

Mutual Recognition within ship classification

in accordance with Article 10.1 of Regulation (EC) No 391/2009 of the European Parliament and of the Council from 23 April 2009 on common rules and standards for ship inspection and survey organisations.



First Report to the European Commission and the Member States
Oct 2012



Foreword

As rotating Chairman during 2011/12 of the EU Recognised Organisations' Mutual Recognition Advisory Board, I have the privilege to present this First Report to the European Commission and the Member States on the progress of the Group's works toward effective implementation of the Mutual Recognition requirements, as called for by Article 10.1 of the Regulation (EC) No 391/2009.

The EU ROs are all well aware of their collective and individual responsibilities which require their best efforts in order to successfully implement the requirements for Mutual Recognition. This First Report is the result of the collective and individual work of twelve EU ROs listed in Reference 12.2, during the 22 meetings which were held to the present date and even more at home between sessions. This outcome, I believe, will evidence more than any further words our genuine commitment to the progress of the task, the care we have deployed to associate the industry and stakeholders in the works of the Group, as well as the seriousness and diligence with which the safety issues, which are real, are being considered.

All interested parties involved in the maritime industry need, indeed, a solid and safe system. This inevitably takes time, but we are convinced that we must do it to ensure

that this is a valuable investment. This is the start, and we know that we still have a long way to go. I think that the deliverables which we present today will indeed be regarded as being solid and safety-conscious, which to our mind best sets the conditions for successful implementation of Mutual Recognition in classification certification.

I thank the individual members and teams of the twelve EU ROs for their hard work, and huge and timely contribution and participation.

I am confident that the European Commission and all interested parties in the maritime community will read this report with interest and support the results achieved so far.



Claude Maillot
Chairman,
EU RO Mutual Recognition
Advisory Board (2011/2012)



Contents

1.0	Executive summary	4
2.0	Objective and scope of report	5
3.0	The role of classification societies and their responsibilities as Recognised Organisations (ROs) and the link to Mutual Recognition	6
4.0	Background to the legislative history	8
5.0	Article 10.1 of Regulation (EC) No 391/2009	9
6.0	EU RO Mutual Recognition formal setup and governance	10
7.0	The EU ROs' approach to meeting Article 10	12
8.0	Communication and consultation process	18
9.0	Mutual Recognition impact on classification of ships	20
10.0	Performance measurement of Mutual Recognition certification	21
11.0	Conclusion and way forward	22
12.0	Reference Documents	24





1.0 Executive summary

This report is intended to give the European Commission and other interested parties an update on the works of the Group of the EU ROs which they collectively carried out in order to implement Mutual Recognition of classification certificates of equipment and components as required by the Article 10.1 of the Regulation (EC) No 391/2009.

The EU ROs consulted with each other soon after the adoption of the Regulation, and set up a Group which first formally met on 16 September 2009. As no prior suitable forum existed, this Group established a *modus operandi* around an Advisory Board and a Technical Committee gathering representatives of each RO. The aim was to collectively work on the technical and procedural requirements and terms and conditions by which the classification certificates of appropriate types of materials, equipment and components could mutually be recognised. The EU ROs decided a way forward would be to develop an approach for Type Approval of such items of equipment, based on current safety considerations. Thus allowing the relevant classification Type Approval certificate of a piece of equipment intended for a ship to be recognised by the EU RO classing the ship.

The first Technical Requirements (TR1) issued under the scope of the EU RO Mutual Recognition Procedure for Type Approval, Tier 1 items, comprise eleven pilot pieces of materials, equipment and components. These are undergoing the last steps of review by the industry and will be adopted for implementation by the EU ROs on 1 January 2013. A further set of product Technical Requirements

(TR2) for Tier 2 products are also currently under review and are expected to follow in July 2013.

Safety has been the constant priority for the Group of EU ROs. The EU RO Mutual Recognition Procedure for Type Approval applies accordingly to items of equipment or components that are considered to have low safety criticality. The first and second tiers of selected items, pieces of equipment or components for Mutual Recognition of classification certificates have been selected on the basis that all EU RO classification rules are considering them as presenting low safety criticality.

Furthermore, the EU ROs are now developing a method of risk assessment, which will allow equipment makers who are interested in gaining Mutual Recognition for their product to apply for their equipment or product eligibility for Mutual Recognition of classification certificates on the basis that they can demonstrate, through a formal risk assessment, that their product falls into the low safety criticality category.

Appreciable progress has thus been made towards effective implementation of Mutual Recognition of classification certificates, in the makers' workshops and on board the vessels, keeping the ship's safety as an absolute.

The EU ROs are convinced that this will achieve a successful, sustainable and safety conscious implementation of the Article 10.1 requirements for Mutual Recognition of classification certificates.



2.0 Objective and scope of report

The objective of this report is to provide the European Commission and the Member States with an update of the fundamental progress made by the EU ROs and agreeing technical requirements and establishing arrangements for Mutual Recognition of certificates for materials, equipment and components as required by Article 10.1 for installation on board ships.

This report will also be made available to other interested parties within the maritime industry.

Scope of report

The report describes the actions undertaken by the EU ROs between June 2009 and June 2012; these can be summarised under the following headings:

- ★ Developing a common understanding of Article 10 and EU ROs' obligations under this Article
- ★ Establishing a method of working to meet Article 10
- ★ Developing technical requirements and procedures
- ★ Consulting widely with the industry
- ★ Establishing an implementation process

The scope covers the work programmes that have been undertaken by the ROs specifically to meet Article 10. It does not cover ROs activities relating to compliance with IMO or other international regulators and administrations or IACS, and does not deal with actions taken by individual EU ROs who may be making their own preparations for meeting Regulation (EC) No 391/2009.

In this report the EU ROs start by providing some background information that outlines the purpose of classification and stresses the importance of safety in describing their role in relation to this Regulation. It is useful also for completeness to reflect on the legal requirements before describing how the twelve independent EU ROs came to-gether to establish formal working arrangements.

The report then provides details of how the EU ROs cooperated on drafting technical requirements and procedures to allow for Mutual Recognition of certificates for selected pieces of marine equipment using Type Approval as the vehicle. It also summarises the consultation steps that have been taken and are ongoing with industry groups and trade associations. Finally, the report sets out a blueprint for the future and includes a section that describes the intended performance indicators that will be introduced to measure the success of the certification process and future market interest in Mutual Recognition certification.



3.0 The role of classification societies and their responsibilities as Recognised Organisations (ROs) and the link to Mutual Recognition

The regulatory regime concerning ship safety and marine pollution prevention are contained in:

- ★ Rules of individual classification societies, and
- ★ IMO International Conventions and Regulations applied by classification societies

Rules of classification societies

The principles of classification were first laid down in the 18th century in response to marine insurers requiring that ships presented for insurance cover should be subjected to an independent technical assessment. Classification societies evolved from that point as independent self-regulating bodies having no commercial interests related to ship design, shipbuilding, ship ownership, operation, management, maintenance or repairs, insurance or chartering.

The classification societies have established Rules that set requirements for the structural strength of the ship's structure, for ship stability and for the suitability of the propulsion, steering, power generation and other features and auxiliary systems built into the ship. Ships built in accordance with a class society's Rules will be assigned a class designation by the society upon satisfactory completion of the relevant surveys. For ships in service, the societies carry out surveys to verify that ships remain in compliance with the Rules.

In developing Rules, a classification society typically relies on empirical experience gained from classing a wide variety of ship types over many years, coupled with appropriate research that contributes towards the on-going development of advanced technical requirements.

IMO International Conventions and Regulations applied by classification societies

Under the auspices of the IMO, flag administrations agree to implement uniform requirements to safeguard life at sea (SOLAS), protect the marine environment (MARPOL) and facilitate international trade. This also enables the acceptance of a ship registered in one country to trade in the waters and ports of another. These standards, which become national law of the respective flag state by way of ratification, are commonly referred to as "statutory" requirements. Broadly, they cover four distinct areas:

- ★ Aspects of the ship's design including: load line and stability in the intact and damaged condition, essential propulsion, steering equipment, etc.
- ★ Pollution control with regard to normal ship operation
- ★ Accident prevention, including navigational aids and pollution and fire prevention
- ★ The situation after an accident (fire, flooding), including containment and escape, and life-saving appliances

International Conventions permit the flag administrations to delegate the inspection and survey of ships to classification societies which then become known as Recognised Organisations (RO). This allows flag administrations who do not have adequate technical experience, manpower or global coverage to undertake required statutory inspections themselves to delegate these surveys to classification societies. The extent and scope to which these duties are delegated to ROs is at the sole discretion of the individual administration. An RO is responsible and accountable to the flag administration for the work that it carries out on the administration's behalf.



Development of Classification Rules with surveys conducted by class surveyors covering:

- ★ Materials
- ★ Ship structures
- ★ Main and auxiliary machinery
- ★ Control systems
- ★ Electrical installations

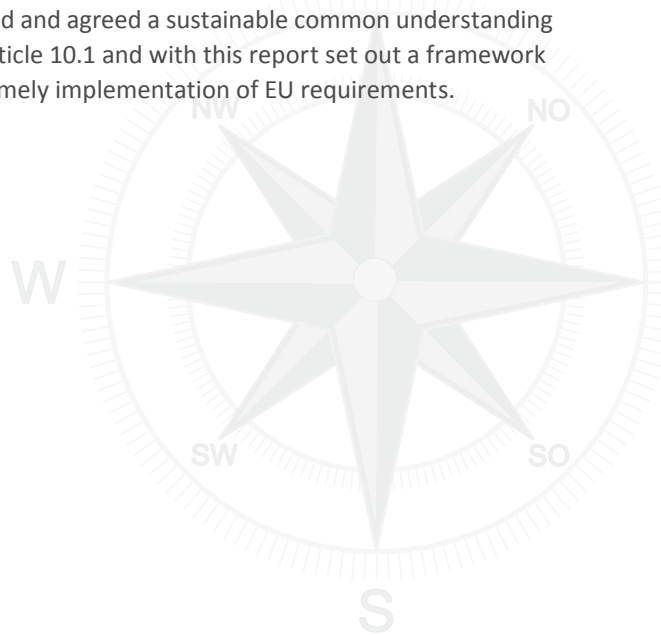
Development of regulations under IMO Conventions with surveys conducted by flag administrations or RO surveyors covering:

- ★ Computation of load line marks and conditions of assignment
- ★ Intact and damage stability
- ★ Carriage of dangerous goods
- ★ Navigational aids, light and sound signals
- ★ Fire protection, detection and extinction
- ★ Radio equipment
- ★ Lifeboats, life rafts, life jackets and other life-saving appliances
- ★ Pollution prevention arrangements and equipment
- ★ Safety management
- ★ Tonnage computation

Mutual Recognition introduces a new regulatory regime on classification

Regulation No 391/2009 imposes new legal requirements. This EU regulation will move beyond the statutory requirements as governed by IMO conventions, as it will be applied in the context of classification. This impacts classification processes directly, requiring class societies to harmonize technical requirements for materials, equipment and components that would not normally be subject to statutory inspection (e.g. electric motors, sensors, resin chock material). This is a unique situation in that it is applying a statutory requirement under EU law which does not fall within the scope of any existing IMO Conventions.

A stipulated aim of the European Union is to ensure cooperation and exchange of knowledge between ROs and to promote highest safety. In the light of this, EU ROs have developed and agreed a sustainable common understanding of the Article 10.1 and with this report set out a framework for the timely implementation of EU requirements.



4.0 Background to the legislative history

Within the framework of the Maritime Safety Package ERIKA III, the European Commission proposed a recast “Directive on Common Rules and Standards for Ship Inspection and Survey Organisations and for the Relevant Activities of Maritime Administrations” on 23 November 2005 to replace Directive 94/57/EC.

The act was then split into a Directive and a Regulation, with the latter containing all of the provisions relating to recognition of EU ROs at the community level. The obligations contained in the Regulation hence apply to the EU ROs (as well as, to the extent necessary, to Member States).

The signature by the European Parliament and the Council took place on 23 April 2009. The Directive 2009/15/EC and the Regulation (EC) No 391/2009 on Common Rules and Standards for Ship Inspection and Survey Organizations came into effect on 17 June 2009.

A more complete reference to the Regulation and legislative history is contained in References 12.10 - 12.11.

5.0 Article 10.1 of Regulation (EC) No 391/2009

The provision of concern

The key provision of concern in Regulation (EC) No 391/2009 is Article 10, and in particular paragraph 10.1. The text of the article reads as follows:

Article 10

Article 10.1 Recognised Organisations shall consult with each other periodically with a view to maintaining equivalence and aiming for harmonisation of their Rules and procedures and the implementation thereof. They shall cooperate with each other with a view to achieving consistent interpretation of the international conventions, without prejudice to the powers of the flag states. Recognised Organisations shall, in appropriate cases, agree on the technical and procedural conditions under which they will mutually recognise the class certificates for materials, equipment and components based on equivalent standards, taking the most demanding and rigorous standards as the reference.

Where Mutual Recognition cannot be agreed upon for serious safety reasons, Recognised Organisations shall clearly state the reasons therefor.

Where a Recognised Organisation ascertains by inspection or otherwise that material, a piece of equipment or a component is not in compliance with its certificate, that Recognised Organisation may refuse to authorise the placing on board of that material, piece of equipment or component. The Recognised Organisation shall immediately inform the other Recognised Organisation, stating the reasons for its refusal.

Recognised Organisations shall recognise, for classification purposes, certificates of marine equipment bearing the wheel mark in accordance with Council Directive 96/98/EC from 20 December 1996 on marine equipment (1).

They shall provide the European Commission and the Member States with periodic reports on fundamental progress in standards and Mutual Recognition of certificates for materials, equipment and components.

In addition, Article 10.2 states: The European Commission shall submit a report to the European Parliament and the Council by 17 June 2014, based on an independent study, on the level reached in the process of harmonising the Rules and procedures and on Mutual Recognition of certificates for materials, equipment and components.

EU RO obligations under Article 10.1

Article 10.1 requires all classification societies authorised to survey and certify vessels on behalf of the EU Member State, to take various actions with reference to their classification Rules and procedures without prejudice to the sovereign powers of the flag states. There are currently twelve classification societies authorised by the EU Member states to inspect or certify ships flying the flag of the EU Member State. Article 10, in summary, requires the EU ROs to:

- ★ consult with each other with the view to maintaining equivalence and aiming for harmonisation of their Rules and procedures;
- ★ cooperate with each other to achieve consistent interpretation of the international conventions;
- ★ agree on the technical and procedural conditions under which they will mutually recognise class certificates for materials, equipment and components, taking the most demanding and rigorous standard as the reference;
- ★ recognise, for classification purposes, certificates of marine equipment in accordance with the Council Directive 96/98/EC 1996 on marine equipment;
- ★ adhere to certain safeguards relating to transfer of class obligations and the exchange of information;
- ★ cooperate in implementing the provisions outlined in above bulletpoints;
- ★ provide the European Commission and the Member States with periodic reports on fundamental progress in standards and Mutual Recognition of certificates for materials, equipment and components.






6.o The EU RO Mutual Recognition formal setup and governance

In accordance with the Article 10.1 of the Regulation (EC) No 391/2009, the EU ROs are required to consult with each other periodically with a view to maintaining equivalence and aiming for harmonisation of their Rules and procedures and the implementation thereof. When appropriate, they are to agree on the technical and procedural conditions under which they will mutually recognise the classification certificates for materials, equipment and components based on equivalent standards, taking the most demanding and rigorous standards as reference.

Soon after the Regulation (EC) No 391/2009 entered into force, the EU ROs agreed that it was necessary to launch without delay the discussions on how to consult and work together on the implementation of Article 10.1. The majority of the EU ROs belong to the International Association of Classification Societies (IACS), but not all of them, and it was very clear from the beginning that a separate and formal unit had to be set up.

The EU ROs organised themselves accordingly. They first met on 16 September 2009 and put in place a dedicated unit consisting of:

- ★ **an Advisory Board**, which would have the overall responsibility for the administration of the procedures and methods of work between the EU ROs and the adoption in a timely and efficient manner of technical requirements which will facilitate the implementation of Mutual Recognition of classification certificates for materials, equipment and components; and
- ★ **a Technical Committee**, responsible for developing recommendations for the Advisory Board regarding the identification of appropriate materials, equipment and components for Mutual Recognition, adopting the agreed technical requirements and procedures to use for Mutual Recognition of classification certificates and for specifying documentation and design evaluation requirements and other relevant technical conditions.



The organisational arrangements and method of work were formally laid down in the “Mutual Agreement on the implementation of Mutual Recognition Provisions of Art 10 of Regulation (EC) No 391/2009 of the European Parliament and of the Council of 23 April 2009 on Common Rules and Standards for Ship Inspection and Survey Organizations”, approved by the EU ROs on 7 October 2010 (see Reference 12.3).

The Advisory Board and the Technical Committee met soon after this agreement was established and have met a number of consecutive times (see Reference 12.4) to examine and plan a way forward. Actions resulting from these meetings have been expeditiously progressed in order to meet the timeline imposed by the Regulation. It should also be appreciated that since the Mutual Recognition of classification certificates of materials, equipment and components is a totally new concept it has raised a lot of issues that needed to be resolved or will be tested during implementation, such as:

- ★ the legal aspects of the EU ROs meeting together with the set objective to mutually recognize one another's certificates between them;
- ★ the classification contract with the shipyard or shipowner and how it may be affected;
- ★ the scope and certification processes to which Mutual Recognition would apply;
- ★ the methodology by which a piece of equipment or a component may be declared eligible for Mutual Recognition;
- ★ the method by which the EU ROs apply the classification requirements for the EU RO Mutual Recognition and the possibility of harmonising them on the basis of the most demanding and stringent requirements;
- ★ the harmonisation of the certification procedures and classification processes;
- ★ the safety aspects and the need for the classification society of the vessel to ascertain for itself that the equipment can be safely integrated into shipboard systems,

- ★ the new distribution of the roles and tasks which were previously fulfilled by the vessel's classification society and will now be shared between several parties;
- ★ the consequential new distribution of responsibilities and liabilities between the equipment manufacturer, the shipyard, the shipowner, the EU RO and the vessel's classification society;
- ★ the traceability aspects, documentation accessibility requirements and maintenance of data; and
- ★ the intellectual property aspects.

This remains an ongoing process of dialogue between EU ROs, regulators and the maritime industry. Whilst they constitute the general framework for the EU ROs work on the implementation of the Mutual Recognition of classification certificates of materials, equipment and components, both the Advisory Board and the Technical Committee have been keen to adopt in the most expeditious way possible a first EU RO Mutual Recognition Procedure to be used as a pilot scheme. The target is to allow technical requirements to be adopted and the first Mutual Recognition classification certificates to be issued, which would help test some of the open issues through practical, actual implementation of Mutual Recognition.

Thanks to this organisation, the EU ROs now have a solid basis in which each RO takes an active part and provides its contribution, so that the technical and procedural decisions and resolutions may be taken on the basis of unanimity.

The EU ROs are well aware that what has been achieved so far is a start and not the end. The items with low safety criticality are being dealt with first to gain experience while limiting the risk to safety. As the level of safety criticality increases, more complex processes will then have to be considered. An Expert Group “Risk Assessment” (EG/RISK) has been set up to work on these more complex issues.



7.0 The EU ROs' approach to meeting Article 10

The “raison d’être” of the class societies and the ROs is to act as major contributors to safety at sea. In this section, the EU ROs describe how with this in mind they have approached the Article 10.1 specific requirement set out in the third sentence of the first paragraph of the Regulation, which reads:

“Recognised Organisations shall, in appropriate cases, agree on the technical and procedural conditions under which they will mutually recognise the class certificates for materials, equipment and components based on equivalent standards, taking the most demanding and rigorous standards as the reference.”

Furthermore, the Regulation states:

“Where Mutual Recognition cannot be agreed upon for serious safety reasons, Recognised Organisations shall clearly state the reasons therefore.”

In line with the above-mentioned remits, the EU ROs have worked together in order to find ways to mutually recognise each other’s class certificates for materials, equipment and components without compromising safety. This has been done by a systematic approach to harmonising the technical and procedural conditions for certification; and when harmonising requirements, the EU ROs have used the most demanding and rigorous standards as the reference.

In this section, the following are described:

- ★ How “appropriate cases” have been framed
- ★ Why and how equivalent standards or common technical requirements were defined and developed
- ★ How 22 products were selected for developing common technical requirements

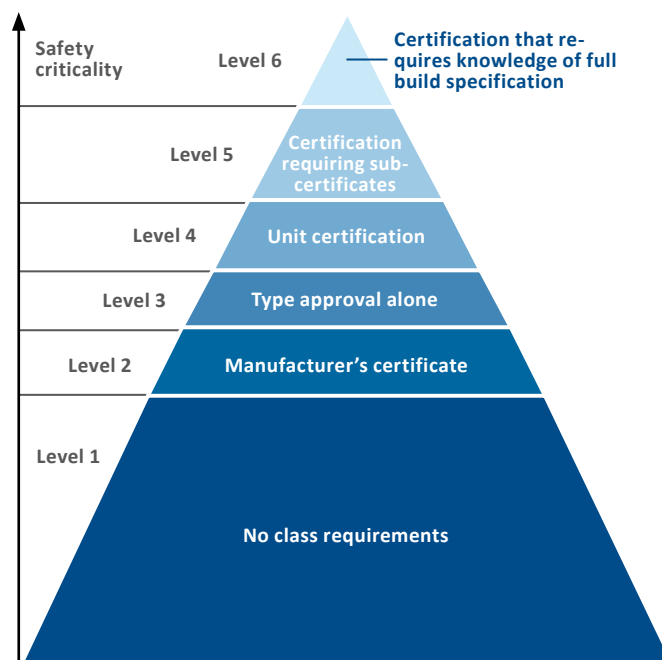


Figure 1

Classification safety hierarchy of materials, equipment and components on a ship

Shipping is an established industry, and the safety regime at sea is mature with well-established legislative processes, routines and practices for assuring safety through implementation. Classification is an integral part of the safety regime, and the scope of class involvement has evolved through empirical risk assessment over more than a century. As a consequence of the robust and evolving empirical risk processes, class is today only involved when safety and reliability are at stake. Furthermore, the involvement of classification increases as the safety criticality of the equipment, component or product increases. The hierarchy of class involvement may be illustrated by Figure 1 above.



Level 1, No class requirements

A large portion of the equipment on board a ship requires no type of class involvement or certification. This is simply because the equipment concerned is non-safety critical per se, or because it does not form part of safety critical systems. Such equipment will be found in the bottom part of the triangle in Figure 1. Examples are furniture and entertainment systems.

Level 2, Manufacturer's certificate

The next level in the safety hierarchy and the second level in the triangle in Figure 1 is equipment where manufacturers' declarations of conformity are sufficient. This is equipment where individual class societies may have requirements but the equipment is not regarded as safety critical enough to be subject to certification schemes overall. This can typically be the simplest components such as small distribution boards, semi-conductor converters, sounding rods and condensers. Requirements for components in this category tend to vary from class society to class society however, reflecting the fact that these pieces of equipment represent lower risk cases.

Level 3, Type approval alone

Direct class involvement starts with equipment in level three in Figure 1. This category consists of equipment that is considered to have a low safety criticality and type approval certificates alone suffice for its acceptance. Type approval facilitates mass production since no individual or product-specific certificate is required. Examples include electrical heating cables and sensors and other such components.

Level 4, Unit certification

At the "Unit certification" level, each individual product will be unique or seen as clearly safety critical, hence, each manufactured unit must, for reasons of safety, be approved and the production and/or test of the specific unit must be witnessed. A wide range of components fall into this category e.g. large electrical machines, pumps, propeller shafts and sub-components of main and auxiliary diesel engines.

Level 5, Certification requiring sub-certificates

This level relates to more complex equipment and systems such as main engines, thrusters and podded thrusters. For these highly complex items typically built to meet ship specific requirements, equipment certificates are needed for sub-assemblies in addition to the main unit certificate. These systems and equipment are essential to the basic function and the safety of the entire vessel.

Level 6, Certification requires knowledge of full build specification

At the top of the safety hierarchy are complete systems such as main propulsion systems or dynamic positioning systems, where deep knowledge about both the specific build and operation of the ship, including many of the other on board systems, is required.

The scope for Mutual Recognition has been limited to the group of equipment currently approved based on type approval certificates alone, described under Level 3 of the triangle. The reasons why type approval was chosen for Mutual Recognition is explained in more detail in the next section.

Why equipment approval based on type approval was chosen for Mutual Recognition

Figure 1 has been drawn to provide a graphical representation of a safety hierarchy to demonstrate where appropriate cases for Mutual Recognition can be adopted. This is between equipment that requires a manufacturers' certificate (certificates provided by the manufacturer) exclusively, and equipment that for higher safety reasons requires witnessing of manufacturing and/or testing and hence falls into the category of unit certification. Equipment that can be approved on the basis of type approval alone falls into this category and has therefore been selected for application of Mutual Recognition in appropriate cases.

The materials, equipment and components certified by type approval alone today are typically those produced in series or mass produced for the shelf and are found in the lower safety criticality level. This is the category of equipment where manufacturers have a strong interest in reducing multiple certification. For this type of equipment, where there are long production series with consistent production, there is no requirement for class to witness the production or to test each unit in order to approve it, which is why the EU ROs have decided to apply Mutual Recognition to equipment in this category.

Potentially, almost all components could pose a serious safety risk under certain operating conditions. (e.g. failure of a simple component such as a pressure or temperature sensor could be catastrophic if the items were critical to the safe operation of a boiler for example). In seeking to minimise the risk through the introduction of mutual recognition, type approval of components that require type approval only were selected for Mutual Recognition. However, should the function of the system in which a type approved product has been fitted require further testing for safety reasons, Mutual Recognition would not preclude this additional verification.

The development of common Process and Legal Agreement

In addition to establishing common technical requirements, the EU ROs also found it necessary to develop a common type approval procedure which is outlined schematically on the right and included in full in Reference 12.6. The procedure has been designed to ensure consistency in the certification process and consists of two steps: the Design Evaluation involving Engineering evaluation and Witnessing the manufacturing and testing processes; the Production Quality Assurance (PQA) aiming at ensuring the consistency of production with the approved design and manufacturing process.

A standard form of agreement covering important client terms and conditions for the mutual recognition of type approval certification has also had to be prepared. This agreement went through a number of iterations and

reviews by the EU RO legal counsels. It was finally agreed in its current form, which is included in Reference 12.5. These terms and conditions will form an integral part of the agreement to be established between the certifying EU RO and its client for the provision of mutual recognition type approval services. The terms and conditions are required to enable the uniform application and acceptance of products that are subject to mutual recognition certification and to allow EU ROs access to information that would not normally be available to them where they are not in a direct contractual relationship with the manufacturer.

The development of common Technical Requirements

The EU ROs have chosen to develop common Technical Requirements (TRs), taking "the most demanding and rigorous standards" as a reference, for the equipment found appropriate for Mutual Recognition. The EU ROs have concluded that having common TRs is the most efficient, effective and sustainable way of maintaining equivalence and harmonisation. Furthermore, the approach is well aligned with the change to methodologies applied by ROs in general and in relation to the IMO requirements.

A number of alternative approaches were given serious consideration:

- ★ Directly accepting each other's standards as equivalent and recognising each other's certificates at face value, which could lead to difficulties in consistently and meeting the most demanding and rigorous standard; hence compromising safety
- ★ Assessing the Classification Rules for the products in question from all ROs and selecting and accepting directly those Rules judged to be the most demanding and rigorous as the common TR. However, since the EU RO Rules have been developed over time using different philosophies, this approach would lead to a regulatory patchwork most likely resulting in inconsistencies which again would be detrimental to safety.

Hence, the EU ROs chose to develop common Technical Requirements as the basis for mutually recognising each other's certificates – the more rigorous and robust route.

Another important step in preparing for Mutual Recognition was for the EU ROs to formulate a framework document which establishes a common type approval procedure to be applied by all the EU ROs, and to agree on a standard form of client agreement that established a set of standard Terms and Conditions for the application of Mutual Recognition. This agreement recognises the need to provide a level of protection for each of the EU ROs who may have to accept certification issued by any one of the other EU ROs.



Design Evaluation

EU RO Engineering
Evaluation

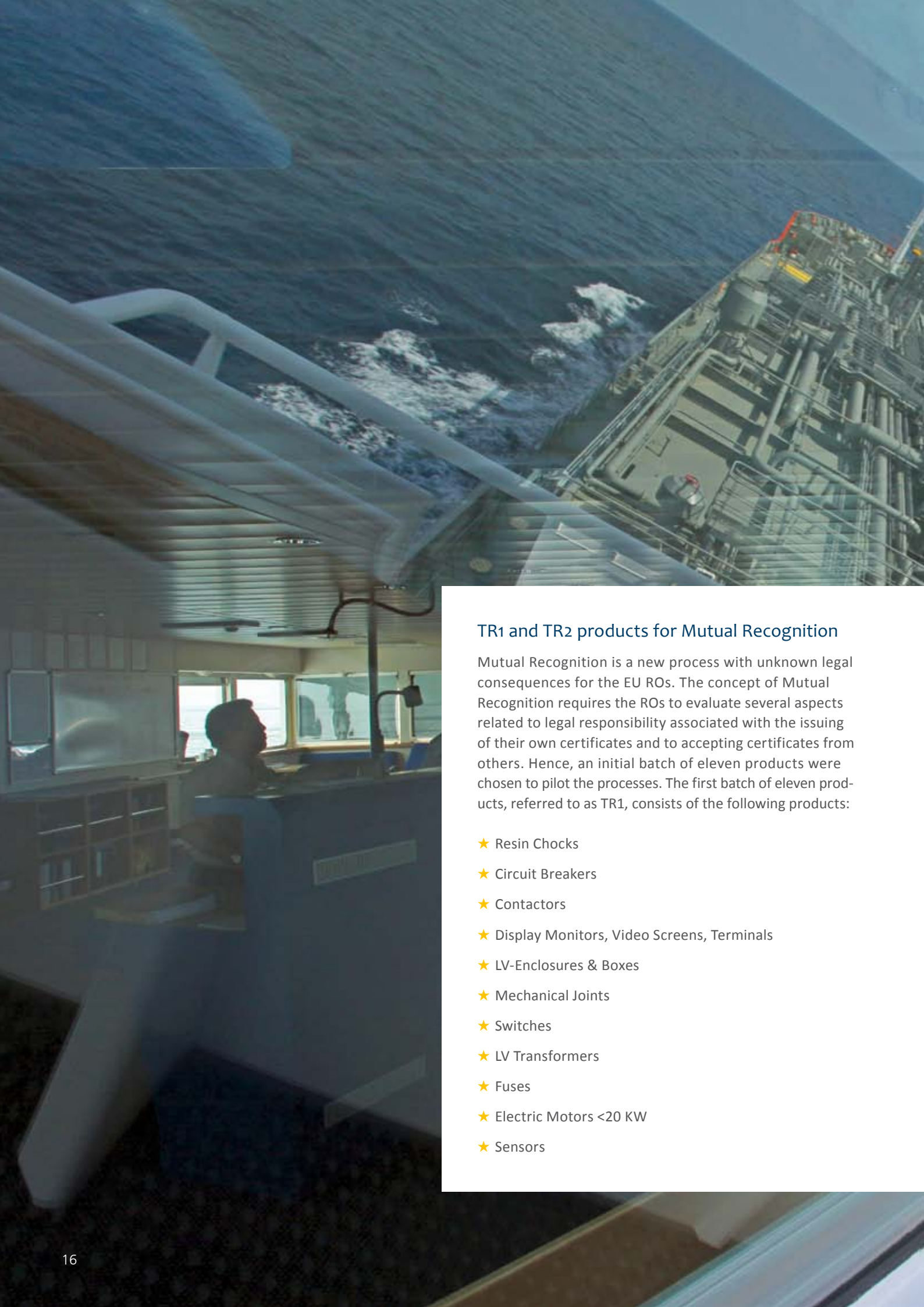
EU RO Witness Type
Testing

Production Quality Assurance

Production Quality Assurance
(PQA)
Production, final product inspection
and testing

EU RO MR Type
Approval Certificate





TR1 and TR2 products for Mutual Recognition

Mutual Recognition is a new process with unknown legal consequences for the EU ROs. The concept of Mutual Recognition requires the ROs to evaluate several aspects related to legal responsibility associated with the issuing of their own certificates and to accepting certificates from others. Hence, an initial batch of eleven products were chosen to pilot the processes. The first batch of eleven products, referred to as TR1, consists of the following products:

- ★ Resin Chocks
- ★ Circuit Breakers
- ★ Contactors
- ★ Display Monitors, Video Screens, Terminals
- ★ LV-Enclosures & Boxes
- ★ Mechanical Joints
- ★ Switches
- ★ LV Transformers
- ★ Fuses
- ★ Electric Motors <20 KW
- ★ Sensors



Detailed technical requirements for these products are included in Reference 12.8.

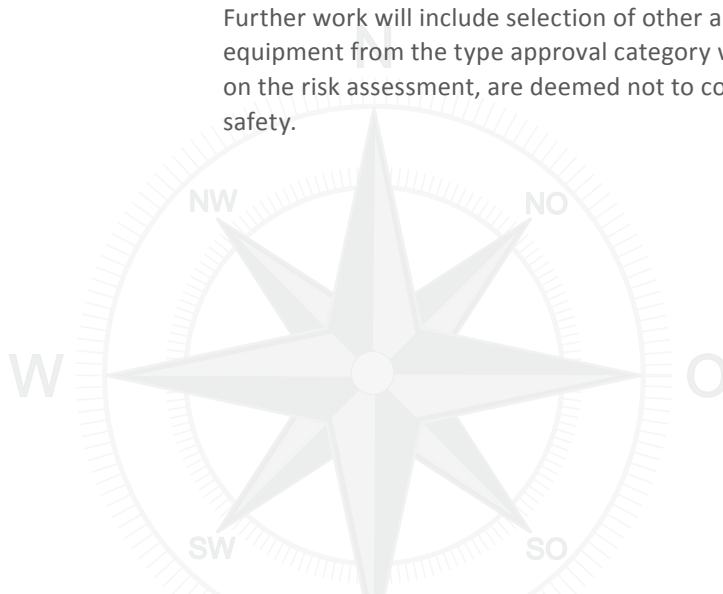
This first batch of eleven products will be followed up by a second batch of products, provided no problems are encountered with the implementation of the first batch. The second batch of eleven products, referred to as TR2, consists of the following products:

- ★ Air Pipe Closing Devices
- ★ Batteries
- ★ Electric Heating Cables
- ★ Expansion Joints
- ★ Ex-Proof Lights / enclosures
- ★ Plastic Piping Systems
- ★ Spark Arrestors
- ★ Class III Pipe Fittings
- ★ Computers and PLCs
- ★ Electric Relays
- ★ Cable Ties

TR1 and TR2 products are widely used within ship's systems and should impact a large number of equipment suppliers to the maritime industry.

The EU ROs compared requirements for type approval across the different class societies and selected products that had common or near common requirements; finally agreeing which products could be included and which could not and collectively agreeing on the most demanding and rigorous standards for the selected products.

Further work will include selection of other appropriate equipment from the type approval category which, based on the risk assessment, are deemed not to compromise safety.





8.0 Communication and consultation process

The EU ROs realised early in the process that Mutual Recognition brought numerous complex issues, not least the duty of care and precautionary measures to alleviate the risks for the safety of the ships, and the necessity to conciliate the expectations of different stakeholders and users of the classification certificates, which may sometimes be contradictory.

It became equally obvious from the start that a wide range of stakeholders had to be consulted on the changes that would be introduced through the implementation of mutual recognition of classification certificates of materials, equipment and components. The stakeholders were therefore contacted early in the process, and the “Mutual Agreement” between EU ROs was designed to encourage third parties, e.g. stakeholders of the maritime industry, to comment on the development process of the proposed Technical Requirements. There has been a solid process of external consultation which has taken time but with a view to ensuring that the interests and concerns of all parties are reasonably met.

The Technical Requirements for TR1 products have been submitted to a two-round external consultation process. The first round included a large array of globally dispersed manufacturers. Their comments were collected and duly considered by the Technical Committee. The list of consulted makers is included in this report (see Reference 12.7).

These Technical Requirements were then updated as necessary and re-circulated to 20 marine equipment makers associations and later to 44 prominent maritime industry organisations. At the request of a number of


these organisations, the consultation process had to be prolonged and their comments were duly considered and integrated as appropriate before adoption of the TR1 Technical Requirements. The list of consulted associations is also included with this report (see Reference 12.7).

The Technical Requirements for TR2 products, and any subsequent Technical Requirements proposed by the EU ROs under the scope of Mutual Recognition, will also undergo a similar external consultation process.

In addition to this, the individual EU ROs have undertaken various initiatives to inform their clients, who include the main stakeholders of the industry, on the progress of the work being done and have shared with the EU RO Group the comments which were made. Mutual Recognition has also been on the agendas of the Technical Committees of the EU ROs, which include prominent representatives of the maritime industry, including: shipowners, shipyards, equipment manufacturers, insurers, brokers and other interested parties.

The collective knowledge of the maritime industry on the Mutual Recognition issues has thus made considerable progress thanks to these initiatives. This is seen by the EU ROs as an important step towards achieving the successful implementation of the Mutual Recognition concept for the provision of equipment on board vessels whilst ensuring that the absolute interest of the numerous stakeholders, including the safety authorities, are indeed respected.

As an important part of the consultation process, the EU ROs decided to deliver in 2011 a forum gathering a broad



spectrum of the maritime industry, equipment makers, shipowners or operators, shipyards, charterers, insurers and P&I clubs, lawyers and other stakeholders, where the concept of Mutual Recognition and the steps reached by the EU ROs towards implementation could be presented and where the various interested parties could make their views and needs known. The EU ROs organised the workshop “Marine equipment on board ships” to that effect, which was held in Hamburg on the 14 December 2011. The workshop was attended by a large number of interested parties of the maritime industry.

The workshop comprised a morning session devoted to the presentation of the outcome of the work carried out so far by the EU ROs, and an afternoon session featuring an interactive panel discussion among industry representatives. This report includes the agenda and the summary notes of the workshop representing the views expressed by interested parties (see Reference 12.9). The workshop highlighted that Mutual Recognition of class equipment certificates is not a simple matter and involves many different issues for the various stakeholders who often have conflicting or diverging concerns, expectations or requirements. However, all stakeholders are looking for practical solutions and will have to cooperate and agree on a common understanding of the concepts if Mutual Recognition brought about by Article 10 is to be achievable. Overall, the manufacturers took note of the outcome of the EU ROs work and generally expressed the opinion that this was heading in the right direction. They were also thankful to the EU ROs for the consultation process put in place and will generally be supportive of any initiative aimed at improving the processes of class certification of marine equipment.

9.0 Mutual Recognition impact on classification of ships

A modern ship is a complex engineered unit that comprises significant structural elements, sophisticated power producing machines that provide propulsion and electrical power to the ship, a wide range of auxiliary mechanical and electrical systems, and a large number of items of equipment that are integrated into these systems.

In selecting type approval alone, this could result in a large number of components being covered by mutual recognition certification. By way of example, one of the components selected for type approval, “Electric motors of 20 KW or less”, is fitted to a wide variety of ships systems.

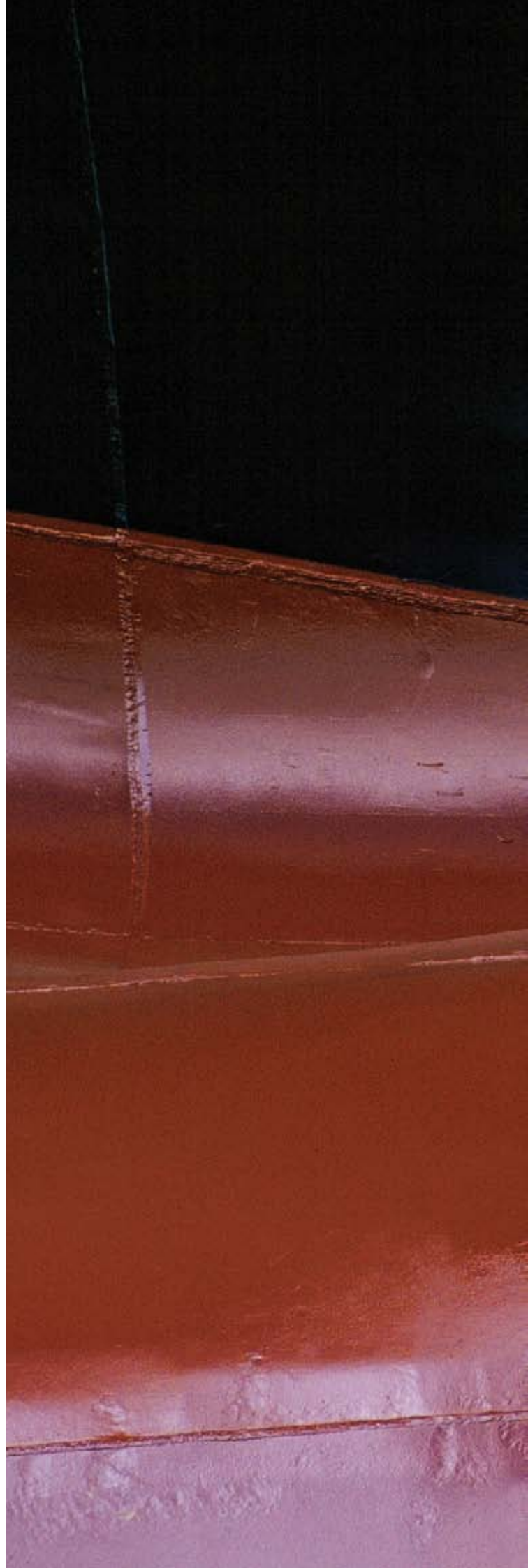
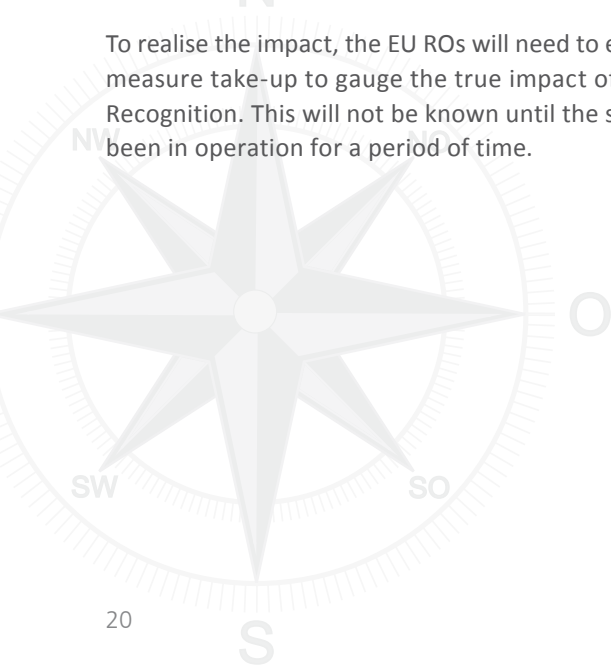
Typical quantities fitted to ships include:

- ★ around 60 to 65 electric motors of this size per vessel on tankers, bulk carriers and container ships; and
- ★ upwards of 500 per vessel for a typical passenger ship.

For other components in the TR1 list, such as switches, contactors, circuit breakers, sensors, etc., the number of items can run into the thousands when viewed across all the ship's systems.

To further provide an indication of the scale of coverage and overall impact of the proposed approach to Mutual Recognition, the EU ROs individually reviewed their respective Classification Rules and Requirements to statistically analyse the extent of coverage of the products included in the type approval programme. Whilst there is considerable variation between the classification requirements overall it was found that TR1 and TR2 products covered between 30 and 40% of the total type approvals (where type approval only is a requirement) required in the Rules. The averages were 18% coverage for the TR1 products and 17% for the TR2 products.

To realise the impact, the EU ROs will need to evaluate and measure take-up to gauge the true impact of Mutual Recognition. This will not be known until the service has been in operation for a period of time.





10.0 Performance measurement of Mutual Recognition certification

The EU ROs will consider what data can be measured and analysed in a meaningful way and how best to obtain feedback from manufacturers and shipyards. From January 2013, performance data will be collected and analysed when sufficient data is available to make for a valid review. The method of data collection, analysis and reporting will form a future action of the EU ROs. Quantitative and qualitative performance measures could be employed.

Statistics will be presented in a format yet to be agreed. These measures will provide input to future reports to the European Commission and the Member States on the take-up of Mutual Recognition certification and other comments about its effectiveness.

In gathering and analysing data and preparing reports, it should be understood that the EU ROs will not discuss or compare information that could be construed as breaching competition law. The EU ROs cannot be seen to be collaborating on commercial considerations or collecting and collating data that might be used for commercial gain. This limitation may therefore have an impact on the extent to which information can be reviewed and reported where the information may be commercially sensitive (see Reference 12.11).

11.0 Conclusions and way forward

Classification impacts almost all sectors of the maritime industry, including the shipyards, shipowners, flag administrations, charterers, insurers and P&I clubs. The ship's classification certificate and the associated classification notations provide the assurance they need that the ship and its equipment comply with the Rules of a classification society.

The Mutual Recognition concept as introduced by Article 10.1 of Regulation (EC) No 391/2009 may be a reflection of what is standard practice in some other sectors but is a totally new concept in the maritime industry within the context of the classification certification of materials, equipment and components. Also as explained in section 3 above, it crosses the boundary that separates what is traditionally a classification function from what would be considered a statutory function imposing conditions on classed items.

Planned implementation of legal requirements

Notwithstanding the complexity of the issues and the legal assurances that the EU ROs are yet to receive, they have pursued their obligations in pursuance of the Article 10.1 of Regulation (EC) No 391/2009 as follows:

Set up, methodology and governance:

Soon after the regulation entered into force, the EU ROs established a solid foundation which has shown its capacity to convene periodical meetings and consultations and proposed pragmatic ways of how to implement Mutual Recognition and to have them endorsed by the industry through a fair mode of consultation, whilst respecting the overarching principle and vision that safety will always come first.

Agreed Technical Requirements:

The first tier of Technical Requirements has been adopted with implementation due to commence on 1 January 2013 and a second tier is planned to follow soon afterwards; currently targeted for introduction by mid 2013. This is an ongoing process, and the EU ROs are confident to have set up the required procedures and processes and fostered the knowledge within the industry which are the best guarantors

for an effective, efficient and safe implementation of the Mutual Recognition of classification certificates of materials, equipment and components onboard the vessels.

Involvement of industry:

The EU ROs recognise the need to maintain an ongoing dialogue with industry to appraise them of the plans and to involve them in the developments. EU ROs will continue to seek the industry's input during development of technical requirements and look for feedback, to check on the effectiveness of Mutual Recognition in practice, following implementation. Future involvement of industry will also include future workshops and conferences.

Secretariat for implementation of Article 10.1:

The Advisory Board has discussed the setting up of a secretariat to administer the activities relating to Mutual Recognition on behalf of the EU ROs.

Duties will include:

- ★ maintenance of the Technical Requirements;
- ★ coordination of all general correspondence;
- ★ organisation of meetings and industry conferences;
- ★ maintenance of common procedures; and
- ★ collection, maintenance and dissemination of data relating to certification for future reviews.

If adopted this will provide a longer term sustainable arrangement for the coordination of correspondence between the interested parties within the industry and the regulators.

Reporting to the European Commission:

This is the first written report prepared for the European Commission. It provides a full and frank description of the actions taken by the EU ROs to date to comply with Article 10.1 of the Regulation requiring Mutual Recognition of certification. The EU ROs will monitor the implementation of Mutual Recognition, its impacts and the industry take-up and will report back the European Commission and the Member States as further substantial progress is made.

Type approval under EU ROs' Mutual Recognition:

Components fitted in Ships Bridges, Engine Rooms, Electrical Distribution Panels, Generator Rooms, Pump Rooms, Cargo Handling Systems, Steering Gear etc.

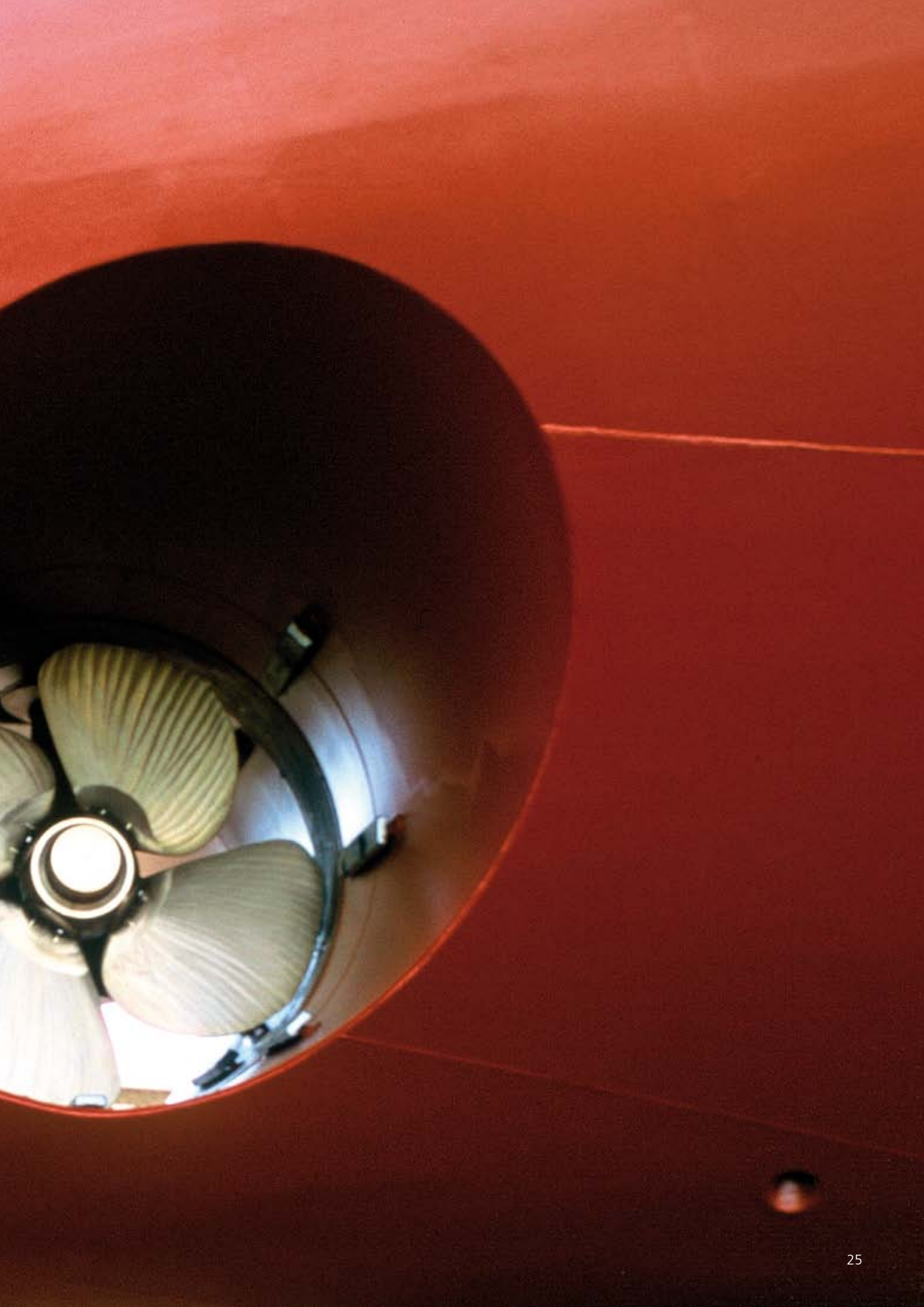


- ✧ Circuit breakers
- ✧ Cast Resin (Chock)
- ✧ Contactors
- ✧ Electrical motors <20 kW
- ✧ Electrical/electronic sensors
- ✧ Fuses
- ✧ LV Enclosures & Boxes
- ✧ Mechanical joints
- ✧ Monitors / Terminals
- ✧ Switches
- ✧ Transformers



12.0 Reference Documents

- 12.1 List of abbreviations
- 12.2 EU Recognised Organisations (EU ROs)
- 12.3 European Union Recognised Organisations
Mutual Agreement on Implementation of MR
- 12.4 AB and TC meeting history
- 12.5 EU RO Mutual Recognition for Type Approval
Terms and Conditions
- 12.6 EU RO Mutual Recognition Procedure for
Type Approval
- 12.7 List of consulted manufactures and associations
for EU RO Mutual Recognition
- 12.8 Technical Requirements developed (TR1)
- 12.9 EU RO Workshop – Marine Equipment on Ships
- 12.10 Legislative background
- 12.11 Regulation (EC) No 391/2009
- 12.12 Competition Law Statement



12.1 – List of abbreviations

AB	Advisory Board
ABS	American Bureau of Shipping (USA)
ACBs	Air Circuit Breakers
BIMCO	Baltic and International Maritime Council
BMEA	Busan Marine Equipment Association
BV	Bureau Veritas (France)
CCS	China Classification Society (China)
CESA	Community of European Shipyards Associations
CIMAC	International Council on Combustion Engines
DNV	Det Norske Veritas (Norway)
EC	European Commission
EG/Risk	Expert Group Risk
EMEC	European Marine Equipment Council
EMSA	European Maritime Safety Agency
EU ROS	European Union Recognised Organisations (to the European Commission)
EUROMOT	European Association of Internal Combustion Engine Manufacturers
GL	Germanischer Lloyd (Germany)
HGK	Hrvatska Gospodarska Komora (Croatia)
IACS	International Association of Classification Societies
ICS / ISF	International Chamber of Shipping / International Shipping Federation
IEC	International Electrotechnical Commission
IECEE	System for Conformity Testing and Certification of Electrotechnical Equipment and Components
ILAC	International Laboratory Accreditation Cooperation
IMO	International Maritime Organisation
ISO	International Organization for Standardization
KOMEA	Korea Marine Equipment Association
KR	Korean Register of Shipping (Korea)
LOVAG	Low Voltage Agreement Group
LR	Lloyd's Register of Shipping (UK)
MARPOL	International Convention for the Prevention of Pollution from Ships
MCCBs	Moulded-Case Circuit Breakers
MR	Mutual Recognition
NK or ClassNK	Nippon Kaiji Kyokai (Japan)
OCEAN	European Ship Suppliers Organization
PQA	Production Quality Assurance
PRS	Polish Register of Shipping (Poland)
QM / QS	Quality Management / Quality Assurance System
RINA	Registro Italiano Navale (Italy)
RINAVE	Registro Internacional Naval (Portugal)
RS	Russian Maritime Register of Shipping (Russia)
SEA	Ships and Maritime Equipment Association of Europe
SOLAS	International Convention for the Safety of Life at Sea
TA	Type Approval
TAC	Type Approval Certificate
TC	Technical Committee
TR	Technical Requirements
URs	Unified Requirements
VDMA	German Engineering Federation

12.2 – EU Recognised Organisations (EU ROs)



12.3 – European Union Recognised Organisations

Mutual Agreement on the Implementation of Mutual Recognition Provisions of Article 10 of Regulation (EC) No 391/2009 of the European Parliament and of the Council from 23 April 2009 on Common Rules and Standards For Ship Inspection and Survey Organisations

between:

American Bureau of Shipping (“ABS”) whose registered office address is
16855 Northchase Drive, Houston, TX 77060, USA;

Bureau Veritas (“BV”) whose registered office address is
67-71, boulevard du Château, 92200 Neuilly-sur-Seine, France;

China Classification Society (“CCS”) whose registered office address is
9 Dongzhimen Nan Da Jie, Beijing, 100007 China

Det Norske Veritas (“DNV”) whose registered office address is
Veritasveien 1, 1363 Hovik, Oslo, Norway;

Germanischer Lloyd (“GL”) whose registered office address is
Brooktorkai 18, 20457 Hamburg, Germany;

Korean Register of Shipping (“KR”) whose registered office address is
36, Myeongji ocean city 9-ro, Ganseo-gu, Busan, Seoul 618-814, Rep. of Korea;

Lloyd’s Register Group Ltd (“LR”) whose registered office address is
71 Fenchurch Street, London EC3M 4BS; UK

Nippon Kaiji Kyokai (“NK”) whose registered office address is
4-7 Kioi-cho, Chiyoda-ku, Tokyo 102-8567, Japan;

Polski Rejestr Statków S.A. (“PRS”) whose registered office address is
Al. Gen. Józefa Hallera 126 80-416 Gdańsk, Poland;

RINAVE – Registro Internacional Naval SA (“Rinave”) whose registered office address is
Pólo Tecnológico de Lisboa, Lote 21, 1600-485 Lisboa, Portugal;

RINA whose registered office address is
Via Corsica 12, Genova, Italy; and

Russian Maritime Register of Shipping (“RS”) whose registered office address is
191186 St. Petersburg, 8, Dvortsovaya Nab., Russian Federation.

1. General

1. Scope.

These procedures shall apply to the development of technical requirements that will facilitate the Mutual Recognition of class certificates for materials, equipment and components to satisfy the requirements of Article 10 of the above referenced Regulation on Common Rules and Standards for Ship Inspection and Survey Organizations by the European Union Recognized Organizations (EU RO). An EU RO is an organization recognized in accordance with the Regulation on Common Rules and Standards for Ship Inspection and Survey Organizations. Recognition is granted by the European Commission in accordance with the regulatory procedure referred to in Article 12(3) of the Regulation on Common Rules and Standards for Ship Inspection and Survey Organizations.

2. Organization and Responsibilities

1. EU RO Mutual Recognition Advisory Board.

1. General.

The EU RO Mutual Recognition Advisory Board (hereinafter “Advisory Board”) has overall responsibility for the administration of these procedures and the development of technical requirements which will facilitate the implementation of Mutual Recognition of class certificates for materials, equipment and components. The Advisory Board shall appoint the EU RO Mutual Recognition Technical Committee (hereinafter “Technical Committee”), act on the recommendations of the Technical Committee, review drafts of technical requirements, and issue technical requirements and guidance.

2. Membership of Advisory Board.

1. Appointment.

Each EU RO shall appoint a representative to serve on the Advisory Board.

2. Alternates.

EU RO representatives on the Advisory Board may appoint an alternate when necessary.

3. Terms of Membership.

Each EU RO determines the length of term of its respective representative serving on the Advisory Board.

3. Chair.

1. Election of Chair.

The members of the Advisory Board shall vote to appoint a Chair. The Chair must be an appointed representative of an EU RO to the Advisory Board. Any EU RO Advisory Board member may nominate themselves or another EU RO Advisory Board member for the position of Chair. Once elected, the Chair shall be a non-voting member of the Advisory Board. The Chair’s EU RO shall appoint another representative to serve as their voting member on the Advisory Board. The term of the Chair is one year.

2. Responsibilities of Chair.

1. Meetings.

The Chair shall call meetings as necessary for the Advisory Board to conduct its work. At least two meetings will be held in each year. The Chair shall preside at meetings of the Advisory Board.

2. Preparation of an Agenda.

Prior to each meeting, the Chair shall develop a proposed agenda for the meeting and circulate it to the Advisory Board. The EU ROs may make revisions to the proposed agenda.

3. Attendance at Meetings.

The Chair shall ensure that attendance at meetings of the Advisory Board is limited to members, alternate members of the Board, and invited guests. Invitations to guests will be issued, or agreed to, by the Chair.

4. Recordkeeping.

The Chair shall maintain draft documents, maintain minutes of Advisory Board meetings, maintain records of Advisory Board actions, and maintain records of all ballots.

4. Working Groups.

1. General.

Working groups shall be designated, appointed and disbanded at the discretion of the Advisory Board to carry out specific technical work.

2. Communication Group

During the development period until the 17th of June 2014 the European Commission shall be provided with an update on the progress being made at least twice per year. Therefore the EU ROs will designate a Communication Group consisting of representatives of one or more EU RO. The information provided to the European Commission shall be coordinated by a Communication Group in close cooperation with the Chair of the Advisory Board and the Chair of the Technical Committee and is subject to the Advisory Board's prior approval. Such information shall inter alia contain:

- a milestone paper reflecting the progress of the implementation of Mutual Recognition
- general information regarding the meetings of the Advisory Board and the Technical Committee

2. EU RO Mutual Recognition Technical Committee.

1. General.

The Technical Committee shall be responsible for developing recommendations to the Advisory Board regarding the:

- identification of which materials, equipment and components to apply Mutual Recognition;
- adoption of the "most demanding and rigorous standards as reference" as a set of agreed technical requirements;
- procedures EU ROs can use to mutually recognize class certificates for materials, equipment and components for new and existing vessels;
- specifying documentation and design evaluation requirements necessary to implement Mutual Recognition; and
- any other tasks assigned by the Advisory Board.

2. Membership of Technical Committee.

1. Appointment.

Each member of the Advisory Board shall appoint a representative to serve on the Technical Committee.

2. Membership Criteria.

Members shall have expertise and/or experience in the certification of materials, equipment, and components.

3. Alternates.

EU RO representatives on the Technical Committee may appoint an alternate to attend meetings in their absence.

4. Terms of Membership.

Each EU RO shall determine the length of the term of its respective representative serving on the Technical Committee.

3. Chair.

1. Appointment of the Chair.

The Chair of the Advisory Board shall also serve as the Chair of the Technical Committee for the first year after adoption of these Procedures. Thereafter, the Advisory Board shall appoint the Chair of the Technical Committee. The Chair of the Technical Committee must also be an appointed member of the EU RO Advisory Board. The Chair shall be a non-voting member of the Technical Committee. The Chair's EU RO shall appoint another representative to serve as their voting member on the Technical Committee. The term of the Chair is one year.

2. Responsibilities of Chair.

1. Meetings.

The Chair shall call meetings as necessary for the Technical Committee to conduct its work. There shall be at least two meetings in each year. The Chair shall preside at meetings of the Technical Committee.

2. Preparation of an Agenda.

Prior to each meeting, the Chair shall develop a proposed agenda for the meeting and circulate it to the Technical Committee. The EU ROs may make revisions to the proposed agenda.

3. Attendance at Meetings.

The Chair shall ensure that attendance at meetings of the Technical Committee is limited to members, alternate members of the Committee, and invited guests. Invitations to guests will be issued, or agreed to, by the Chair.

4. Recordkeeping.

The Chair shall maintain draft documents, maintain minutes of Technical Committee meetings, maintain records of Technical Committee actions, and maintain records of all ballots.

4. Task Groups.

1. General.

Task groups may be designated, appointed and disbanded by the Technical Committee to divide and separate technical work to increase efficiency. The Technical Committee shall appoint members and chairs of Task groups.

3. Advisory Board/Technical Committee Procedures

1. Roster of Advisory Board/Technical Committee.

The Chair of the Advisory Board shall maintain a roster of Advisory Board/Technical Committee members.

2. Meetings.

1. Scheduling Meetings.

Meetings to conduct business shall be held at a location and on date(s) decided upon by the Chair. Notice of meetings should be provided at least 42 days prior to the meeting in principle, and shall not be provided less than 28 days prior to the meeting.

2. Quorum.

Three-quarters of the appointed EU RO representatives shall constitute a quorum for meeting. Members participating by teleconference or videoconference shall be counted toward meeting the quorum requirement.

3. Voting.

Each EU RO has one vote in the Advisory Board and one vote in the Technical Committee. Voting at meetings shall be limited to members; however, alternate members shall be permitted to vote if the member to whom they are alternate is absent from the vote. Any member may authorize another member to vote on their behalf.

4. Work Program

1. General.

The sole purpose of the Advisory Board and the Technical Committee is to develop the arrangements which will facilitate the mutual recognition of class certificates for materials, equipment and components as required in Article 10 of the European Union's Regulation on Common Rules and Standards for Ship Inspection and Survey Organizations.

2. Work Program.

The work program of the Technical Committee to comply with the Mutual Recognition of certificates required by Article 10 will be assigned by the Advisory Board. The initial Work Program is outlined in the Addendum to these procedures.

3. Work Plan/Schedule.

The Technical Committee shall develop a Work Plan/Schedule to implement the work program assigned by the Advisory Board. The Technical Committee shall submit that Work Plan/Schedule to the Advisory Board and provide regular updates.

5. Preparation of Mutual Recognition Technical Requirements.

1. General.

The Technical Committee will assess the classification certification requirements for materials, equipment, and components and recommend to the Advisory Board the appropriate cases for which Mutual Recognition could be applied.

2. Development of Draft Technical Requirements.

The Technical Committee shall develop a draft Technical Requirement that is based on accepted science and engineering practice And that is based on the "most demanding and rigorous standards as reference" as mentioned by the Regulation. Where Mutual Recognition cannot be agreed upon for serious safety reasons, the Technical Committee shall state the reasons therefore.

3. Release of draft Technical Requirement for review.

1. Initiation of ballot.

The Chair of the Technical Committee shall send a draft Technical Requirement to all members of the Technical Committee for ballot. The individual Technical Requirement is to be supplemented by documentation clarifying the underlining principle. The Chair will provide the committee members a sufficient time period, not less than 28 days, to review the draft before a decision is requested by voting.

2. Approval of Draft Technical Requirement.

The draft Technical Requirement must be approved by a two-thirds majority of the Technical Committee.

4. Review and Approval by the Advisory Board.

1. Review.

Following approval of a draft Technical Requirement by the Technical Committee, the Chair of the Advisory Board shall circulate the draft Technical Requirement to the Advisory Board for their review.

2. Modifications.

If Advisory Board members seek modifications to the draft Technical Requirement, the chair of the Advisory Board shall send the proposed modification(s) to all members of the Advisory Board. If a unanimous agreement among the EU ROs cannot be reached, the chair shall send the draft Technical Requirement and proposed modifications to the Advisory Board for ballot.

3. Initiation of final ballot.

Once any modifications are accepted or rejected, the Chair of the Advisory Board shall send a draft Technical Requirement to all members of the Advisory Board for ballot. The Chair will provide the Advisory Board a sufficient time period to review the draft before needing to return their ballot

4 Approval of the Technical Requirement.

The draft Technical Requirement must be approved by a three-quarters majority of the Advisory Board. Once approved, the draft Technical Requirement will become an EU RO Mutual Recognition Technical Requirement approved for third party review. The Chair shall record all Advisory Board actions and approved EU RO Mutual Recognition Technical Requirement.

5. Background Documentation

On a case by case basis the documentation supporting an individual Technical Requirement may be published once the Technical Requirement is released.

6. Implementation of EU RO Mutual Recognition Technical Requirements

1. EU Commission Notifications.

Once approved, the Chair shall notify in writing the European Commission of an EU RO Mutual Recognition Technical Requirement's adoption.

2. EU RO Notification.

Once approved, the Chair shall notify in writing each EU RO of an EU RO Mutual Recognition Technical Requirement's adoption.

3. Implementation.

Once approved, each EU RO will be responsible for implementing the EU RO Mutual Recognition Technical Requirement.

4. Third Party Participation

The EU RO's shall make arrangements to allow interested third Parties, e.g. stakeholders of the maritime industry to comment in the development process of the proposed Technical Requirements.

7. Maintenance of EU RO Mutual Recognition Technical Requirements

1. Review Frequency.

EU RO Mutual Recognition Technical Requirement shall be reviewed by the Technical Committee as need may arise, but not less than every five years following publication or revision. In addition, any EU RO may request a review.

2 Proposed Changes.

Any changes proposed by the Technical Committee shall be reviewed in accordance with section 5.

3. Approval.

Approval of the revised Technical Requirement by the Advisory Board shall be in accordance with section 5.

8. Miscellaneous

1 Confidentiality.

Except to comply with Article 10, EU ROs will not disseminate unpublished information originated from its clients except where a client has given his/her consent to the release of information or where disclosure is required by judicial order, governmental order or regulation, subpoena or direction of a governmental agency with subpoena power.

2. Amendments.

Amendments to these procedures shall be by approval of the EU RO Mutual Recognition Advisory Board.

3. Governing Law and Place of Jurisdiction

This Memorandum shall be governed by English law and subject to the exclusive jurisdiction of English Courts.

12.4 – Advisory Board meeting history

Dates	Main outcomes
16/9/2009	Set up of the EU RO Group Set up of the Advisory Board (AB) and the Technical Committee (TC) ABS appointed to chair both the AB and the TC Set up of a SG to develop a EU RO Group framework Agreement
23/11/2009	1st Meeting of the Advisory Board Draft Mutual Recognition Implementation Framework
16/6/2010	Draft EU RO Mutual Recognition Scheme for Type approval, and terms and conditions
7/10/2010	Review and approval of the Terms of Reference Review of the draft Procedure for Type Approval Principles of external consultation for Technical Requirements
24/1/2011	Continuous Review of the EU RO Mutual Recognition Procedure for Type Approval Draft Technical Requirements for 10 Pilot Projects
22/3/2011	BV takes the Chair of the AB Principles of external consultation Inclusion of next items subject to Type Approval Mutual Recognition into the TC Work Program Decision of a EU RO Workshop as part of the consultation process
17/6/2011	Adoption of the 10 Pilot Technical Requirements for 1st round of external consultation with makers Draft Manufacturers' Terms and Conditions
26/9/2011	Principles for the second round of consultation with Makers Associations (Starting 1st December 2011) Principles to convene an Expert Group on Criticality Assessment Process for future items and roadmap to 2014 Selection of 12 new items for TA MR EU RO Workshop Organization
13/12/2011	Second round of consultation process for the 10 Pilot projects Final preparation of the EU RO Workshop
2/3/2012	Governing Principles for TR implementation Meeting with E/C Selection of items until 2014 based on ROs' Rules EG/Risk to develop a concept for post 2014 items based on RO eligibility/Maker assessment
21/5/2012	AB discuss drafting of Interim Report Clarified implementation issues associated with initial Type Approvals Request made for EU ROs to provide data on potential type approvals for inclusion in Interim Report
27/6/2012	Agreed timetable and actions for implementation of TR1 and TR2 products Proposal presented for introduction of a permanent Secretariat to coordinate future affairs Draft interim report circulated for comment LR elected to chair AB for next 12 months period
25/5/2012, 27/6/2012, 9/8/2012 4/9/2012 17/10/2012	Working group drafting Interim Report for Commission including editorial meetings Work on design layout and preparation for printing.
4/10/2012	AB agreement on format of the Report for the Commission. Further discussion on Secretariat proposal Agreement on minor amendment to the TR1 requirements

Technical Committee meeting history

Dates	Main outcome
15 January 2010	Review implementation of framework and work programme Discussed the development of Mutual Recognition Technical Requirements
17 March 2010	Review type approval definitions Draft Mutual Recognition framework for type approval
18 May 2010	Review draft working plan Review terms and definitions Review type approval framework Identify products for pilot project
29 June 2010	Review EU RO Mutual Recognition flowchart Select products for pilot project Review development of background information
29 September 2010	Review PQA scheme Clarify type approval definitions Develop standard for Technical Requirements
9 December 2010	Review of consolidated PQA Scheme Review Technical Requirements of products selected for pilot project
3 March 2011	Review EU MR procedure for type approval Review Technical Requirements consultation process Review amended work programme
19 May 2011	Review Technical Requirements pilot project Discuss identification of component criticality
29 June 2011	Review Technical Requirements pilot project Continue discussion on identification of component criticality
6 September 2011	Review feedback from Technical Requirements consultation process Continue discussion on identification of component criticality
15 February 2012	Review Technical Requirements pilot, update based on feedback from consultation process Review Technical Requirements of products selected for Tier 2 Discuss implementation of pilot
14 May 2012	Finalise TR1 and MR TA framework documentation, prepare for hand over to AB Go through 2nd consolidated of TR2 and prepare for handover to AB Prepare implantation of pilot

12.5 – EU RO Mutual Recognition for Type Approval

Terms and Conditions

1. This document establishes a common set of requirements that will be applied to manufacturers of marine equipment or components (product[s]) where such products are to benefit from the Mutual Recognition of Type Approval by the European Union recognised classification societies (hereafter described as EU ROs) under EU regulations.
2. The European Union Recognised Organisation (EU RO) Mutual Recognition (MR) Type Approval Certificate (MR TAC) is issued in pursuance of Article 10 of the Regulation (EC) No 391/2009 of the European Parliament and of the Council from 23 April 2009 on Common Rules and Standards for Ship Inspection and Survey Organisations. Technical Requirements applicable to products under MR are adopted by the EU ROs pursuant to same Article 10. These Technical Requirements may be amended from time to time.
3. The MR TAC is intended to enable Mutual Recognition (MR) of certain type-approved products, through the uniform application of Technical Requirements, to enable those products to be installed on board ships for which MR TACs are issued by one or more of the EU ROs.
4. The EU ROs currently are:
 - American Bureau of Shipping (ABS)
 - Bureau Veritas (BV)
 - China Classification Society (CCS)
 - Det Norske Veritas (DNV)
 - Germanischer Lloyd (GL)
 - Korean Register of Shipping (KRS or KR)
 - Lloyd's Register (LR)
 - Nippon Kaiji Kyokai (NK or ClassNK)
 - Polish Register of Shipping (PRS)
 - Registro Italiano Navale (RINA)
 - Registro Internacional Naval (Rinave)
 - Russian Maritime Register of Shipping (RS)
5. The MR TAC applies to products to be installed aboard EU RO-classed ships as defined in Article 2 (a) of the Regulation (EC) No 391/2009. For those products intended to be installed on board a ship that do not fall within the scope of the above definitions, the individual EU RO requirements will apply.
6. The manufacturer will be required to sign a contract with the EU RO providing the MR TAC service and certificate; such contract will include terms, whereby the manufacturer accepts expressly that:
 - a. when a product is intended to be installed on board as an element or sub-element of a piece of equipment, part or system of the ship, the EU RO classing the ship that is not the issuer of the MR TAC of the product may ask for information in addition to that provided in the MR TAC;
 - b. the manufacturer shall provide immediately, when so requested, information, documentation and/or evidence required by the EU RO classing the ship;
 - c. where a product that has a valid MR TAC is rejected because the product is not found in compliance with the published classification Rules and regulations or applicable statutory requirements applied by the EU RO classing the ship or otherwise, the EU RO which has noted or ascertained the non-compliance shall promptly inform the other EU ROs, stating the reasons for rejecting the product;
 - d. the MR TAC may be suspended or withdrawn by the EU RO issuing it (see 10d below); and
 - e. flag national authorities may have their own requirements for the approval of products to be installed aboard ships flying their flag. Both the requirements of national authorities and those of the classification Rules must be complied with by the manufacturers of the products to be installed aboard such ships.
7. The manufacturer must ensure and certify that the product(s) supplied for an individual ship under a MR TAC is (are) marked with suitable identification to ensure traceability.
8. The manufacturer is required to operate and maintain a quality management system certified by an accredited certifying body to the ISO 9001 standard or equivalent and that this certification relates to the products for which MR TAC is sought.
9. The manufacturer will be required to agree that it will fulfil the obligations arising out of its quality assurance scheme as approved during production. The manufacturer certifies it has kept the accredited certification body and the EU RO that issued the MR TAC is duly informed of any intended design changes or updating of the production quality assurance scheme for its consideration with regard to the validity of the MR TAC. The manufacturer will apply annually for periodical assessment by the EU RO to show that the production under the MR TAC and the quality assurance scheme are being satisfactory maintained.

10. The MR TAC of an existing product remains valid until:

- a. its expiry date; or
- b. such time as any material modification of the design or construction is made; or
- c. such time as the manufacturer has not fulfilled its obligations of annual assessment; or
- d. such time as the MR TAC is suspended or withdrawn by the EU RO; or
- e. such time as the EU RO Mutual Recognition Technical Committee considers it necessary to change the Technical Requirements on which the MR TAC was based.

Validity may be extended in case of b, c, or e above case following further review by the EU RO providing the MR TAC.

11. The manufacturer of a MR TAC product, its heirs and designee are responsible for the archiving and retention of all records of the design and construction approved by the EU RO, the records of type testing, and the quality records of the production under the MR TAC for seven years after the validity of the relevant MR TAC expires.

12.6 – EU RO Mutual Recognition procedure for Type Approval

General

1. The purpose of this agreed procedure is to provide a framework document setting out the minimum steps necessary to enable Mutual Recognition (MR) of certain type-approved products, through the uniform application of agreed Technical Requirements relating to equipment listed in Appendix III to be placed on board ships for which MR Type Approval Certificates are issued by one or more of the Recognised Organisations listed in Appendix IV.
2. For the purpose of this agreed procedure, the following definitions shall apply:
 - Agreed Technical Requirements** – a mutually agreed document or documents that prescribe Technical Requirements to be fulfilled by a design, product, process or service.
 - Assessment** – the process of evaluating a design, product, service or process. It involves generating and collecting evidence of the design, product, service or process and judging that evidence against defined standards.
 - Certification** – a procedure whereby a design, product, service or process is assessed for compliance with agreed Technical Requirements.
 - Classification** – that specific type of certification for which the Technical Requirements are the Rules of the relevant classification society.
 - Design evaluation** – Two-step process involving engineering evaluation and witnessing the manufacturing and testing processes.
 - Engineering evaluation** – evaluation of a design of a type of the product to determine compliance with the agreed Technical Requirements.
 - Installed on board a ship** – the assembling and final placement of components, equipment and sub-systems to permit operation of the system on board the ship.
 - Manufacturer** – a company producing and/or assembling final products and who is responsible for such products.
 - Parties** – see IMO definition.
 - Product** – is material, equipment and component (ME & C).
 - Testing process** – a technical operation to determine if one or more characteristic(s) or performance of a product or process satisfies agreed technical requirements.
 - Type Approval** – see IMO Circular MSC.1/Circ.1221.
 - Witness** – to be physically present at a test in accordance with the agreed technical requirements and be able to give evidence about its outcome.
 - Witnessing the manufacturing and testing processes** – witnessing manufacture as applicable and testing of a type of the product to determine compliance with the agreed Technical Requirements.
3. This agreed procedure shall apply to ships as defined in Article 2 of the Regulation (EC) No 391/2009 of the European Parliament and of the Council from 23 April 2009 on Common Rules and Standards for Ship Inspection and Survey Organisations:
 - a. “Ship” means a ship falling within the scope of the international conventions
 - b. “International conventions” means the International Convention for the Safety of Life at Sea from 1 November 1974 (SOLAS 74) with the exception of chapter XI-2 of the Annex thereto, the International Convention on Load Lines from 5 April 1966 and the International Convention for the Prevention of Pollution from Ships from 2 November 1973 (MARPOL), together with the protocols and amendments thereto, and the related codes of mandatory status in all Member States, in their up-to-date version
4. The conformity-assessment procedure for products listed under the EU RO Agreed Procedure for Mutual Recognition of Type Approval, details of which are listed in Appendix II, shall be subject to:
 - a. EU RO Design Evaluation (DE) and
 - b. Production Quality Assurance (PQA) assessment.

For those products that do not fall within the scope of the EU RO agreed procedure for Mutual Recognition of Type Approval, the individual EU RO requirements will apply.

A flow chart of the conformity assessment procedures provided for EU RO Mutual Recognition and individual EU RO requirements is provided in Appendix II.
5. The EU MR Type Approval Certificate shall contain as a minimum the information as specified in Appendix I.
6. Each EU RO shall maintain an up-to-date list of EU RO MR Type Approval Certificates that have been issued by that EU RO.

7. Individual ROs are responsible for:
 - a. giving detailed reasons to a manufacturer when an MR Type Approval Certificate is refused and
 - b. making available information when an MR Type Approval Certificate is withdrawn.
8. Manufacturer's responsibility
 - a. Where a manufacturer reapplies for type approval for products for which an MR Type Approval Certificate has been refused, his submission to the EU RO must include all relevant documentation, including the original test reports, the detailed reasons for the previous refusal and details of all modifications made to the product or manufacturing process
 - b. The manufacturer shall provide other EU ROs, on request, the relevant information on Design Evaluation documentation that has been amended or superseded
9. Where a Recognised Organisation refuses the placing onboard of a product that has been ascertained not to be in compliance with its certificate, that EU RO shall immediately inform the other EU ROs, stating the reasons for its refusal.
10. This agreed procedure shall become effective on 1 January 2013, after which the EU RO Mutual Recognition Technical Committee shall meet on an annual basis or as required to review the agreed Technical Requirements of existing products identified in Appendix III and to consider new products for inclusion in the Appendix as required.

Appendix I

EU MR Type Approval Certificate information

The EU MR Type Approval Certificate shall contain as a minimum the following information:

Certificate heading

Mutual Recognition Type Approval Certificate

Certificate number

Each EU MR Type Approval Certificate is to be issued with a specific number to ensure traceability

Company information

Manufacturer's name

Address (city, state, postcode, country)

Product information

Product

Model

Intended service

Description

Ratings

Restrictions (limitations as outlined by the Technical Requirements)

Term of validity

Place of issue

Issue date

Expiration date

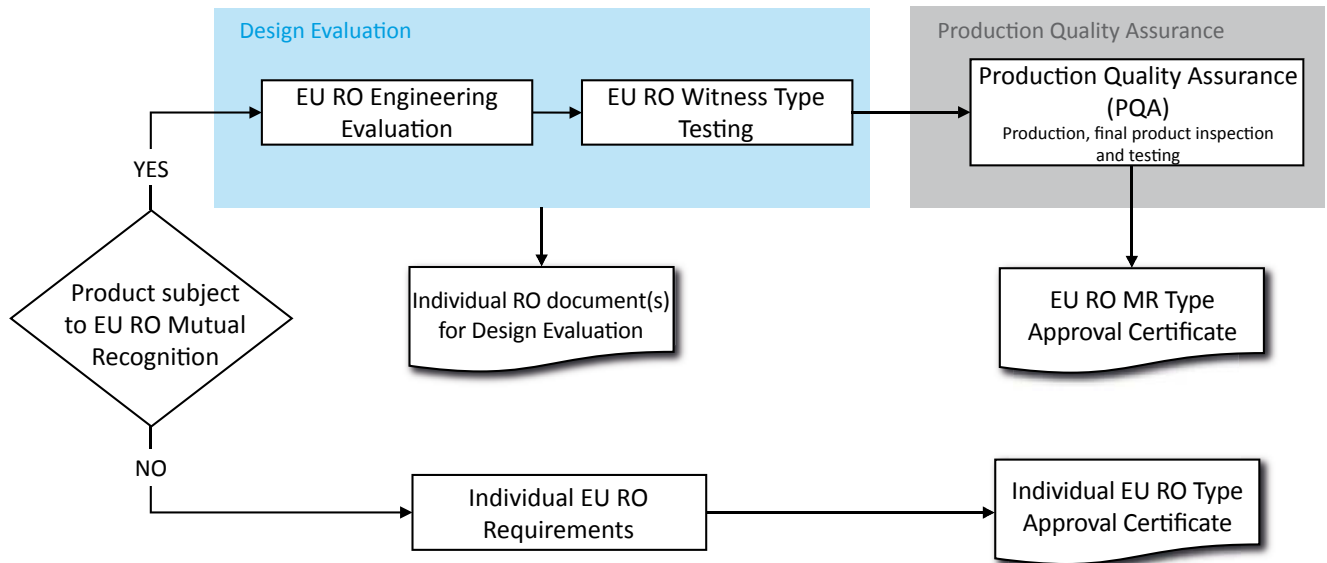
Rules and Standards

Technical Requirement reference

Other standards as applicable

Appendix II

Flow chart technical and procedural conditions for EU RO Mutual Recognition of Type Approval Certificates for equipment and components based on equivalent standards



Note 1: For critical systems, products with an EU MR Type Approval Certificate cannot be accepted under Mutual Recognition arrangements for serious safety reasons as noted in Article 10 of the Regulation from 29 June 2010.

Version 4.0

Appendix III

List of products:

Electric-Driven Motors <20 kW
Circuit Breakers
Contactors
Fuses
Display Monitors, Video Screens, Terminals
LV Enclosures & Boxes
LV Transformers
Mechanical Joints
Resin Chocks
Switches
Sensors

Appendix IV

List of Recognised Organisations:

American Bureau of Shipping (ABS)
Bureau Veritas (BV)
China Classification Society (CCS)
Det Norske Veritas (DNV)
Germanischer Lloyd (GL)
Korean Register of Shipping (KRS or KR)
Lloyds Register (LR)
Nippon Kaiji Kyokai (NK or ClassNK)
Polish Register of Shipping (PRS)
Registro Italiano Navale (RINA)
Registro Internacional Naval (RINAVE)
Russian Maritime Register of Shipping (RS)

Appendix V

EU RO Design Evaluation scheme

Procedure:

1. An application for the Design Evaluation must be submitted by the manufacturer or product designer to the EU Recognised Organisation(s) and must include:
 - a. the name and address of the manufacturer or product designer; and
 - b. the technical documentation as described in point 2.
2. The technical documentation must make it possible to assess the product's compliance with the agreed Technical Requirements.
3. The EU RO will review the submitted technical documentation to confirm compliance with the agreed Technical Requirements
4. Verifies, where required, that the product to be tested has been manufactured in accordance with the technical documentation.
5. Where required, agrees with the applicant the location where the examinations and necessary tests will be carried out
6. The EU RO is to witness the required tests and to check whether the agreed Technical Requirements have been met.
7. Where the product meets the relevant agreed Technical Requirements, the EU RO will issue an Individual RO document(s) for Design Evaluation to the applicant. The document must give the name and address of the applicant, details of the product, the conclusions of the examination, the conditions of its validity and the necessary data for identification of the approved product.
8. The applicant must inform the EU RO(s) that hold the technical documentation concerning the EU RO MR Type Approval Certificate of any modification of the design, which must receive additional approval where such changes may affect compliance with the agreed Technical Requirements or the prescribed conditions for use of the product. Such additional approval must be given in the form of an addition to the original EU RO MR Type Approval Certificate.
9. The applicant must provide on request the Design Evaluation documents to each EU RO for which they want Mutual Recognition.

Appendix VI

EU RO Production Quality Assurance (PQA)

Procedure:

1. A manufacturer who satisfies the obligations of point 2 must ensure that the product(s) concerned conform to type as described in valid EU RO Design Evaluation documents. The documents must be issued by the EU RO responsible for the whole EU RO Type Approval process (hereafter described as EU ROs), i.e. both Design Evaluation and Production Quality Assurance (PQA).

The manufacturer must ensure that the product(s) supplied for an individual ship under a MR TAC is (are) marked with suitable identification to ensure traceability.
2. The manufacturer must operate a quality management system certified by an accredited certifying body as meeting the requirements of ISO 9001 or industry equivalent.

The Production Quality Assurance scheme must be approved by the EU RO for production, final-product inspection and testing of the product(s) subject to EU RO MR Type Approval as specified in point 3 and must be subject to surveillance as specified in point 4.

The approval shall only be valid as long as the Quality Management System Certificate is valid.

The manufacturer has to inform the EU RO if the Quality Management System Certificate is suspended, withdrawn or not renewed.
3. Production Quality Assurance scheme
 - 3.1. The manufacturer must submit an application for assessment of his Production Quality Assurance scheme according to point 2 with the EU RO. The application must include:
 - a. all relevant information for the product(s) envisaged;
 - b. list of manufacturing/production sites other than the TA applicant site; and
 - c. the documentation concerning the quality management system and its certification including:
 - i. the Quality Management System Certificate issued by the certifying body;
 - ii. the manufacturing, quality-control and quality-assurance techniques, processes and systematic actions that will be used;
 - iii. the examinations and tests that will be carried out before, during and after manufacture, and the frequency with which they will be carried out;
 - iv. the quality records, such as inspection reports and test data, calibration data, damage and claim records, qualification reports of the personnel concerned, etc.; and
 - v. the means of monitoring the achievement of the required product quality and the effective operation of the quality system.

- 3.2. The EU RO shall assess the Production Quality Assurance scheme to determine whether it gives reasonable confidence that the concerned product(s) can be consistently produced in compliance with the type of product(s) covered by the Design Evaluation document(s). The assessment procedure must also include a review of the quality management system documentation and a visit to the manufacturer's premises and manufacturing/production sites other than the TA applicant site. A report of the audit assessment is provided to the manufacturer.
- 3.3. The manufacturer must undertake to fulfill the obligations arising out of the Production Quality Assurance scheme as approved and to uphold it so that it remains adequate and efficient. The manufacturer must keep the EU RO that has evaluated the Production Quality Assurance scheme informed of any intended updating of that Production Quality Assurance scheme for its consideration with regard to the validity of the EU MR Type Approval Certificate. The manufacturer is to apply for periodical assessment to the EU RO at an annual frequency to verify that the quality system Production Quality Assurance scheme is maintained and applied. Audit reports are to be provided to the manufacturer.
4. Periodical assessment by the EU RO
 - 4.1. The purpose of surveillance is to make sure that the manufacturer duly fulfils the obligations arising out of the approved Production Quality Assurance scheme.
 - 4.2. The manufacturer must allow the EU RO access for inspection purposes to the locations of manufacture, inspection and testing and storage and must provide it with all necessary information, in particular:
 - a. the Production Quality Assurance scheme documentation and the Design Evaluation documentation;
 - b. the quality records, such as inspection reports and test data, calibration data, damage and claims records, qualification reports of the personnel concerned, etc.; and
 - c. additional testing as per the Technical Requirements that may be required by the EU RO.
5. Upon satisfactory completion of the Design Evaluation and Production Quality Assurance evaluations, the EU RO may issue an EU MR Type Approval Certificate for the concerned product(s) with a maximum validity of 5 years. The document must give the name and address of the manufacturer and place of manufacture, if at a different location, conditions of its validity and the necessary data for identification of the approved product(s).

12.7 – List of consulted manufactures for the EU RO Mutual Recognition

Type Approval Programme

Circuit Breakers, Switches, Contactors LV

Abb Sace Division, Italy
Schneider Electric Industries Sas, France
Jiangsu Daqo Kf Ine Electric Co. Ltd., China
Siemens Electrical Apparatus Ltd, China
Changshu Switchgear Co., Ltd., China
Siemens AG, Germany
Thomas Völkel, Abb Automation Gmbh, Germany
Lsis Co., Ltd. – Cheongju Plant, Korea
Dong A Electric Device Ind. Co., Ltd., Korea
Terasaki Electric Co., Ltd., Japan
Mitsubishi Electric Corp. Fukuyama Works, Japan
Fuji Electric Fa Components & Systems Co., Ltd., Japan
Schneider Electric Polska Sp. Z O.O., Poland
Abb Spa – Abb Sace Division, Italy
Jayme Da Costa Mecânica E Electricidade, S.A., Portugal
Isognom – Electricidade E Metalomecânica, Lda., Portugal
Contactors, Abb Stotz-Kontakt GmbH, Germany

Electrical/Electronic Sensors (including P&T Transmitters/Transducers)

Vega Grieshaber KG, Germany
Tematec Löbach GmbH, Germany
Nanjin Gaohua Technology Co., Ltd, China
Shanghai Rongde Engineering Equipment Co., Ltd., China
Kongsberg Maritime AS, Norway
Cmr Controle Mesure Regulation, France
Endress + Hauser GmbH & Co. KG, Germany
Dae Yang Instrument Co., Ltd., Korea
Keumyang Ind. Co., Ltd., Korea
Meiyo Electric Co., Ltd., Japan
Nakakita Seisakusho Co., Ltd., Japan
Yamatake Corporation, Japan
Controlmatica Zap Pniefal, Poland
Valcom S.r.l., Italy
Valcom Ltd., Russia

Cast Resin Chock Material (Propulsion)

Itw Polymer Technologies, USA
Henkel Corporation, USA
Itw Performance Polymers (Wujiang) Co., Ltd., China
Mim Marine- u. Industrie-Montage GmbH, Germany
Marine Service Jaroszewicz S.C., Poland
H.A. Springer GmbH Marine + Industrie Service, Germany
Diamant Metallplastic GmbH, Germany

Electric Motors <20 kW

Teco-Westinghouse Motor Company, USA
Moteurs Leroy Somer Angouleme, France
Xiangtan Electric Manufacturing Co., Ltd., China
Shanghai Marathon Ge-Xin Electric Co., Ltd., China
Jiangsu Yuandong Electric Motor Manufacturing Co., Ltd., China
Abb Oy, Motors, Finland
Atb Motorentechnik GmbH, Germany
Hyosung Heavy Ind. Co., Ltd., Korea
Higen Motor Co., Ltd., Korea
Taiyo Electric Co., Ltd., Japan
Mitsubishi Electric Corporation, Japan
Maszyny Elektryczne Celma S.A., Poland
Marelli Motori Spa, Italy
Weg, Portugal
Vemz Open JSCO (Vladimirskiy Elektromotorniy Zavod), Russia

Mechanical Joints for Piping

Chibro S.p.A., Italy
Victaulic Company, USA
Wuxi Jinchang Piping & Valve Co., Ltd., China
Marinetec Development (Shanghai) Limited, China
Straub Werke AG, Switzerland
NORMA Germany GmbH, Germany
Sewon Industries Co., Ltd., Korea
JIB Tech Co., Ltd., Korea
Ihara Science Corporation, Japan
Japan A.M.C. Ltd., Japan
RIKEN KOKI Co., Ltd., Japan
Teekay Couplings Ltd., UK
RACCORDERIE METALLICHE S.p.A., Italy
Rasmussen GmbH, Germany
GS-Hydro Oy, Finland

Electric Fuses

Sb Fuse Co., Ltd., Korea
Utsunomiya Electric Mfg. Co., Ltd., Japan
Legrand France- Limoges, France
Abb Oy, Low Voltage Products, Finland
Siba Sicherungen-Bau GmbH, Germany
Sb Corporation, Korea
Utsunomiya Electric Mfg. Co., Ltd., Japan
Eaton Industries GmbH, Germany
Socomec Elettrotecnica S.r.l., Italy
Jayme Da Costa Mecânica E Electricidade, S.A., Portugal
JSCO Electroautomat, Russia

Transformers LV

Rex Power Magnetics Div. Of Transfactor Ind. Inc., Canada
VOLTA D.O.O., Croatia
Taizho Haitian Electrical Manufacture Co., Ltd., China
Shanghai HUGUANG Transformer Co., Ltd., China
Trasfor SA, Switzerland
Hyundai Heavy Industries Co., Ltd., Korea
KOC Electric Co., Ltd., Korea
Torishima Electric Works Co., Ltd., Japan
Shihen Technical Corporation, Japan
ELHAND Transformatory, Poland
ESPA S.r.l., Italy
Efacec Engenharia E Sistemas, S.A., Portugal
Electrophysica Ltd., Russia

Enclosures, Cabinets, Boxes LV

Net Safety Monitoring Inc., Canada
Cooper Crouse-Hinds Pauluhn, USA
Legrand-France, France
Henan Guangcai Electric Co., Ltd., China
Schneider Electric SA, France
Rittal GmbH & Co. KG, Germany
Kte Co., Ltd., Korea
Terasaki Electric Co., Ltd., Japan
Japan Radio Co., Ltd. – Mitaka Plant, Japan
Uzushio Electric Co., Ltd., Japan
Ergom Zakład Aparatury Elektrycznej Sp. z o.o., Poland
Bocchiotti Spa, Italy
Enerluz Representações De Equipamentos, Lda, Portugal
Vidropol, Portugal
Medc Limited, UK

Display Monitors, Video Screens, Terminals

North Invent A/S, Denmark
Vansco Electronics Oy, Finland
Schneider Electric Industries SAS, France
Hatteland Display AS, Norway
Tetradyne Co., Ltd., Korea
Terasaki Electric Co., Ltd., Japan
Jrcs Mfg. Co., Ltd., Japan
Uzushio Electric Co., Ltd., Japan
Mariner Systems (Uk) Ltd., UK
V.D.S. Video Display Systems S.r.l., Italy
Unicont Spb, Russia

Manufacturer associations

BELGIUM	EMEC
CROATIA	Association of Croatian Marine Equipment Manufacturers
DENMARK	Danish Maritime
FINLAND	Association of Finnish Maritime Industries
FRANCE	The French Marine Equipment Association - GICAN - COFRENA
GERMANY	CIMAC EUROMOT German Engineering Federation (VDMA) Division Marine and Offshore Equipment Industries
ITALY	The Italian Marine Industry Association - Group of Equipment Suppliers V.D.S. Video Display Systems S.r.l.,

JAPAN	Japan Marine Equipment Association (JSMEA) Japan Ship Machinery Quality Control Association
KOREA	Korea Marine Equipment Association Busan Marine Equipment Association
NORWAY	Association of Norwegian Marine Equipment Manufacturers
POLAND	Forum Okretowe
RUSSIA	Unicont Spb
SPAIN	AEDIMAR
SWEDEN	Swedoean
The NETHERLANDS	Holland Marine Equipment
TURKEY	GESAD - Turkish Association of Ship Industrialists
UNITED KINGDOM	Society of Maritime Industries Mariner Systems (Uk) Ltd., UK

List of consulted associations for EU RO Mutual Recognition

ATENA - Italian Association of Maritime Technology, Italy
 BIMCO - The Baltic and International Maritime Council,
 BIPAR - European Federation of Insurance Intermediaries -
 CAJS - The Cooperative Association of Japan Shipbuilders
 CANSI - China Association of National Shipbuilding Industry
 CESA - Community of European Shipyards' Associations -
 CIRM - COMITE INTERNATIONAL RADIO-MARITIME - The International Association for Marine Electronics Companies)
 CLIA - Cruise Lines International Association,
 CMI - Comité Maritime International
 CONFITARMA - Italian Shipowners' Association, Italy,
 Danish Shipowners' Association
 ECC - European Cruise Council,
 ECSA - European Community Shipowners' Association,
 EMPA - European Maritime Pilots Association
 ESC - European Shippers' Council
 ESPO - European Sea Ports Organisation
 Federation of Norwegian Industries (Norsk Industri)
 HELMEPA - Hellenic Marine Environment Protection Association,
 IAPH - The International Association of Ports and Harbours
 ICOMIA - International Council of Marine Industry Associations
 ICS - International Chamber of Shipping
 IFSMA - International Federation of Shipmasters' Associations
 IMCA - The International Marine Contractors Association
 INTERCARGO International Association of Dry Cargo Shipowners
 INTERFERRY
 InterManager International Ship Managers' Association
 INTERTANKO - International Association of Independent Tanker Owners
 ISF - International Shipping Federation
 IUMI - International Union of Marine Insurance
 JSA - the Japanese Shipowners' Association
 KOSHIPA - Korean Shipbuilder Association
 MAR.TEC.MA, Greece
 Norwegian Maritime Suppliers
 Norwegian Shipowners' Association
 OCIMF - Oil Companies International Marine Forum
 P & I Clubs International Group of P & I Associations
 Portuguese association of shipyards: Associação das Indústrias Navais
 RINA - The Royal Institution of Naval Architects
 SAJ - the Shipbuilders' Association of Japan
 SIGTTO - Society of International Gas Tanker and Terminal Operators Limited
 SNAME - The Society of Naval Architects & Marine Engineers
 The Swedish Ship Owners' Association
 VDR - German Shipowners' Association
 WSC- World Shipping Council

12.8 – Technical Requirements developed

EU Mutual Recognition Technical Requirements

Circuit Breakers	Version	0.1
	Date	19 September 2012

1. PRODUCT DESCRIPTION	46
a. General description of the product	46
b. Application limitations	46
c. Intended use	46
d. System context	46
2. DESIGN EVALUATION	46
a. Engineering evaluation requirements	46
b. Type testing requirements	47
3. PRODUCTION REQUIREMENTS	47
a. General Requirements	47
b. Special Requirements	47
4. MARKING REQUIREMENTS	48
5. TYPE APPROVAL CERTIFICATE CONTENT	48
6. APPROVAL DATE AND REVISION NUMBER	48
7. BACKGROUND INFORMATION / REFERENCES	48

1. Product description

a. General description of the product

Description of product according to IEC IEV 441-14-20.

Circuit breaker: A mechanical switching device, capable of making, carrying and breaking currents under normal circuit conditions and also making, carrying for a specified time and breaking currents under specified abnormal circuit conditions such as those of short circuit.

b. Application limitations

- Restricted to LV air circuit breakers (ACBs) and moulded-case circuit breakers (MCCBs) according to IEC 60947-2 where the rated voltage does not exceed 1,000 V ac (50/60 Hz) or 1,500 V dc and without electronic devices.
- Onboard ships with exceptions as per SOLAS Ch. I, Reg. 3.
- Installation on board ships within locations with climatic, biological, chemically active, mechanically active and mechanical environmental conditions not exceeding those for which performance has been proved according to IEC 60721-3-6 (1993) + A2 (1997).

c. Intended use

- Power supply system characteristics as per IEC 60092-101; 101 sub-clause 2.8.
- Environment categories 6K4, 6B2, 6C2, 6S2 and 6M3 according to IEC 60721-3-6 (1993) + A2 (1997).
- Circuit breakers shall have their energy for the tripping operation stored prior to the completion of the closing operation.
- Circuit breakers are to be of the trip-free type and be fitted with anti-pumping control.
- Circuit breakers are to be equipped with independent manual closing as per IEC 60947-2 sub-clause 7.2.1.

d. System context

See 1.c. above

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

- Type, ratings and characteristics of circuit breakers for intended applications to be evaluated.
- In general, IEC 60947 series shall be observed.

EU Mutual Recognition Technical Requirements

Circuit Breakers	Version	0.1
	Date	19 September 2012

ii. Technical documents to be submitted

- All technical documents in English.
- Type test reports, product descriptions, operation manuals, assembly drawings, dimension drawings, etc. to be submitted in the English language.

Prior to tests:

- Proposed test programme and test schedule.
- Description of the test specimens and explanation of the selected test sample(s) providing evidence that the selected sample meets the most rigorous and demanding requirements.
- Product descriptions, manuals, data sheets, assembly drawings, dimension drawings, etc. clearly identifying the product.
- Complete accreditation certificate of the test laboratory.
- Details of production sites.
- Product specification.
- Application, working area.
- Instructions on fitting, assembly and operation.
- QM certificate according to ISO 9001.

After completion of tests:

- The test report with an identification number must contain all relevant data and test results, including place and date of the tests, the names of the responsible personnel carrying out the test.
- Type references and serial numbers of the products tested.
- Test reports and test records must be signed by the personnel members in charge of the test and are to be confirmed by the EU RO. by signing and marking the test report.
- Certificate of conformity to IEC standards issued by one of the certification body under the ILAC or LOVAG or IECEE Mutual Recognition Agreement.

b. Type testing requirements

- All type tests according to IEC 60947-2 sub-clause 8.2 and 8.3 to be performed in accredited test laboratories recognised either by the ILAC or LOVAG or IECEE. Above tests are to be witnessed by the EU RO.
- Test laboratory shall be authorised to conduct type tests according to the relevant IEC standards.
- Special test according to IEC 60947-2 sub-clause 8.5 and IEC 60947-1 Annex Q special tests – damp heat, salt mist, vibration and shock (Category D). All tests to be performed on the agreed test samples.
- Type test reports, product descriptions, manuals, etc. to be submitted in the English language.
- IEC 60947-2 Annex H, test sequence for circuit-breakers for IT systems.

3. Production requirements

a. General requirements

- Refer to “EU RO Product Quality Assurance”.

b. Special requirements

- Routine test according to IEC 60947-2 sub-clause 8.4.
- Production certification according to ISO 9001 by accredited certification bodies.
- QM/QS audit (annual) to be submitted to R.O. for review
- Production of the equipment is limited to those facility listed on R.O. certificate.
- Changes to the product will void the R.O. certification.

EU Mutual Recognition Technical Requirements

Circuit Breakers	Version	0.1
	Date	19 September 2012

- R.O. shall be granted access to all manufacturing and testing facilities, and to be provided with all the information necessary to performance its duties.
- General terms and conditions of R.O. to be observed

4. Marking requirements

- Marking as required by IEC 60947-2 (sub-clause 5.2)

5. Type Approval Certificate content

- Technical data according to IEC marking.
- Validity according to “EU RO Product Quality Assurance, validity”.
- The EU RO certificate is void if IEC standards are updated or withdrawn.
- Reference to approved technical documents.
- Application and limitations.
- The EU RO certificate remains valid until the date of validity, unless cancelled or revoked.

The EU RO certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified about, and agreed in writing with the EU RO. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0,0	Accepted by Advisory Board
19 Sept. 2012	0.1	Errors corrected

7. Background information / references

- See testing procedures.

EU Mutual Recognition Technical Requirements

Contactors	Version	0.1
	Date	19 September 2012

1. PRODUCT DESCRIPTION	49
a. General description of the product	49
b. Application limitations	49
c. Intended use	49
d. System context	49
2. DESIGN EVALUATION	49
a. Engineering evaluation requirements	49
b. Type testing requirements	50
3. PRODUCTION REQUIREMENTS	50
a. General Requirements	50
b. Special Requirements	50
4. MARKING REQUIREMENTS	50
5. TYPE APPROVAL CERTIFICATE CONTENT	50
6. APPROVAL DATE AND REVISION NUMBER	51
7. BACKGROUND INFORMATION / REFERENCES	51

1. Product description

a. General description of the product

Description of product according to IEC IEV 441-14-33.

Contactor: a mechanical switching device having only one position of rest, operated otherwise than by hand, capable of making, carrying and breaking currents under normal circuit conditions, including operating overload conditions.

b. Application limitations

- Restricted to LV electromechanical contactors according IEC 60947-4-1 where the rated voltage does not exceed 1,000 V AC or 1,500 V DC. and without electronic devices.
- Onboard ships with exceptions as per SOLAS Ch. I, Reg. 3.
- Installation on board ships within locations with climatic, biological, chemically active, mechanically active and mechanical environmental conditions not exceeding those for which performance has been proved according to IEC 60721-3-6 (1993) + A2 (1997).

c. Intended use

- Power supply system characteristics as per IEC 60092-101 sub-clause 2.8.
- Environment categories 6K4, 6B2, 6C2, 6S2 and 6M3 according to IEC 60721-3-6 (1993) + A2 (1997).

d. System context

See 1.c. above

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

- Type, ratings and characteristics of contactors for intended applications to be evaluated.
- In general, IEC 60947 series shall be observed.

ii. Technical documents to be submitted

- All technical documents in English.
- Type test reports, product descriptions, operation manuals, assembly drawings, dimension drawings, etc. to be submitted in the English language.

Prior to tests:

- Proposed test programme and test schedule.
- Description of the test specimens and explanation of the selected test sample(s) providing evidence that the selected sample meets the most rigorous and demanding requirements.

EU Mutual Recognition Technical Requirements

Contactors	Version	0.1
	Date	19 September 2012

- Product descriptions, manuals, data sheets, assembly drawings, dimension drawings, etc. clearly identifying the product.
- Complete accreditation certificate of the test laboratory.
- Details of production sites.
- Product specification.
- Application, working area.
- Instructions on fitting, assembly and operation.
- QM certificate according to ISO 9001.

After completion of tests:

- The test report with an identification number must contain all relevant data and test results, including place and date of the tests, the names of the responsible personnel carrying out the test.
- Type references and serial numbers of the products tested.
- Test reports and test records must be signed by the personnel members in charge of the test and are to be confirmed by the EU RO by signing and marking the test report.
- Certificate of conformity to IEC standards issued by one of the certification body under the ILAC or LOVAG or IECEE Mutual Recognition Agreement

b. Type testing requirements

- All type tests according to IEC 60947-4-1 sub-clause 9.1.2 to be performed in accredited test laboratories recognized either by ILAC or LOVAG or IECEE. Above tests are to be witnessed by the EU RO.
- Test laboratory shall be authorised to conduct type tests according to the relevant IEC standards.
- Special test according to IEC 60947-4-1 sub-clause 9.1.5 and IEC 60947-1 Annex Q special tests – damp heat, salt mist, vibration and shock (Category D). All tests to be performed on the agreed test samples.
- Type test reports, product descriptions, manuals, etc. to be submitted in English language.

3. Production requirements

a. General requirements

- Refer to “EU RO Product Quality Assurance”.

b. Special requirements

- Routine test according to IEC 60947-4-1 sub-clause 9.1.3.
- Production certification according to ISO 9001 by accredited certification bodies.
- QM/QS audit (annual) to be submitted to R.O. for review .
- Production of the equipment is limited to those facility listed on R.O. certificate.
- Changes to the product will void the R.O. certification.
- R.O. shall be granted access to all manufacturing and testing facilities, and to be provided with all the information necessary to performance its duties.
- General terms and conditions of R.O. to be observed.

4. Marking requirements

- Marking as required by IEC 60947-4-1 (sub-clause 6.2)

5. Type Approval Certificate content

- Technical data according to IEC marking.
- Validity according to “EU RO Product Quality Assurance, validity”.
- The EU RO certificate is void if IEC standards are updated or withdrawn.
- Reference to approved technical documents.
- Application and limitations.
- The EU RO certificate remains valid until the date of validity, unless cancelled or revoked.

EU Mutual Recognition Technical Requirements

Contactors	Version	0.1
	Date	19 September 2012

The EU RO certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified about, and agreed in writing with the EU RO. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0,0	Accepted by Advisory Board
19 Sept. 2012	0.1	Errors corrected

7. Background information / references

- See testing procedures.

EU Mutual Recognition Technical Requirements

Display Monitors, Video Screens, Terminals	Version	0.0
	Date	8 July 2012
1. PRODUCT DESCRIPTION		52
a. General description of the product		52
b. Application limitations		52
c. Intended use / System context		52
2. DESIGN EVALUATION		52
a. Engineering evaluation requirements		52
i. Technical Requirements		52
Ambient Conditions		52
Voltage and Frequency		52
Construction, Materials, Installations, etc.		52
ii. Technical documents to be submitted		53
b. Type testing requirements		53
3. PRODUCTION REQUIREMENTS		53
4. MARKING REQUIREMENTS		53
5. TYPE APPROVAL CERTIFICATE CONTENT		53
6. APPROVAL DATE AND REVISION NUMBER		54
7. BACKGROUND INFORMATION / REFERENCES		54
Table 2.1 – Angles of Inclination		54
Table 2.2 - Voltage and Frequency Fluctuation		54
Table 2.3 - Testing condition and method		55

1. Product description

- a. General description of the product

Display monitors and video screens for monitoring the conditions of systems, machinery and equipment (excluding touch screens or terminals with keys and buttons).
- b. Application limitations

Onboard ships with exceptions as per SOLAS Ch. I, Reg. 3 (navy, offshore and industrial applications).
- c. Intended use / System context

Alarm and monitoring systems subject to classification.

2. Design evaluation

- a. Engineering evaluation requirements
 - i. Technical Requirements

Ambient conditions

 1. The ambient condition given in Table 2.1 is to be applied to the design, selection and arrangement of electrical installations in order to ensure their proper operation.
 2. Electrical equipment is to be suitable for operations up to 55°C.
 3. Electrical equipment is to be designed sufficiently enough to withstand any vibrations that occur under normal conditions.

Voltage and frequency

Electrical equipment supplied from main and emergency switchboards is to be designed and manufactured so that it is capable of operating satisfactorily under the normally occurring voltage and frequency fluctuations. Such electrical equipment is to operate satisfactorily under those fluctuations in voltage and frequency that are given in Table 2.2. Any special systems, e.g. electronic circuits, whose functions cannot operate satisfactorily within the limits given in this table are to be supplied by some suitable means, i.e. through some stabilised supply.

Construction, materials, installations, etc.

 1. All electrical equipment is to be constructed and installed so as not to cause injury when handled and touched in a normal manner.
 2. Insulating materials and insulated windings are to be resistant to moisture, sea air and oil vapours.
 3. Bolts, nuts, pins, screws, terminals, studs, springs and such other small parts are to be made of corrosion-resistant material or to be suitably protected against corrosion.

EU Mutual Recognition Technical Requirements

Display Monitors, Video Screens, Terminals	Version	0.0
	Date	8 July 2012

ii. Technical documents to be submitted

- a. Specifications (description of the product name, type, principal particulars, use, construction, performance, etc.).
- b. Product name, principal particulars, general dimensions and sectional assembly plan, material, quantity, applicable rules and standards, etc.
- c. Wiring diagram (electrical systems) including PCB layouts and parts list.
- d. Instruction manual (including operating procedure).
- e. Inspection and test specification for quality control (including test data).
- f. Environmental test procedures (including appropriate measure of technical performance).
- g. Certificate and test result certificate issued by bodies recognised by the EU RO (if any).
- h. Quality control for software
 1. Quality standards
 2. A quality plan for software lifecycle
 3. Quality assurance procedures in production
- i. Documentation of software modification.
- j. Work procedures for modifying program contents and data (including upgrades).

b. Type testing requirements

1. After the drawings and documents submitted in accordance with 2.a.ii have been examined, tests are to be carried out in accordance with the latest IACS UR E10 with modifications given in Table 2.3 in the presence of the RO's surveyor, and they are to be proven to satisfy the criteria of the latest IACS UR E10 and Table 2.3. In case the tests are conducted at a nationally accredited laboratory, the presence of the EU RO's surveyor may be omitted.
2. In case the documents in 2.a.ii (g.) are deemed appropriate, part of the tests may be exempted.
3. Tests are to be carried out under normal temperature (25°C/10°C), normal humidity (60%/30%), normal atmospheric pressure (96 kPa/10 kPa), rated electrical source voltage and rated electrical source frequency unless otherwise specified. The number of test samples is, as a rule, to be one for each type. However, additional test samples may be required when deemed necessary by the EU RO.

3. Production requirements

Refer to "EU RO Product Quality Assurance"

4. Marking requirements

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment, and, in addition, at least the following items are to be marked at the suitable place:

- a. Manufacturer's name or equivalent
- b. Type No. or symbol
- c. Serial No. and date of manufacture
- d. Particulars or ratings

5. Type Approval Certificate content

- a. Certificate number.
- b. Name and address of manufacturer.
- c. Product description.
- d. Name of model.
- e. Approval number.
- f. Specification and documents.
- g. Environmental test items applied and approval conditions.

EU Mutual Recognition Technical Requirements

Display Monitors, Video Screens, Terminals	Version	0.0
	Date	8 July 2012

- h. Rule applied/Standard applied.
- i. Validity.
- j. Issue date.
- k. Software name and version.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

- a. IACS UR E10 "Test specification for type approval".
- b. IEC 60092-504 "Electrical installations in ships – Special features, control and instrumentation".
- c. IEC 60945 "Maritime navigation and radio communication equipment and systems – General requirements".
- d. IEC 60533 "Electrical and electronic installations in ships – Electromagnetic compatibility".

Table 2.1 – Angles of inclination

Static inclination	Dynamic inclination
22.5°(1)	22.5°(1)

Note:

In ships carrying liquefied gases in bulk and ships carrying dangerous chemicals in bulk, emergency power supplies are to remain operable with the ship flooded to a final athwart ships inclination up to a maximum of 30°. In this case, the test level has to be named on the certificate.

Table 2.2 – Voltage and frequency fluctuation

a. Voltage and frequency fluctuations for AC distribution systems (Note 1)

Type of fluctuation	Fluctuation (Note 4)	
	Permanent	Transient
Voltage	±10%	±20% (within 1.5 sec.)
Frequency	±5%	±10% (within 5 sec.)

b. Voltage fluctuations for DC distribution systems (Note 2)

Type of fluctuation	Fluctuation (Note 4)
Voltage fluctuation (permanent)	±10%
Voltage cyclic fluctuation deviation	5%
Voltage ripple	10%

c. Voltage fluctuations for battery systems

Systems	Fluctuation (Note 4)
Components connected to the battery during charging (Note 3)	+30%, –25%
Components not connected to the battery during charging	+20%, –25%

Note 1: AC distribution systems mean AC generator circuits and AC power circuits produced by inverters.

Note 2: DC distribution systems mean DC generator circuits and DC power circuits produced by converters.

Note 3: Different voltage fluctuations as determined by charging and discharging characteristics, including voltage ripples from the charging devices, may be considered.

Note 4: The numerical values given in the table, excluding those values for time, mean percentages of rated values.

Table 2.3 – Modified testing condition and method of IACS UR E10

No.	Test	Procedure to:*	Test parameters	Other information																														
1.	Power supply variations a. electric	-	<div>AC supply</div> <table><tr><th>Combination</th><th>Voltage(%) variation (permanent)</th><th>Frequency(%) variation (permanent)</th></tr><tr><td>1</td><td>+10</td><td>+5</td></tr><tr><td>2</td><td>+10</td><td>-5</td></tr><tr><td>3</td><td>-10</td><td>-5</td></tr><tr><td>4</td><td>-10</td><td>+5</td></tr><tr><td></td><td>Voltage (%) transient 1.5 s</td><td>Frequency (%) transient 5 s</td></tr><tr><td>5</td><td>+20</td><td>+10</td></tr><tr><td>6</td><td>-20</td><td>-10</td></tr></table> <div>DC supply</div> <table><tr><td>Voltage tolerance (continuous)</td><td>±10%</td></tr><tr><td>Voltage cyclic (variation)</td><td>5%</td></tr><tr><td>Voltage ripple</td><td>10%</td></tr></table> <p>Electric battery supply:</p> <ul style="list-style-type: none">• +30% to -25% for equipment connected to charging battery or as determined by the charging/discharging characteristics, including ripple voltage from the charging device• +20% to -25% for equipment not connected to the battery during charging	Combination	Voltage(%) variation (permanent)	Frequency(%) variation (permanent)	1	+10	+5	2	+10	-5	3	-10	-5	4	-10	+5		Voltage (%) transient 1.5 s	Frequency (%) transient 5 s	5	+20	+10	6	-20	-10	Voltage tolerance (continuous)	±10%	Voltage cyclic (variation)	5%	Voltage ripple	10%	
Combination	Voltage(%) variation (permanent)	Frequency(%) variation (permanent)																																
1	+10	+5																																
2	+10	-5																																
3	-10	-5																																
4	-10	+5																																
	Voltage (%) transient 1.5 s	Frequency (%) transient 5 s																																
5	+20	+10																																
6	-20	-10																																
Voltage tolerance (continuous)	±10%																																	
Voltage cyclic (variation)	5%																																	
Voltage ripple	10%																																	
2.	Vibration	IEC Publication 60068-2-6 Test Fc	<ul style="list-style-type: none">• 2(+3, -0) Hz to 13.2 Hz – amplitude ±1 mm• 13.2 Hz to 100 Hz – acceleration ±0.7 g• For severe vibration conditions such as on diesel engines, air compressors, etc.• 2.0 Hz to 25 Hz – amplitude ±1.6 mm• 25.0 Hz to 100 Hz – acceleration ± 4.0 g	<ul style="list-style-type: none">• Duration in case of no resonance condition: 90 minutes at 30 Hz• Duration at each resonance frequency at which Q ≥2 is recorded at -90 minutes• During the vibration test, functional tests are to be carried out• Tests to be carried out in three mutually perpendicular planes• Q should not exceed 5• Where sweep test is to be carried out instead of the discrete frequency test and a number of resonant frequencies is detected close to each other, duration of the test is to be 120 min. Sweep over a restricted frequency range between 0.8 and 1.2 times the critical frequencies can be used where appropriate. Note: Critical frequency is a frequency at which the equipment being tested may exhibit:<ul style="list-style-type: none">• malfunction and/or performance deterioration;• mechanical resonances and/or other response effects, e.g. chatter; and• mechanical resonances with amplification greater than 10, which will not be accepted.																														
3.	Compass safe distance measurement	IEC 60945		<ul style="list-style-type: none">• The test is applied to equipment intended for installation on the navigation bridge																														
4.	Acoustic noise and signals measurement	IEC 60945		<ul style="list-style-type: none">• The test is applied to equipment intended for installation on the navigation bridge																														
5.	Shock	IEC 60068-2-27	<table><tr><td>Acceleration (g)</td><td>±5.0</td></tr><tr><td>Shock duration (ms)</td><td>10–15</td></tr><tr><td>Number of shocks in each position</td><td>20</td></tr><tr><td>Shock succession frequency (mm)</td><td>40–80</td></tr></table>	Acceleration (g)	±5.0	Shock duration (ms)	10–15	Number of shocks in each position	20	Shock succession frequency (mm)	40–80	<ul style="list-style-type: none">• The tests shall be earned out in operating condition under effect of shock load in each of the three mutually perpendicular directions in relation to the item, in turn• The form of the shock pulse is recommended to be close to sine one• The method of fastening the items for testing shall be indicated in the technical documentation with due account of the possible positions of the items in service (if the technical documentation on the items specifies different methods of fastening in service, the item shall be tested using the most dangerous method of fastening stated in the technical documentation)• The equipment shall be considered to have passed the tests if during and after the tests it meets the requirements set forth in the technical documentation for the test type concerned																						
Acceleration (g)	±5.0																																	
Shock duration (ms)	10–15																																	
Number of shocks in each position	20																																	
Shock succession frequency (mm)	40–80																																	

EU Mutual Recognition Technical Requirements

Electric Driven Motors < 20 kW	Version	0.0
	Date	8 July 2012
1. PRODUCT DESCRIPTION		56
a. General description of the product		56
b. Application limitations		56
c. Intended use		56
d. System context		56
2. DESIGN EVALUATION		56
a. Engineering evaluation requirements		56
i. Technical Requirements		56
ii. Technical documents to be submitted		56
b. Type testing requirements		57
3. PRODUCTION REQUIREMENTS		57
4. MARKING REQUIREMENTS		57
5. TYPE APPROVAL CERTIFICATE CONTENT		57
6. BACKGROUND AND REFERENCE DOCUMENTS		58
7. APPROVAL DATE AND REVISION NUMBER		58
8. BACKGROUND INFORMATION / REFERENCES		58

1. Product description

- a. General description of the product

These Technical Requirements apply to electric-driven motors of <20 KW.

- b. Application limitations

This standard is not applicable for propulsion motors. This standard does not cover certification with respect to explosion protection.

- c. Intended use
- d. System context

2. Design evaluation

- a. Engineering evaluation requirements

- i. Technical Requirements

Rating: Temperature rise of machines to be verified in relation to insulation class.

- ii. Technical documents to be submitted

- a. Main drawings for assembled machines revealing details of air gap, shaft and bearings with dimensions and tolerances inserted.
 - b. References to design standards, rules, specifications, etc.
 - c. Test results from tests already carried out, if any (only one copy).
 - d. Applicant's proposal to Product Sample Test and Routine Test.
 - e. Documentation of reliability and endurance on board ships and Mobile Offshore Units, if any.
 - f. Special operational limitations.
 - g. Field of Application.
 - h. List of type designations for each variant.

Construction details:

- 1. Voltage
 - 2. Power
 - 3. Speed
 - 4. Temperature class
 - 5. Insulation class
 - 6. Enclosure (IP) class
 - 7. Explosion protection and certificate from recognised test laboratory
 - 8. Special properties, if any

Test programme, which as a minimum includes the elements for type testing and routine testing. The test programme shall refer to the relevant IEC standards for each test.

EU Mutual Recognition Technical Requirements

Electric Driven Motors < 20 kW	Version	0.0
	Date	8 July 2012

b. Type testing requirements

- a. Visual inspection according to IACS URE13 (1).
- b. Examination of technical documentation according to IACS URE13 (1).
- c. Temperature-rise test at full load according to IACS URE13 (5) and IEC 60034-1/8.
- d. Overspeed test: 20% in excess of the rated RPM for 2 min. (not applicable for squirrel cage motors) according to IACS URE13 (8) and IEC 60034-1/9.7.
- e. High voltage test 1 min. according to IACS URE13 (9) and IEC 60034-1/9.2.
- f. Insulation resistance to be measured according to IACS URE13 (2).
- g. Winding's resistance to be measured according to IACS URE13 (3).
- h. Checking vibration /balance including operation of the bearing or lubrication system according to IACS URE13 (10).
- i. Verification of degree of enclosure protection (IP) according to IACS URE13 (11).
- j. For DC motors: measuring of speed vs load within speed range.

For DC motors: Overload test: 50% in excess of the rated current for not less than 2 min. and 60% in excess of the rated current for not less than 15 sec. operating at highest full-field speed in accordance with URE13 (6) and IEC 600034-1/9.3.3. Overload test to be performed both for type test and routine test.

For AC motors: No load current at rated voltage and frequency in accordance with IACS URE13 (10).

For AC motors: Overtorque test = 60% overtorque 15 sec. in accordance with IACS URE13 (6) and IEC 60034-1/9.4.

For HV machines: Dry lightning impulse test or equivalent of the coil interturn insulation in accordance with IEC 60034-15.

Tests to be carried out:

- Cold endurance (IEC 60068-2-1)
- Vibration (IEC 60068-2-6)
- Dry and damp heat (IEC 60068-2-2 и 60068-2-30)

3. Production requirements

Routine tests in accordance with IEC 60034-1.

Refer to "EU RO Product Quality Assurance".

4. Marking requirements

- Manufacturer's name or trademark
- Type designation under which the product is type approved.
- Rated voltage.
- RPM.
- Rated power.
- Ambient temperature.
- Power factor.
- Rated current.
- Rated frequency.
- Insulation class.
- IP class.
- No. of phases (AC machines), serial No., duty type.

5. Type Approval Certificate content

- Type Approval validity.
- Product description.
- Application/limitation.

EU Mutual Recognition Technical Requirements

Electric Driven Motors < 20 kW	Version	0.0
	Date	8 July 2012

- Type Approval documentation.
- Tests carried out.
- Marking of product.
- Certification retention survey.

6. Background and reference documents

- IACS UR E 13 Test requirements for rotating machines.
- IEC Publication 60092-301 (1995-03): Part 301 Equipment-generators and motors.
- IEC Publication 60034-1 (2004-04), Rotating electrical machines. Part 1: Rating and performance.
- Other relevant parts of IEC Publication 60034-series.

7. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

8. Background information / references

1. IEC (2002), "IEC 60721 – Classification of environmental conditions".
2. IEC (2007), "IEC 60068 – Environmental testing".

Fuses	Version	0.0
	Date	8 July 2012

1. PRODUCT DESCRIPTION	59
a. General description of the product	59
b. Application limitations	59
c. Intended use	59
d. System context	59
2. DESIGN EVALUATION	59
a. Engineering evaluation requirements	59
i. Technical Requirements	59
ii. Technical documents to be submitted	59
b. Type testing requirements	60
3. PRODUCTION REQUIREMENTS	60
4. MARKING REQUIREMENTS	61
5. TYPE APPROVAL CERTIFICATE CONTENT	61
6. APPROVAL DATE AND REVISION NUMBER	61
7. BACKGROUND INFORMATION / REFERENCES	61

1. Product description

a. General description of the product

Fuses are over current protective devices that contain a calibrated current carrying element which melts and opens under specified over current conditions. Fuses are individual devices and can have different shapes. Connection to a circuit is normally carried out through the use of single or multi fuse bases or fuse holders, as required. Fuses are to be classified according to applicable parts of IEC standards 60269-1, IEC 60269-2, IEC 60068-2 and IEC 60721-3, as applicable.

b. Application limitations

Fuses are to be used in low voltage (<1000V for AC systems and <1500V for DC systems) electrical installations of ships classed for unrestricted navigation and, designed, constructed and tested to operate satisfactorily under the worst environmental conditions, found on board, for each application case.

These technical requirements do not apply to fuses used for the protection of internal circuitry, normally located inside of cabinets or enclosures such as semiconductor power converters, specific motor controllers, battery chargers and similar equipments.

In the same way, fuse-bases or fuse-holders are not covered by this document.

c. Intended use

Fuses used on protection of overload and short circuits in LV electrical installations, on power and lighting distribution systems, motor and transformer circuits or, as a backup, to increase the short circuit breaking capacity of electrical devices. Fuses may be used for overload protection only up to a rating of 315A.

d. System context

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

The terms and definitions, related to fuses, according to IEC 60269-1 will apply. Fuse elements are to be of a totally enclosed type and allow no arc ejection to the outside, sparking, or any other harmful effect upon the adjacent parts in the case the fuse blows. Fuse elements are to be made of incombustible and non-hygroscopic insulating material.

Type testing conditions, namely those concerned with ambient air temperature, humidity, salt mist and vibration level, shall comply with the requirements of IEC 60269-2, IEC 60068-2 and IEC 60721-3 as applicable. These environmental operating conditions aim at reflecting the higher ambient air temperature, higher humidity and the presence of salt mist, all degrading factors with influence in the behaviour of a fuse link.

The system voltage, the currents to be carried and to be broken, the rated frequency and the power factor for AC systems, or the time constant for DC systems are to comply with IEC-60269-1as applicable.

ii. Technical documents to be submitted

All documentation is to be submitted to the Recognised Organization (RO) in the English language. The manufacturer shall submit detailed information concerning:

EU Mutual Recognition Technical Requirements

Fuses	Version	0.0
	Date	8 July 2012

- Technical data and characteristics,
- Construction drawings concerning all parts of each of the fuse link types,
- Dimensions and tolerances,
- Instructions on fitting, assembly and operation
- Materials specification,
- Type of applied anticorrosive treatments,
- Contact plating materials,
- Application, working area.

Prior to tests the manufacturer is to submit:

- Proposed test program and test schedule,
- Description of the test specimens and explanation of the selected test sample(s),
- Complete accreditation certificate of the Test laboratory.

After completion of tests the manufacturer is to submit:

- The test report with an identification number containing all relevant data and test results including place and date of the tests.
- Type references and serial numbers of the products tested
- Test reports and test records must be signed by the personnel members in charge of the test and are to be confirmed by the RO by signing and marking the test report,
- Certificate of conformity to IEC Standards issued by one of the Certification Body under the ILAC or LOVAG or IECEE mutual recognition agreement,
- Complete report of the tests carried out according to applicable procedures as per IEC 60269-1, Chapter 8, taking into account the particular shipboard conditions,
- The manufacturer shall also submit tables with conventional time for non fusing (I_{nf}) and fusing current (I_f) as well as time-current characteristics and gates, with due corrections for shipboard conditions.

b. Type testing requirements

Fuse links must be subject to a complete testing program carried out under the responsibility of the fuse manufacturer with the survey of the RO.

All type tests according to the relevant IEC-Standards to be performed in accredited test laboratories recognized either by ILAC or LOVAG or IECEE . Above tests are to be witnessed by the RO. Test laboratory shall be authorized to conduct type tests according to the relevant IEC standards.

The complete tests as well as type tests shall be carried out, considering the recommended number of samples and following the applicable test program for the “g” or “a” fuse link types according to IEC 60269-1, Chapter 8, Table 7A, 7B or 7C.

The following environmental tests according to IACS UR E10 are to be carried out: #5 (dry heat), #6 (damp heat), #7 (vibration) (20mm/s velocity amplitude in frequency range 5-50Hz is accepted), #11 (cold) and #12 (salt mist). Verification shall be according to IEC 60269-1 chapter 8.

3. Production requirements

EU RO Production Quality Assurance is to be applied. The manufacturer and its individual works are to be recognized by the RO for the type of product(s) fabricated. Plants, production and treatment procedures, testing equipments, laboratories, internal control systems and personnel qualification are to be suitable in the opinion of the RO. Production of the equipment is limited to those facilities listed in the certificate.

Manufacturing procedures and techniques are to be such as reasonably ensure constant compliance of the product with the requirements. If tests and/or analyses are performed by external laboratories or third parties, these have to be recognized by the RO. Manufacturing process may be required to be approved and approval tests may have to be performed for the purpose. The RO shall be granted access to all manufacturing and testing facilities, and is to be provided with all the information necessary to perform its duties. Changes to the product will void the certification. General terms and conditions of the RO are to be observed.

EU Mutual Recognition Technical Requirements

Fuses	Version	0.0
	Date	8 July 2012

4. Marking requirements

The marking shall be durable and easily legible. Compliance is to be checked by inspection and by testing according to IEC 60269-1 chapter 6. Markings on fuse links are to be in accordance with the IEC 60269-1 standard. Additionally a code or mark, to be designated shall be marked on all type approved fuse links identifying the type approval and the RO.

5. Type Approval Certificate content

The validity of the certificate is to be 5 years in the condition that:

- The design and manufacture remain unmodified from the initial process,
- The specified regulations or standards are not modified during the validity period,
- The product remains satisfactory in service,
- Type Approval Certificate shall contain clearly all the other complementary clauses that are part of the conditions of issue.

Type approval certificate shall be issued including the following information:

- Company name and address,
- General product designation,
- Test standards with the date and/or number of edition,
- Onboard environmental conditions considered,
- Remarks like limitations,
- Test reports with identification number and date,
- Manufacturer's documentation identification number for the product or series with date,
- Date of issue and date of expiry,
- Place of issue.

Manufacturer's documentation is to include particular information for the product or series:

- Manufacturer type designation,
- Application category (breaking range and utilization category by code letters),
- Rated current (or range of current ratings in case of a series of fuses),
- Voltage rating,
- Type of current (ac; dc; both),
- Rated frequency (if applicable),
- Rated breaking capacity,
- Rated power dissipation,
- Time current characteristics curves,
- Cut-off current characteristics,
- Others.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

1. IEC (2006), "IEC 60269 – Low-voltage fuses".
2. IEC (2002), "IEC 60721 – Classification of environmental conditions".
3. IEC (2007), "IEC 60068 – Environmental Testing".
4. IACS (2011), "Unified Requirements concerning Electrical Installations – Test Specification for Type Approval – E10".

LV Enclosures & Boxes	Version	0.0
	Date	8 July 2012

1. PRODUCT DESCRIPTION	62
a. General description of the product	62
b. Application limitations	62
c. Intended use	62
d. System context	62
2. DESIGN EVALUATION	62
a. Engineering evaluation requirements	62
b. Type testing requirements	63
3. PRODUCTION REQUIREMENTS	63
4. MARKING REQUIREMENTS	64
5. TYPE APPROVAL CERTIFICATE CONTENT	64
6. APPROVAL DATE AND REVISION NUMBER	64
7. BACKGROUND INFORMATION / REFERENCES	64

1. Product description

a. General description of the product

Empty enclosure – enclosure intended for support and installation of electrical equipment, whose internal space provides suitable protection against external influences as well as a specified degree of protection against approach to or contact with live parts and against contact with moving parts.

Empty box – enclosure, generally of small dimensions and, in principle, intended to be mounted on a vertical plane.

b. Application limitations

Enclosures and boxes used as part of switchgear and control gear assemblies of voltage up to 1,000V AC at frequencies not exceeding 1000Hz or of voltage up to 1,500V DC; intended for use onboard of ships; outdoor or indoor application. Enclosures and boxes intended for the below listed applications are excluded:

installation in areas where explosive gases or vapour atmospheres may occur;

appliances for which EMC requirements are to be met.

c. Intended use

Construction of electrical switchboards intended for distribution of electrical power and control or connection purposes.

d. System context

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

Enclosures and boxes are to be capable of withstand ambient temperature of $+45\pm 2$ °C prolonged without suffering any defects. Frame construction, front plates, mounting plates and casings of enclosures and boxes are to be made of metallic or other incombustible materials. Such materials are to be at least moisture-resistant and oil vapours-resistant. Application of other materials can be specially considered by the EU RO.

Constructional components of enclosures and boxes are to be made of materials resistant to sea air (unless they are additionally protected onboard). Enclosures and boxes are to be of adequate rigidity and mechanical strength (resistant to mechanical stresses which may occur under service conditions or as a result of short-circuits). Screws, nuts, hinges, wall-fixing lugs and similar items of enclosures and boxes intended for installation on open decks or in spaces of humidity higher than normal are to be made of corrosion-resistant materials.

Where the framework or doors of enclosures or boxes are of steel, suitable measures are to be provided to prevent overheating due to the possible circulation of eddy currents.

Where screw fastenings are applied on/in enclosures and boxes, means to exclude possibility of their self unscrew is to be provided. Gaskets used in enclosures and boxes components (doors, covers, sight holes, cable glands, etc.) are to ensure required degree of protection under service conditions. Such gaskets are to be suitably fastened to those components. Cable entrances are not to impair the degree of protection of the enclosures and boxes. Enclosures and boxes intended for installation in places accessible to unauthorized persons are to be provided with doors which opening may be possible only with usage of a special key, the same for all the switchboards on the ship. Hinged doors are to be provided with fixing devices for

EU Mutual Recognition Technical Requirements

LV Enclosures & Boxes	Version	0.0
	Date	8 July 2012

keeping them in open position. Casing and hinged or sliding doors are to have appropriate metal screwed connections intended for connection of protective conductor (to ensure continuity of the protective circuit). Such metal screwed connections are to be suitably assembled (welded) to casing and doors - proper electrical connection is to be retained.

Enclosures intended for construction of main switchboards, emergency switchboards, selected distribution boards, control desks are to be provided with insulated handrails or handles fitted in an appropriate position at the front of the switchboard. Where access to the rear is necessary for operational or maintenance purposes, an insulated handrails or insulated handles are to be fitted. Such handrails or handles may be made of insulating material, wood (of adequate rigidity and mechanical strength) or earthed metal covered with a suitable insulating material.

ii. Technical documents to be submitted

Enclosure classification according to International Standard IEC 62208 First Edition 2002-11. Relevant constructional and mechanical drawings and details. Instructions necessary for correct handling, assembling, mounting and service conditions of the enclosure/box. Information concerning the thermal power dissipation relative to the effective cooling surface.

b. Type testing requirements

The enclosures under test shall be mounted and installed as in normal use according to the manufacturer's instructions. Unless otherwise specified, the tests shall be carried out at an ambient temperature of (20±5) °C.

Number of samples to be tested and order of test per sample

Test procedures	Test	Sample 1	Sample 2	Sample 3	Representative sample
	Static loads	1			
	Lifting	2			
	Verification of axial loads of metal inserts	3			
	Verification of degree of protection against external mechanical impacts (IK code)	4			
	Verification of degree of protection (IP code)	5			
	Verification of thermal stability				
	Verification of resistance to heat		1		
	Verification of resistance to abnormal heat and fire		2		
	Verification of dielectric strength	6	3		
	Verification of the continuity of the protective circuit	7			
	Verification of resistance to weathering			3	a.
	Verification of resistance to corrosion				
	Marking	8		1 c.	
IACS UR E10	Verification of resistance to vibration - hinges, door lock, screws, etc. (Vibration test)	9 b.			
IACS UR E10	Verification of resistance to cold (Cold test)	10 c.			
Selected tests of group K according to IEC 60068-1 and substances according to IEC 60721-3-6	Test of resistance against liquids and chemicals			2 c.	

a. Tests carried out on representative sample only.

b. Applicable for enclosures of dimensions of at least 3 00x3 00x15 0mm (H x W x D).

Enclosures of other dimensions are to be visually examined.

c. Visual/functional examination of hinges, door lock, screws, coating, enclosure material, sealing etc. is to be carried out after test.

3. Production requirements

a. General requirements

- refer to "EU RO Product Quality Assurance"

EU Mutual Recognition Technical Requirements

LV Enclosures & Boxes	Version	0.0
	Date	8 July 2012

b. Special requirements

The enclosure or box shall be constructed only of material capable of withstanding the mechanical, electrical and thermal stresses as well as effects of humidity which are likely to be encountered in normal use. Protection against corrosion shall be ensured by the use of suitable materials or by the application of protective coating to the exposed surface, taking into account the intended conditions of use.

4. Marking requirements

The enclosure or box shall be identifiable, making it possible for the final assembler to obtain relevant information from the enclosure manufacturer. Such identification shall comprise:

either the name, trade mark or identification mark of the enclosure manufacturer;

- type designation or identification number of the enclosure. The marking shall be durable and easily legible and may be inside the enclosure.

5. Type Approval Certificate content

- Validity.
- Number of the Certificate and date of issuance.
- Type designations and dimensions of enclosures/boxes.
- Manufacturer name and address.
- Technical data.
- Basis of approval – documents (reports from type tests with identification No. and date, manufacturer's documentation drawings Nos.).
- Additional conditions and remarks, limitations,
- Product description.
- Environmental Category.
- Range of application.
- Test standards with the date and/or No. of edition.
- Place of issue.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

- Rules of the certifying EU RO,
- International Standard IEC 62208 First edition 2002-11,
- International Standard IEC 60068-1 Edition 6.0,
- International Standard IEC 60721-3-6. Edition 1.0.

LV Transformers	Version	0.0
	Date	8 July 2012

1. PRODUCT DESCRIPTION	65
a. General description of the product	65
b. Application limitations	65
c. Intended use Nil	65
d. System context	65
2. DESIGN EVALUATION	65
a. Engineering evaluation requirements	65
b. Type testing requirements	67
3. PRODUCTION REQUIREMENTS	67
4. MARKING REQUIREMENTS	68
5. TYPE APPROVAL CERTIFICATE CONTENT	69
6. APPROVAL DATE AND REVISION NUMBER	69
7. BACKGROUND INFORMATION / REFERENCES	69

1. Product description

a. General description of the product

This part applies to three-phase power transformers rated at greater than 5 kVA and single phase power transformers rated at greater than 1 kVA (including auto-transformers), up to a power limit of 50KVA *(50KVA when single phase)*.

This part does not apply to special transformers as per IEC 60076 -1.

This part does not apply to the special transformers intended for Ice Breakers and ships with an ice class, on high-speed crafts, on ships with nuclear power plant and on other special objects with more severe environmental conditions or where raised reliability of the equipment is required.

b. Application limitations

Transformers are to be used in low voltage (<1000V AC systems) electrical installations of ships and off shore units classed for unrestricted navigation if, designed, constructed and tested to operate satisfactorily under the worst environmental conditions, found on board, for each application case.

c. Intended use

Nil

d. System context

Nil

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

All transformers, except those used for motor starting, are to be double wound, with no electrical connections between primary and secondary windings

Transformers are to be of the dry and air cooled type. Acceptance of liquid immersed type transformers is subject to special considerations on a case-by-case basis. Liquid-immersed transformers should be in compliance with the requirements as below:

- Liquid fillings for transformers are to be non-toxic and of a type which does not readily support combustion. Such transformers are to have a pressure release device with an alarm and there is to be a suitable means provided to contain any liquid which may leak from the transformer due to the operation of the release device or damage to the tank;
- Where forced liquid cooling is used, there is to be temperature monitoring of the cooling medium and transformer windings with an alarm being given when the temperature exceeds a preset limit, and provision is to be made for reducing the load to a level commensurate with the cooling available;
- The construction is such that the liquid is not spilled in inclined position; a liquid gauge indicating the normal liquid level range is to be fitted.

The voltage drop of transformers supplying secondary distribution systems from no load to rated load at resistive load is not to exceed the following:

EU Mutual Recognition Technical Requirements

LV Transformers	Version	0.0
	Date	8 July 2012

- 2.5% for single phase transformers rated more than 5 kVA or 3-phase transformers rated more than 15 kVA;
- (2) 5% for single phase transformers rated up to 5 kVA or 3-phase transformers rated up to 15 kVA.
- The temperature rise of transformers at windings is not to exceed the values given in the Table during continuous operation at rated output, where the ambient air temperature is based on 45°C.

Limit of Temperature Rise			
Type of transformers	Limit of temperature rise(K) windings		Method of measurement
Dry-type air-cooling transformers	Class A insulation	50	Resistance method
	Class E insulation	65	
	Class B insulation	75	
	Class F insulation	95	
	Class H insulation	120	
Liquid-immersed transformers	Identified as ON.. or OF.. in IEC60092-303	65	Thermometer or thermocouple
	Identified as OD.. in IEC60092-303	70	
<ul style="list-style-type: none">• All transformers are to be capable of withstanding, without damage, the thermal and mechanical effects of a short-circuit at the terminals of any winding for 2 s.• Transformers are to be subjected to high voltage test according to the table showing below, applying a test voltage between primary and secondary windings and between windings and the earthed enclosure for 1 min without breakdown and flashover.			

Voltage of High Voltage Test	
Highest voltage (root-mean-square) kV	Rated short duration power frequency withstand voltage (root-mean-square) kV
≤1.1	3
3.6	10
7.2	20
12.0	28
17.5	38
24.0	50
36.0	70

Transformers are to withstand an induced high voltage test with a voltage twice the rated voltage. The duration of the test is to be 1 min with a frequency less than or equal to twice the rated frequency. If the frequency is greater than twice the rated frequency, the duration of the test is to be obtained from the following formula with a minimum of 15 s:

$$t = (60 \times 2 \times \text{rated frequency}) / \text{test frequency (s)}$$

For transformers subject to temperature rise test, the induced high voltage test is to be carried out immediately after the temperature rise test.

Suitable terminals, clearly marked, shall be provided in an accessible position, convenient for external connections. The terminals shall be effectively secured and shall be so spaced and/or shielded that they cannot be accidentally earthed, short-circuited or touched.

Transformers should be fitted with an earth terminal for the connection of a protective conductor. All exposed metallic conductive non-live parts should be connected to the earth terminal by construction or otherwise. Marine transformers with metal enclosures should be in compliance with the above-mentioned standards and in addition, the following requirements:

- Metal enclosures are to be of sufficient mechanical strength for mechanical protection, normal operation and safe handling of transformers.

EU Mutual Recognition Technical Requirements

LV Transformers	Version	0.0
	Date	8 July 2012

2. Metal enclosures are to have sufficient space to maintain enough air clearance and creepage distance between conducting parts and between conducting parts and non-conducting parts of transformers inside metal enclosures. When a transformer mounted in the metal enclosure is in normal operation, the temperature rise is to comply with above table.
3. Degree of protection provided by metal enclosures should be appropriate to the ambient conditions of the location where transformers are installed.
4. The temperature rise of transformer mounted in metal enclosure in normal operation is to comply with the aforementioned limits.

ii. Technical documents to be submitted

1. General drawings / plans;
2. Detailed drawings of main parts including frames, primary windings, secondary windings, magnetic cores (with type / model of the main material such as electromagnetic wire, silicon steel sheet, insulation material, etc.);
3. Detailed construction drawings of metallic enclosure if any);
4. Nameplate drawings;
5. External connection terminal drawings;
6. Product specifications;
7. Type test plan;
8. Installation manual;
9. Process flow diagram with quality reference point marking.

b. Type testing requirements

Unless otherwise specified, all tests are to be carried out under the following atmospheric conditions:

1. Ambient temperature between 10°C and 40°C and with cooling water (if required) at any temperature not exceeding 25°C;
2. Relative humidity: 30%RH~90%RH;
3. Air pressure: 86~106 kPa.

Test items	Requirements	Test method
Dielectric strength test	Clause 2.a.i of this part	IACS UR E10
Measurement of insulation resistance	IACS UR E10	IACS UR E10
Voltage regulation test	Clause 2.a.i of this part	Clause 2.1.1 3 of this part
Temperature-rise measurement	Clause 2.a.i of this part	IEC60076-2
Secondary terminal short-current test	Clause 2.a.i of this part	IEC60076-5
Degree of protection (for transformers with enclosure)	IPxx	IEC60529
Damp heat test	IACS UR E10	IEC60068-2-30
Salt mist test	IACS UR E10	IEC60068-2-52
Measurement of winding resistance	Clause 15 of IEC60076-11	
Measurement of voltage ratio and vector	Clause 16 of IEC60076-11	
Measurement of impedance voltage, short-circuit imp. and load loss	Clause 17 of IEC60076-11	
Measurement of no-load loss and current	Clause 18 of IEC60076-11	
Dielectric tests	Clause 19 and 20 of IEC60076-11	
Measurement of zero-sequence impedance of 3 phase transformers	Clause 8.7 of IEC60076-11	
Measurement of harmonics of the no-load current functional test of supplement elements, if any (PT 100, cooling fans, protection devices etc.)	Clause 8.6 of IEC60076-11	

3. Production requirements

1. A basic production site, suitable product equipment and measurement equipment, and practical process documentation shall be provided by the manufacturer to ensure that the transformers comply with the drawings and technical documents approved by the Classification Society.

EU Mutual Recognition Technical Requirements

LV Transformers	Version	0.0
	Date	8 July 2012

2. A Quality Management System meeting the requirements of EU RO Product Quality Assurance shall be implemented effectively by the manufacturer.
3. The source of main material such as silicon steel sheet, electromagnetic core, insulation material, etc. shall be controlled effectively by the manufacturer to ensure the type / model is in compliance with the drawings and documents approved by Classification Society.
4. All of the silicon steel sheets shall have the same magnetic aligning for high magnetic permeability core.
5. The tests indicated below shall be carried out by manufacturer:
 1. Observational check;
 2. Measurement of winding resistance (Clause 15 of IEC60076-11);
 3. Measurement of voltage ratio and check of phase displacement (Clause 16 of IEC60076-11);
 4. Measurement of short-circuit impedance and load loss (Clause 17 of IEC60076-11);
 5. Measurement of no-load loss and current (Clause 18 of IEC60076-11);
 6. Separator-source AC withstand voltage test (Clause 19 of IEC60076-11);
 7. Induced AC withstand voltage test (Clause 20 of IEC60076-11);
 8. High voltage test ①② (IACS UR E10);
 9. Insulation resistance measurement (IACS UR E10);
 10. Partial discharge measurement (when $U_m \geq 3.6 \text{ kV}$) (Clause 22 of IEC60076-11);
 11. Voltage regulation test ③ (Clause 2.1.1.3 of this part),
 12. Measurement of temperature rise ④ (Clause 2.1.1.4 of this part).

Note:

- ① For transformers subject to temperature rise test, the high voltage test is to be carried out immediately after the temperature rise test.
- ② The high voltage test is in general not to be repeated, but if it is necessary, one additional test is permitted to be carried out with a test voltage equal to 75% of the voltage at the first test.
- ③ If the test is impracticable at the manufacturer (such as the manufacturer's power distribution is limited, etc.), it may be waived, subject to agreement of Classification Society.
- ④ The test may only be carried out to the first product for batch products of the same type and specification.

4. Marking requirements

1. Each transformer shall be provided with a clear symbol or mark near the terminals for external connections. A clear earthing mark shall be provided near the earthing terminal. The entry shall indelibly marked.
2. Rating plate fitted to the transformer

Each transformer shall be provided with a rating plate of weatherproof material, fitted in a visible position, showing the items indicated as below. The entries on the plate shall be indelibly marked (that is, by etching, engraving, stamping or by a photo-chemical process).

- a. Kind of transformer;
- b. Number and year of product standard;
- c. Manufacturer's name;
- d. Manufacturer's serial number;
- e. Year of manufacture;
- f. Insulation system temperature for each winding. The first letter shall refer to the high voltage winding, the second letter shall refer to the low voltage winding. When more than two windings are present, the letters shall be placed in the order of the windings from the high voltage to the low voltage;
- g. Number of phases;
- h. Rated power for each kind cooling;
- i. Rated frequency;

LV Transformers	Version	0.0
	Date	8 July 2012

- j. Rated voltages, including tapping voltages, if any;
- k. Rated currents for each kind cooling;
- l. Connection symbol;
- m. Short-circuit impedance at rated current and at the appropriate referenced temperature;
- n. Type of cooling;
- o. Total mass;
- p. Insulation levels;
- q. Degree of protection;
- r. Environmental class;
- s. Climatic class;
- t. Fire behaviour class.

The rated withstand voltages for all windings shall appear on the rating plate. The principles of the standard notation are illustrated in Clause 5 of IEC60076-3.

3. Rated plate fitted to the transformer enclosure

Each transformer enclosure shall be provided with a rating plate of weatherproof material, fitted in a visible position, showing the items indicated in 4.1. The entries on the plate shall be indelibly marked (that is, by etching, engraving, stamping or by a photo-chemical process).

5. Type Approval Certificate content

- a. Name of manufacturer;
- b. Address of manufacturer;
- c. Product description,
- d. Product type;
- e. Approval standards / Rules (Number of the standard and number of revision);
- f. Insulation level;
- g. Cooling method;
- h. Degree of protection of enclosure (if any);
- i. Validity (4 years, generally, etc.)
- j. Rated power;
- k. Primary/secondary voltage;
- l. Coupling index, etc.

6. Approval and revision number

To be defined

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

- 1. IEC60092-303 ed3.0(1980-01), Electrical installations in ships. Part 303: Equipment – Transformers for power and lighting
- 2. IEC 60092-303-am1 ed3.0 (1997-09), Amendment 1 – Electrical installations in ships. Part 303: Equipment – Transformers for power and lighting
- 3. IEC 60076-1(2000-04), Power transformers – Part 1: General
- 4. IEC 60076-2(1993-04), Power transformers – Part 2: Temperature rise

EU Mutual Recognition Technical Requirements

LV Transformers	Version	0.0
	Date	8 July 2012

5. IEC 60076-3(2000-03), Power transformers – Part 3: Insulation levels, dielectric tests and external clearances in air
6. IEC 60076-4(2002-06), Power transformers – Part 4: Guide to the lightning impulse and switching impulse testing – Power transformers and reactors
7. IEC 60076-5(2006-02), Power transformers – Part 5: Ability to withstand short circuit
8. IEC 60076-10(2005-07), Power transformers – Part 10: Determination of sound levels
9. IEC 60076-10-1(2005-10), Power transformers – Part 10-1: Determination of sound levels – Application guide
10. IEC 60076-11(2004-05), Power transformers – Part 11: Dry-type transformers
11. IEC 60905(1987-12), Loading guide for dry-type power transformers
12. IEC 60529 (2001-02), Degrees of protection provided by enclosures (IP Code)
13. IEC 60068-2-30(2005-08), Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)
14. IEC 60068-2-11(1981-01), Environmental testing – Part 2: Tests. Test Ka: Salt mist
15. IACS UR E10

Mechanical Joints	Version	0.0
	Date	8 July 2012
1. PRODUCT DESCRIPTION		71
a. General description of the product		71
b. Application limitations		72
c. Intended use		72
d. System context		72
2. DESIGN EVALUATION		72
a. Engineering evaluation requirements		72
b. Type testing requirements		72
3. PRODUCTION REQUIREMENTS		76
4. MARKING REQUIREMENTS		76
5. TYPE APPROVAL CERTIFICATE CONTENT		77
6. APPROVAL DATE AND REVISION NUMBER		77
7. BACKGROUND INFORMATION / REFERENCES		77

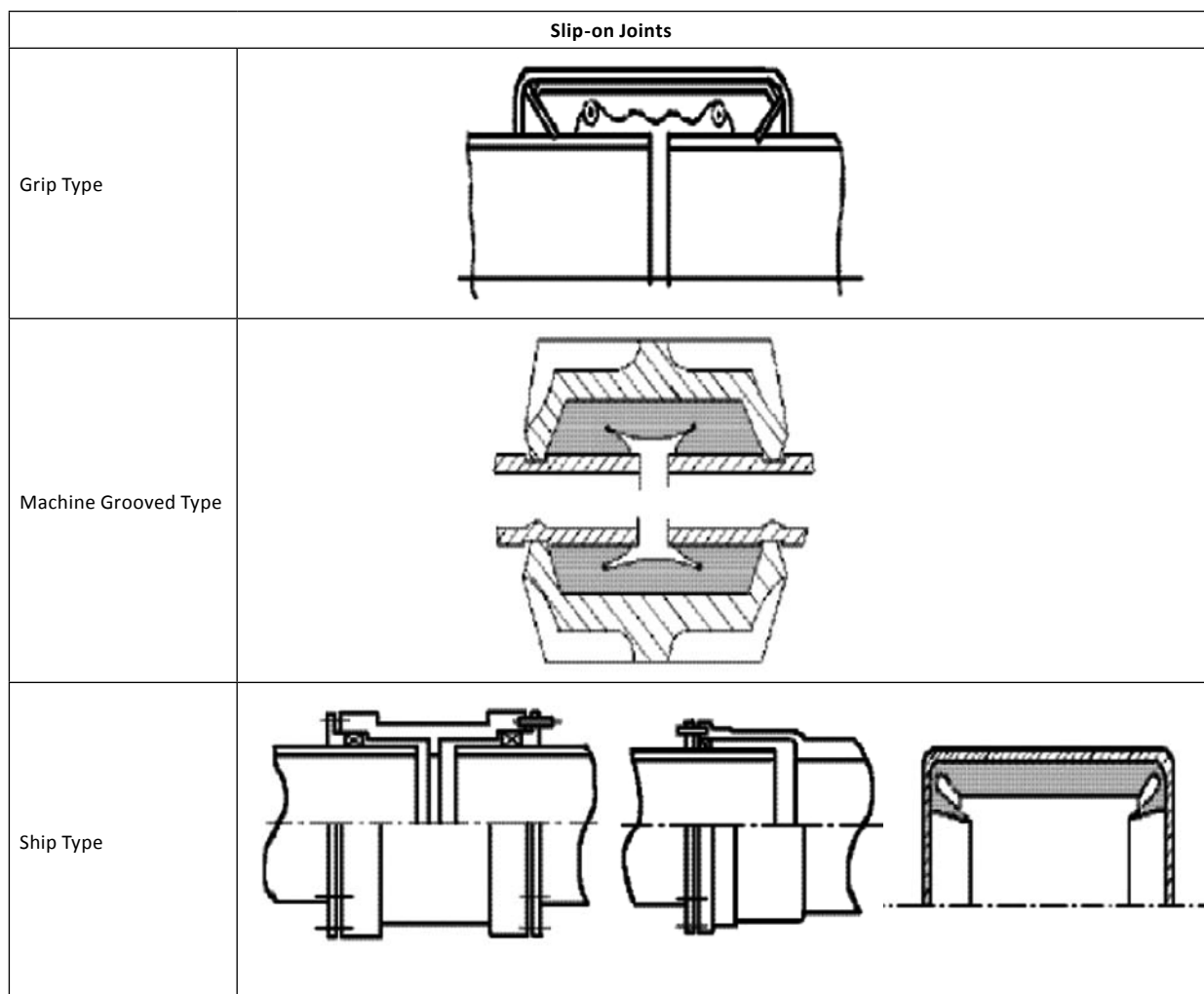
1. Product description

- a. General description of the product

These Technical Requirements apply to mechanical joints so called slip type or grip type or machine grooved type as shown in Fig. 1 for both fire resistant and non-fire resistant type.

“Mechanical joints” means devices intended for direct connection of pipe lengths other than by welding, flanges or threaded joints.

Fig. 1



EU Mutual Recognition Technical Requirements

Mechanical Joints	Version	0.0
	Date	8 July 2012

b. Application limitations

Application of mechanical joints, their acceptable use for each service, the dependence upon the class of piping system, pipe dimensions, working pressure and temperature are defined in the Classification Rules of individual RO.

Piping in which a mechanical joint is fitted is to be adequately adjusted, aligned and supported. Supports or hangers are not to be used to force alignment of piping at the point of connection.

Typical application limitations are given by IACS UR P2 Rev. 2 November 2001 in its tables 7 and 8 where classes of piping system are defined in its fig 1 and table 1.

c. Intended use

These Technical Requirements apply to mechanical joints intended for use in marine piping systems.

d. System context

Application of the joint type for a given piping system of a given vessel is subject to the approval of the individual RO classing that vessel.

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

Due to the great variations in design and configuration of mechanical joints, no specific recommendation regarding calculation method for theoretical strength calculations is given in these requirements. The Type Approval is to be based on the results of testing of the actual joints.

Construction of mechanical joints is to prevent the possibility of tightness failure affected by pressure pulsation, piping vibration, temperature variation and other similar adverse effects occurring during operation on board.

The materials used for mechanical joints are to be compatible with the piping material and internal and external media.

The mechanical joints are to be designed to withstand internal and external pressure as applicable and where used in suction lines are to be capable of operating under vacuum.

The manufacturer has to submit evidence to substantiate that all components are adequately resistant to working the media at design pressure and temperature specified.

ii. Technical documents to be submitted

Following documents and information are to be submitted by Manufacturer:

1. Description of the product;
2. Typical sectional drawings with all dimensions necessary for evaluation of joint design;
3. Specification of materials used for all components of the assembly;

Documents showing:

- Maximum design pressures (pressure and vacuum);
- Maximum and minimum design temperatures;
- Conveyed media;
- Intended services;
- Maximum axial, lateral and angular deviation, allowed by manufacturer;
- Installation details;
- Marking details

b. Type testing requirements

1. Test program

The testing program is to be submitted to the EU RO for approval. Tests required are indicated in Table 2.

EU Mutual Recognition Technical Requirements

Mechanical Joints	Version	0.0
	Date	8 July 2012

Table 2

Tests	Grip type & Machine grooved type	Slip type
Tightness test	+	+
Vibration (fatigue) test	+	-
Pressure pulsation test 1	+	-
Burst pressure test	+	+
Pull-out test	+	-
Fire endurance test	+	+
Vacuum test	+	+
Repeated assembly test	+	-

Abbreviations:

+ Test is required

- Test is not required

NOTES:

1. for use in those systems where pressure pulsation other than water hammer is expected.
2. Selection of Test Specimen

Test specimens are to be selected in the presence of EU RO's surveyor from production line or at random from stock.

Where approval is applied for a range of sizes of a given type of mechanical joints, at least three separate sizes representative of the range, from each type of joints are to be type tested.

The selected specimens are to be verified for compliance with the technical documentation to the satisfaction of the EU RO's attending surveyor.

3. Mechanical Joint Assembly

Assembly of mechanical joints should consist of components selected in accordance with [ii] and the pipe sizes appropriate to the design of the joints.

Where pipe material would affect the performance of mechanical joints, the selection of joints for testing is to take the pipe material into consideration.

Where not specified, the length of pipes to be connected by means of the joint to be tested is to be at least five times the pipe diameter.

In all cases the assembly of the joint shall be carried out only according to the manufacturer's instructions.

No adjustment operations on the joint assembly, other than that specified by the manufacturer, are permitted during the test.

4. Methods of tests

- i. Test fluid

Unless otherwise specified, water or oil as test fluid is to be used.

- ii. Tightness test

All mechanical joints are to be subjected to a tightness test, as follows.

Mechanical joint assembly test specimen is to be connected to the pipe or tubing in accordance with the requirements of [iii] above and the manufacturer's instructions, filled with test fluid and de-aerated.

Pressure inside the joint assembly is to be slowly increased to 1.5 times of design pressure. This test pressure is to be retained for a minimum period of 5 minutes. In the event where there is a drop in pressure or there is visual indication of leakage, the test (including fire test) shall be repeated for two test pieces. If during the repeat test one test piece fails, the testing is regarded as having failed.

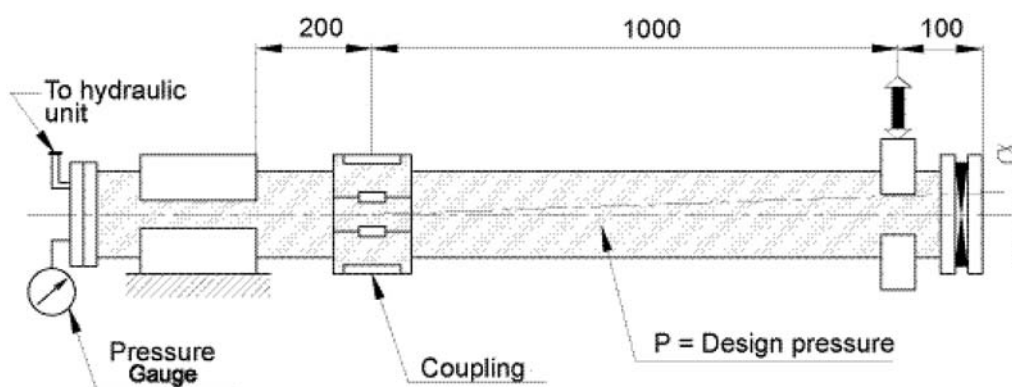
Mechanical Joints	Version	0.0
	Date	8 July 2012

iii. Vibration (fatigue) test for grip type and machine grooved type joints

Mechanical joints assembly is to be subject to the following vibration test. Conclusions of the vibration tests should show no leakage or damage, which could subsequently lead to a failure.

Grip type joints and other similar joints containing elastic elements are to be tested in accordance with the following method. A test rig of cantilever type used for testing fatigue strength of components may be used. The test specimen being tested is to be arranged in the test rig as shown in Fig 2 below.

Fig 2



Two lengths of pipes are to be connected by means of joint assembly specimen to be tested.

One end of the pipe is to be rigidly fixed while the other end is to be fitted to the vibrating element on the rig. The length of pipe connected to the fixed end should be kept as short as possible and in no case exceed 200 mm.

Mechanical joint assemblies are not to be longitudinally restrained.

The assembly is to be filled with test fluid, de-aerated and pressurized to the design pressure of the joint. Preliminary angle of deflection of pipe axis is to be equal to the maximum angle of deflection, recommended by the manufacturer.

The amplitude is to be measured at 1m distance from the center line of the joint assembly at free pipe end connected to the rotating element of the rig. (See Fig. 2).

Parameters of testing are to be as indicated below and to be carried out on the same assembly:

Number of cycles	Amplitude, mm	Frequency, Hz
$3 \cdot 10^6$	± 0.06	100
$3 \cdot 10^6$	± 0.5	45
$3 \cdot 10^6$	± 1.5	10

Pressure during the test is to be monitored. In the event of a drop in the pressure and visual signs of leakage the test is to be repeated as described in v after.

Visual examination of the joint assembly is to be carried out for signs of damage which may eventually cause leakage

iv. Pressure pulsation test for grip type and machine grooved type joints

The mechanical joint test specimen for carrying out this test may be the same as that used in the tightness test above provided it passed that test.

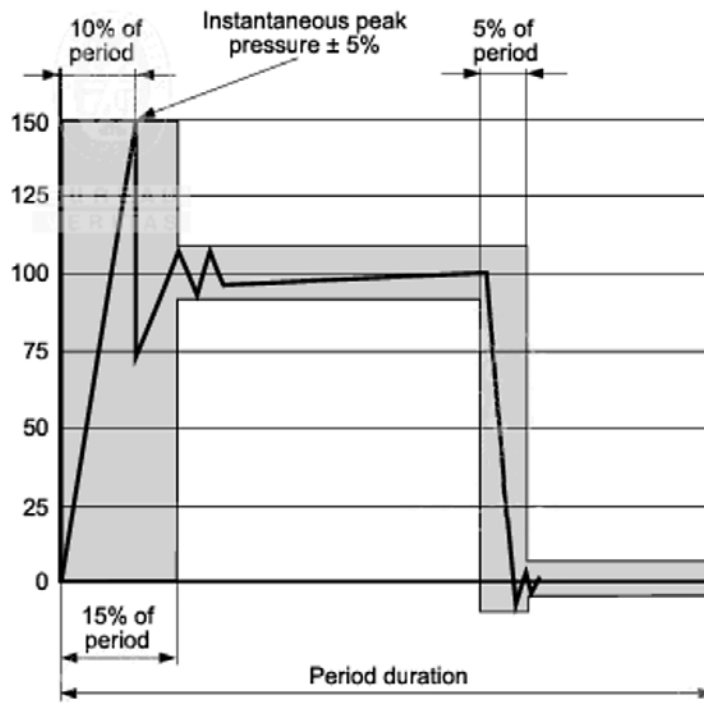
The mechanical joint test specimen is to be connected to a pressure source capable of generating pressure pulses of magnitude as shown in Fig 3.

Impulse pressure is to be raised from 0 to 1.5 times the design pressure of the joint with a frequency equal to 30-100 cycles per minute. The number of cycles is not to be less than 5×10^5 .

The mechanical joint is to be examined visually for sign of leakage or damage during the test.

Mechanical Joints	Version	0.0
	Date	8 July 2012

Fig 3 Impulse pressure diagram



v. Burst pressure test

Mechanical joints are to be tested where applicable, to a burst pressure of 4 times the design pressure. For design pressure above 200 bar the required burst pressure is to be agreed with the EU RO.

Mechanical joint test specimen is to be connected to the pipe or tubing in accordance with the requirements of Pressure pulsation test, filled with test fluid, de-aerated and pressurized to test pressure with an increasing rate of 10% per minute of test pressure. The mechanical joint assembly intended for use in rigid connections of pipe lengths is not to be longitudinally restrained.

Duration of this test is not to be less than 5 minutes at the maximum pressure. This pressure value will be annotated.

Where consider convenient, the mechanical joint test specimen used in tightness test, same specimen may be used for the burst test provided it passed the tightness test.

The specimen may have small deformation and settling whilst under test pressure, but no continuous movement on the pipe, leakage or visible cracks are permitted.

vi. Pull-out test for grip type and machine grooved type joints

In order to determine ability of a mechanical joint assembly to withstand axial load likely to be encountered in service without the connecting pipe from becoming detached, following pullout test is to be carried out.

Pipe length of suitable size is to be fitted to each end of the mechanical joints assembly test specimen. The test specimen is to be pressurized to design pressure. In addition an axial load is to be applied of a value calculated by the following formula:

$$L = \frac{\pi}{4} D^2 p$$

Where:

D - Pipe outside diameter, mm

p - Design pressure, N/mm²

L - Applied axial load, N

This axial load is to be maintained for a period of 5 minutes.

During the test, pressure is to be monitored and relative movement between the joint assembly and the pipe measured.

The mechanical joint assembly is to be visually examined for drop in pressure and signs of leakage or damage. There are to be no movement between mechanical joint assembly and the connecting pipes.

EU Mutual Recognition Technical Requirements

Mechanical Joints	Version	0.0
	Date	8 July 2012

vii. Fire endurance test for fire resistant type

The fire endurance test is to be conducted on the selected test specimens as per the following standards and clarifications.

- (a) ISO 19921: 2005(E): Ships and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Test methods
- (b) ISO 19922: 2005(E): Ships and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Requirements imposed on the test bench.

Clarifications to the standard requirements :

- If the fire test is conducted with circulating water at a pressure different from the design pressure of the joint (however of at least 5 bar) the subsequent pressure test is to be carried out to twice the design pressure.
- A selection of representative nominal bores may be tested in order to evaluate the fire resistance of a series or range of mechanical joints of the same design. The smallest and biggest size of the range shall in all cases be tested. For the sizes between the smallest and biggest, the testing of a mechanical joint with nominal bore (Dn) will qualify other mechanical joints up to 2xDn.

viii. Vacuum test

Mechanical joint assembly is to be connected to a vacuum pump and subjected to a pressure 170 mbar absolute. Once this pressure is stabilized the mechanical joint assembly test specimen under test are to be isolated from the vacuum pump and this pressure is to be retained for a period of 5 minutes.

Pressure is to be monitored during the test. No internal pressure rise is permitted.

ix. Repeated assembly test for grip type and machine grooved type joints

Mechanical joint test specimens are to be dismantled and reassembled 10 times in accordance with manufacturer's instructions and then subjected to the tightness test.

5. Test Results Acceptance Criteria

Where a mechanical joint assembly does not pass all or any part of the tests in Table 2, two assemblies of the same size and type that failed are to be tested and only those tests which mechanical joint assembly failed in the first instance, are to be repeated.

In the event where one of the assemblies fails the second test, that size and type of assembly is to be considered unacceptable.

The methods and results of each test are to be recorded and reproduced as and when required.

3. Production requirements

EU RO's Production Quality Assurance scheme applies.

4. Marking requirements

The product shall be marked with:

- Manufacturer's name or logo
- Type designation
- Size
- Maximum working pressure
- Year/ serial number
- Clamping torque of screws
- Degree of fire resistance
- Sealing material

Where it is impracticable to affix the above marking due to the size of the product, the product shall be marked with at least :

- Manufacturer's name or logo
- Type designation
- Size
- Maximum working pressure

EU Mutual Recognition Technical Requirements

Mechanical Joints	Version	0.0
	Date	8 July 2012

5. Type Approval Certificate content

a. Validity

The certificate is generally issued with a validity period of five years.

b. Content

The type approval certificate is to contain the following information:

- Reference of the Technical Requirement and testing standards applied.
- Material designation of major components, e.g. coupling housing, sealing etc.
- Product type, Size range, Pressure and temperature range
- Design drawing numbers
- Test reports
- Range of Application / Limitation
- Production places
- Marking of product

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

IACS UR P2.7.4 (rev.7 Sept 2007) Mechanical joints

IACS UR P2.11 (Corr.1 Apr 2007) type Approval of Mechanical Joints

EU Mutual Recognition Technical Requirements

Resin Chocks	Version	0.0
	Date	8 July 2012

1. PRODUCT DESCRIPTION	78
a. General description of the product	78
b. Application limitations	78
c. Intended use	78
d. System context	78
2. DESIGN EVALUATION	78
a. Engineering evaluation requirements	78
b. Type testing requirements	79
3. PRODUCTION REQUIREMENTS	80
4. MARKING REQUIREMENTS	80
5. TYPE APPROVAL CERTIFICATE CONTENT	80
6. APPROVAL DATE AND REVISION NUMBER	80
7. BACKGROUND INFORMATION / REFERENCES	80

1. Product description

a. General description of the product

Mixture of resins (usually epoxy resin) and specific additives, mainly characterized by high values of mechanical properties, with particular regard to compression module, resistance to water and oils, and stability over time

b. Application limitations

Each specific installation of cast resin chocks is normally to be carried out in compliance with installation drawings approved on a case-by-case basis, according to each specific R.O.'s Rules. Such specific approval will normally take into account, as a minimum, the following:

- Total deadweight of supported machinery
- Number, size, arrangement and material of chocks and bolts, complete with relevant detailed (dimensioned) drawings
- Bolts pre-load and/or elongation, complete with details of tightening procedure
- Locking arrangement for bolts and calculation of bolt elongation for bolt connection securing
- Longitudinal and lateral stopping arrangements
- Sealing arrangement (for installation in stern tube or shaft struts)
- Anti-rotation devices (for shaft bearings and rudder stock bearings/bushes)
- Manufacturer's instructions (including instructions for special cases e.g. Thin small chock height or cracks in chocks)

c. Intended use

Chocking of machinery and equipment (engines, gearboxes, steering gears, shaft bearings, stern tubes and arrangements), at initial installation or during repair, within the relevant application range (as a function of the specific product, e.g. ranges of application, supported [basic] materials, allowable temperature ranges etc.)

d. System context

Propulsion shafting and machinery arrangement

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

- Compressive strength
- Tensile strength
- Elastic tensile modulus
- Elastic shear modulus
- Deformation under load
- Impact characteristics
- Hardness

EU Mutual Recognition Technical Requirements

Resin Chocks	Version	0.0
	Date	8 July 2012

- Flexural strength
- Shrinkage during cure
- Pulsating compressive strength
- Flammability
- Ageing
- Thermal expansion
- Dielectric strength
- Insulation resistance
- Friction coefficient
- Resistance to oils
- Density
- Voluminal shrinkage
- Glass transition temperature
- Resistance to water
- Creep properties
- Measurement of exotherm temperature
- Viscosity of compound at pouring stage (prior to curing)

Tests to be carried out as per recognized standard, in accordance with the Manufacturer's specifications; limit values to be specified

ii. Technical documents to be submitted

- Data sheet / specification of chocking compound (including all data as per 2.a.i.)
- Test reports for compliance with 2.b
- Material Safety Data Sheet and curing/processing conditions
- Manufacturer's instructions and recommendations for use, including:
 - Range of ambient conditions during installation (pouring/curing)
 - Gelling time (temperature sequence)
 - Curing conditions (tempering)
 - Minimum curing time prior to loading vs. ambient temperature
 - Surface treatment of supported materials
 - Maximum and minimum chock thickness

b. Type testing requirements

- ASTM D 695 - ISO 604 (elastic modulus / compressive strength)
- ASTM D 638 - ISO 527-1,2,4,5 (all - as applicable) (tensile strength)
- ASTM D 621 - ISO 75-2 (deformation under load)
- ASTM D 256 - ISO 180 (impact testing)
- EN 59 (Barcol Hardness as per ASTM D 2583 prior to bolt tightening and loading)
- ASTM D 4065 (previously ASTM D 2236) - DIN 53445 - ISO 6721-1 (elastic shear modulus, logarithmic decrement)
- ASTM D 790 - ISO 178 - ISO 14125 as applicable (flexural strength, maximum strain)
- ASTM D 2566 (WITHDRAWN) - ISO 3521 (linear shrinkage during cure)
- ASTM D 635 - FTP Code, Annex 1, Part V (flammability of self-supporting plastics, low flame spread)
- DIN 50100 (pulsating compressive test)
- DIN 53481 (dielectric strength)

EU Mutual Recognition Technical Requirements

Resin Chocks	Version	0.0
	Date	8 July 2012

- DIN 53482 (insulation resistance)
- ISO 3521 or equivalent (voluminal shrinkage)
- ISO 11357, ISO 11359 or equivalent (glass transition temperature)
- ISO 1675 or equivalent (density)
- EN 1465 (tensile lap shear strength)
- ASTM D 732 (shear strength)
- DIN 53752 (coefficient of thermal expansion)
- ISO 175 (resistance to media of the application range)
- Coefficient of friction against steel, with machined or cast specimen, with or without separating agents (to be defined)

Other standards can also be accepted, provided not less effective. Tests to be carried out in Laboratories recognized by the Society or in the presence of the Surveyor. Samples to be taken from the production line or from stocks at the Supplier. Sample conditions must also be stated by Supplier.

3. Production requirements

EU RO's Production Quality Assurance scheme applies

4. Marking requirements

Each can of the product shall be marked with:

- Manufacturer's name or logo
- Type designation
- Year / lot number
- Expiry date (or shelf life)
- Storage conditions

5. Type Approval Certificate content

1. Validity

Four (up to five) years

2. Content

- Company / Maker
- Product / Model Name
- Description (application & limitations)
- Ratings (physical properties, max allowable specific load vs. design temp.)
- Applicable Standards
- Service Restrictions (special conditions, requirements for application)
- Comments (see point 1.b)
- Notes, Drawing and Documentation (incl. test reports)

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

The chocks may only be poured by companies authorized by the cast resin manufacturer whilst maintaining the boundary conditions required by the process. Authorization respectively evidence of training the personnel performing the cast resin process by the cast resin manufacturer has to be presented to the local Surveyor on request.

Definition: Material Manufacturer - Licensed Material Producer - Application Enterprise - Authorized Application Company.

Sensors	Version	0.0
	Date	8 July 2012

1. PRODUCT DESCRIPTION	81
1. General description of the product	81
2. Application limitations	81
3. Intended use	81
4. System context	81
2. DESIGN EVALUATION	81
1. Engineering evaluation requirements	81
3. PRODUCTION REQUIREMENTS	83
1. General requirements	83
2. Special requirements	83
4. MARKING REQUIREMENTS	83
5. TYPE APPROVAL CERTIFICATE CONTENT	83
1. General	83
2. Special requirements	83
3. Validity	83
6. APPROVAL DATE AND REVISION NUMBER	83
7. BACKGROUND INFORMATION / REFERENCES	83

1. Production description

1. General description of the product
 1. Electrical and electronic sensors (including P & T transducers) suitable for marine use.
2. Application limitations
 1. Applicable for a ship as defined in Mutual Recognition provisions Article 10 Regulation on Common Rules and Standards For Ship Inspection and Survey Organizations
 2. Not applicable for a mobile offshore drilling unit (MODU)
 3. Not applicable for a fishing vessel
3. Intended use

Sensors intended to be used in all control, monitoring and instrumentation systems necessary for the applications mentioned in 1.2.
4. System context

Refer to the item 1.3 above

2. Design evaluation

1. Engineering evaluation requirements
 1. Technical Requirements
 1. Design of electrical and electronic sensors
 1. Reliable operation of electrical and electronic sensors shall be ensured under the following ambient temperature conditions:
0 °C to +55 °C in enclosed spaces,
-25 °C to + 45 °C on open deck.

No damage to electrical and electronic sensors shall be caused by temperatures up to +70 °C.
 2. Reliable operation of electrical and electronic sensors shall be ensured at relative air humidity of 100%.
 3. Reliable operation of electrical and electronic sensors shall be ensured at vibrations having a frequency of 2 to 100 Hz, namely, with shift amplitude of ± 1 mm where the vibration frequency is between 2 and 13,2 Hz, and with an acceleration of $\pm 0,7$ g where the vibration frequency is between 13,2 and 100 Hz.

Reliable operation of electrical and electronic sensors mounted upon vibration sources (engines (ICE), compressors, etc) or installed in steering flats shall be ensured at vibration frequencies of 2 to 100 Hz, namely, with a shift amplitude of $\pm 1,6$ mm where the frequency is between 2 and 25 Hz, and with an acceleration of $\pm 4,0$ g where the frequency is between 25 and 100 Hz.

For more severe conditions which may exist, for example on exhaust manifolds of high speed ICE,
40 Hz to 2000 Hz – acceleration ± 10.0 g at 600 °C.

EU Mutual Recognition Technical Requirements

Sensors	Version	0.0
	Date	8 July 2012

4. Reliable operation of electrical and electronic sensors shall be ensured at long-term heel up to 22,5° and at motions of 22,5° with a period of (8 ± 1) s.
5. The protective enclosure of electrical and electronic sensors shall be chosen in accordance with IEC 60529.
6. Electrical and electronic sensors shall operate reliably in case of deviation of the power parameters listed in Table 2.1.1.1.6 from nominal values.

Table 2.1.1.1.6

Parameter	Deviation from nominal value		
	Long-term.	Short-term	
	%	%	Time, s
Voltage (A. C.)	+10...-10	±20	1.5
Frequency	±5	±10	5
Voltage (D. C.)	±10	5 10	Cyclic deviation of ripple

Electrical and electronic sensors supplied from accumulator batteries shall operate reliably with the following voltage variations from the nominal value:

- from +30 to —25 per cent for the equipment, which is not disconnected from the battery during battery charging;
- from + 20 to —25 per cent for the equipment, which is disconnected from the battery during battery charging.

7. Provision shall be made to ensure the electromagnetic compatibility of electrical and electronic sensors as specified IEC Publication 61000-4-2, IEC Publication 61000-4-3, IEC Publication 61000-4-4, IEC Publication 61000-4-5, IEC Publication 61000-4-6.
8. Electrical and electronic sensors to be installed in locations with specific operating conditions (high or low temperature, excessive mechanical loads, etc) shall be designed and tested with regard to the conditions.
9. Electrical and electronic sensors shall be made of materials resistant to marine environment or shall be reliably protected from its harmful effect.
2. Installations and Settings of Electrical and electronic sensors in accordance with IEC 60092-504 and IEC 60533.
2. Technical documents to be submitted
 1. Explanatory note with description of the principle of operation and structural data of the sensor;
 2. Specification with indication of the devices and appliances used and the technical characteristics thereof;
 3. General view drawings, structural units, appliances and instruments;
 4. Functional block diagrams of the article with indication of input and output signals, feedbacks, self-monitoring system, etc.,
 5. Documentation on the enterprise's quality system (description of the article quality control system functioning) operating when manufacturing a prototype or production samples (if any) – for new enterprises, hitherto unknown to the Society;
 6. In case when explosion-proof sensors are used, Certificates issued by competent authorities in accordance with requirements of EN/IEC 60079 series should be provided;
 7. The technical documentation must make it possible to assess the product's compliance with the agreed technical requirements, as described in the items 2.1.1.1 and 2.1.1.2;
 8. Test programme and standards;
 9. For computer/microprocessor based sensors: Documents in accordance with the paragraph 10.11 of IEC 60092-504, as well as, Firmware Version, Changes List;
 10. For computer based electronics Software QA and other relevant documents according to the requirement class.

2. Type testing requirements

In accordance with IACS UR E10 and additional tests for confirmation of special features of sensors indicated in the technical documentation as follows:

EU Mutual Recognition Technical Requirements

Sensors	Version	0.0
	Date	8 July 2012

Nos	Test	Normative document	Test parameters and conditions	Test purpose, performance criteria
1	Protective enclosure	IEC 60529	The test is applicable for enclosures of the articles with operating voltage up to 1000V.	The equipment is considered to have passed the test, if it satisfies the Performance Criterion A and the requirements of IEC 60529.
2	Impact	-Acceleration – 5g, -Duration : 10 – 15 ms, No of impacts: 20, Frequency of impacts: 40 – 80 impacts/min.	The test shall be carried out under working condition, in three mutually perpendicular planes. Sinusoidal shape of the impact momentum is recommended	The equipment is considered to have passed the test, if during and after the test it complies with the requirements specified in the technical documentation.
3	Exposure to solar radiation	-Temperature in the chamber: + 55°C.	Subjected to the test are appliances with the use of plastics which are intended for operation on the open deck in areas where they are continuously exposed to solar radiation	The equipment is considered to have passed the test, if:
		- Radiation intensity: 1125W/m ² .		- No deformation, cracking, stratification, buckling , ungluing of plastic pieces and other materials has taken place;
		(Including flux density of the ultra-violet portion of spectrum with a wave length of 280 – 400 nm shall be not less than 42 W/m ²)		- No degradation of readability of inscriptions and signs on the instrument scales has not been detected; -Parameters and resistance of insulation have remained normal

3. Production requirements

1. General requirements
 1. Refer to “EU RO Product Quality Assurance”.
2. Special requirements
 1. A serial (not type approved) product shall be tested in accordance with requirement specified in the IACS UR E10.

4. Marking requirements

1. All units, devices and test points shall be clearly and permanently marked. The marking shall be preferably placed adjacent to them.

5. Type Approval Certificate content

1. General
 1. In accordance with Appendix I of the EU RO Mutual Recognition procedure for Type Approval.
2. Special requirements
 1. Technical data
 1. Technical characteristics which express adequately the basic article’s features assuring its functional usage.
 2. Other important characteristics specified by this Requirements, including the power supply parameters.
 3. Version and/or revision of the software (if applicable).
3. Validity
 1. A Type Approval Certificate is generally issued with a validity period not more than 5 five years.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board

7. Background information / references

1. International Electrotechnical Commission (IEC) standards mentioned above.
2. Unified requirements (UR) E10 of the International Association of Classification Societies (IACS)
3. RS Rules for the Classification and Construction of Sea-Going Ships
 - a. Part XI “Electrical Equipment”
 - b. Part XV “Automation”

EU Mutual Recognition Technical Requirements

Switches	Version	0.1
	Date	19 September 2012

1. PRODUCT DESCRIPTION	84
a. General description of the product	84
b. Application limitations	84
c. Intended use	84
d. System context	84
2. DESIGN EVALUATION	84
a. Engineering evaluation requirements	84
b. Type testing requirements	85
3. PRODUCTION REQUIREMENTS	85
a. General Requirements	85
b. Special Requirements	85
4. MARKING REQUIREMENTS	85
5. TYPE APPROVAL CERTIFICATE CONTENT	85
6. APPROVAL DATE AND REVISION NUMBER	86
7. BACKGROUND INFORMATION / REFERENCES	86

1. Product description

a. General description of the product

Description of product according to IEC IEV 441-14-10.

Switch (mechanical): is a mechanical switching device capable of making, carrying and breaking currents under normal circuit conditions which may include specified operating overload conditions and also carrying for a specified time currents under specified abnormal circuit conditions such as those of short circuit.

Note: a switch may be capable of making but not breaking short circuit currents.

b. Application limitations

- Restricted to LV mechanical switches according IEC 60947-3 where the rated voltage does not exceed 1 000 V a.c. or 1 500 V d.c. and without electronic devices.
- Onboard ships with exceptions as per SOLAS Ch. I, Reg. 3.
- Installation on board ships within locations with climatic, biological, chemically active, mechanically active and mechanical environmental conditions not exceeding those for which performance has been proved according to IEC 60721-3-6 (1993) + A2 (1997).

c. Intended use

- Power supply system characteristics as per IEC 60092-101; 2.8.
- Environment category 6K4, 6B2, 6C2, 6S2 and 6M3 according to IEC 60721-3-6 (1993) + A2 (1997).

d. System context

See 1.c.

2. Design evaluation

a. Engineering evaluation requirements

i. Technical Requirements

- Type, ratings and characteristics of switches for intended applications to be evaluated.
- In general, IEC 60947 series shall be observed.

ii. Technical documents to be submitted

- All technical documents in English.
- Type test reports, product descriptions, operation manuals, assembly drawings, dimension drawings, etc. to be submitted in the English language.

Prior to tests:

- Proposed test program and test schedule.
- Description of the test specimens and explanation of the selected test sample(s) providing evidence that the selected sample meets the most rigorous and demanding requirements.

EU Mutual Recognition Technical Requirements

Switches	Version	0.1
	Date	19 September 2012

- Product descriptions, manuals, data sheets, assembly drawings, dimension drawings, etc. clearly identifying the product.
- Complete accreditation certificate of the Test laboratory.
- Details of production sites.
- Product specification.
- Application, working area.
- Instructions on fitting, assembly and operation.
- QM-certificate according to ISO 9001.

After completion of tests:

- The test report with an identification number must contain all relevant data and test results including place and date of the tests, the names of the responsible personnel carrying out the test
- Type references and serial numbers of the products tested
- Test reports and test records must be signed by the personnel members in charge of the test and are to be confirmed by the R.O. by signing and marking the test report.
- Certificate of conformity to IEC Standards issued by one of the Certification Body under the ILAC or LOVAG or IECEE Mutual Recognition agreement

b. Type testing requirements

- All type tests according to IEC 60947-3 sub-clause 8.2 and 8.3 to be performed in accredited test laboratories recognized either by ILAC or LOVAG or IECEE . Above tests are to be witnessed by R.O.
- Test laboratory shall be authorized to conduct type tests according to the relevant IEC standards.
- Special test according to IEC 60947-3 clause 8 and IEC 60947-1 Annex Q Special tests –Damp heat, salt mist, vibration and shock; (Category D).All tests to be performed on the agreed test samples.
- Type test reports, product descriptions, manuals etc. to be submitted in the English language.

3. Production requirements

a. General Requirements

- Refer to “EU RO Product Quality Assurance”.

b. Special Requirements

- Routine test according to IEC 60947-3 sub-clause 8.1.3.
- Production certification according to ISO 9001 by accredited certification bodies.
- QM/QS audit (annual) to be submitted to R.O. for review.
- Production of the equipment is limited to those facility listed on R.O. certificate.
- Changes to the product will void the R.O. certification.
- R.O. shall be granted access to all manufacturing and testing facilities, and to be provided with all the information necessary to performance its duties.
- General terms and conditions of R.O. to be observed.

4. Marking requirements

- Marking as required by IEC 60947-3 (sub-clause 5.2).

5. Type Approval Certificate content

- Technical data according to IEC marking.
- Validity according to “EU RO Product Quality Assurance, validity”.
- R.O certificate is void if IEC standards are up-dated or withdrawn.

EU Mutual Recognition Technical Requirements

Switches	Version	0.1
	Date	19 September 2012

- Reference to approved technical documents.
- Application and limitations.

R.O. certificate remains valid until the date of validity, unless cancelled or revoked.

R.O. certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with R.O. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply.

6. Approval date and revision number

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board
19 Sept. 2012	0.1	Errors corrected

7. Background information / references

- See testing procedures.

12.9 – EU RO WORKSHOP – MARINE EQUIPMENT ON SHIPS

Hamburg, 14th December 2011

The EU RO Workshop on Marine Equipment on Ships was convened at the initiative of the EU RO Group. It was the first of the kind since the adoption of the Reg EC N°391/2009, which introduces “Mutual Recognition of classification certificates for equipment” with a double objective: First to present to the main stakeholders of the maritime community the outcome of the works carried out so far by the EU ROs to implement the provisions of Article 10 of the aforesaid regulation. Second to collect respective views, comments and concerns of stakeholders with a view to further contribute to an efficient and effective implementation of Art. 10.

In this regard, this EU RO Workshop is integral to the consultation process undertaken by the EU ROs. In a first step, the equipment makers have had the opportunity to comment on the Procedures and first Technical Requirements approved so far by EU ROs. The overall few comments received by equipment makers so far are being given serious consideration. In a second ongoing step, a representative number of international associations of marine equipment producers have received the revised documents and are being asked for review.

The workshop was well attended by a number of European marine equipment producers and representatives of their respective associations as well as shipowners associations, shipyards associations, cargo owners associations, insurers and maritime lawyers, the EU ROs and last but not least IACS.

The European Commission was invited to attend the workshop but declined the invitation and was therefore not present.

The workshop was composed of a morning session devoted to the presentation of the outcome of the works carried out so far by the EU ROs, and an afternoon session featuring an interactive panel discussion among industry representatives .

In the morning session, annexed presentations were given respectively by Mr Claude Maillot (Chairman of EU RO Advisory Board, BV), Mr Andrew Kennedy (Barrister, Deputy Group Legal Director, LR) and Dr Ulrich Forster (EU RO Technical Committee Member, LR).

The Industry Panel took place in the afternoon, composed of the following attendees and moderated by Mr C. Maillot:

- Equipment Manufacturers Representatives:
 - EMEC: Mr Tor Andersen
 - CIMAC: Mr Markus Heseding, Secretary General
- Shipowners Representatives:
 - BIMCO: Mr Lars Robert Pedersen, Deputy Secretary General
 - ICS: Mr Alistair Hull, Technical Manager
- Shipyards Representative:
 - CESA: Mr. Reinhard Lüken
- Law Firm Lebuhrn & Puchta: Dr Christian Breitzke
- Axa Corporate Solutions: Mr Michel de Bressy, Marine Technical Adviser

Here follows a synthesis of the main views and exchanges expressed, as summarized and understood from the notes taken during the meeting which, by definition, cannot be considered as exhaustive.

In a nutshell the workshop highlighted that Mutual Recognition of class equipment certificates involves several complex issues to be solved. This, however, will only be possible if industry stakeholders cooperate extensively and produce practical solutions through a common understanding of both the basic requirements of Art. 10 and its constraints for stakeholders in terms of feasibility, individual requirements, obligations and needs.

Equipment Manufacturers/Makers:

The equipment manufacturers expressed the view that all Parties had to make the best out of the EU Regulation and that they were ready to cooperate.

It was generally felt that improvement is needed in various aspects of the certification process such as:

- process for issuance of Type Approval Certificate
- harmonisation of rules, procedures and documentation between ROs
- shop approval, i.e. factory inspection
- alternative means of certification, based on assessment of quality assurance system

Some makers expressed the strong view that the ROs should first start with the harmonisation of rules and procedures, seen in itself as a major potential field for improvement.

Some other makers expressed concerns that they currently do not have the actual choice of the Class Society(ies). In this regard they would prefer to choose themselves the Class Society(ies) they would like to work with, should they be given the possibility to do so.

Some makers expressed another concern, namely that Mutual Recognition could create a competitive advantage in favour of the established makers in the major shipbuilding countries.

The issue of safety was discussed at length. It was explained that makers/suppliers are delivering a product according to their own requirements at first, based on their own quality systems. Consequently the products are consistently delivered with the same level of quality, whichever the Class Society is. They also added that a series of product is already developed today to fulfil all international requirements and therefore Mutual Recognition should not decrease the existing safety level.

Over a concern raised by some shipowners that they desire to keep the choice of certification for major components such as major engines and generators, the makers representatives of these types of equipment replied that they have no opinion yet on whether to seek Mutual Recognition for such types of equipment.

Overall, the manufacturers took note of the outcome of the EU RO works and generally expressed the opinion that they are heading towards the right direction, they will therefore be following with keen interest the continuation of the EU RO works in this respect. They were also thankful to the EU ROs for the consultation process put in place and will generally be supportive of any initiative aiming at improving the processes of class certification of maritime equipment.

Shipowners:

The shipowners expressed the concern that, as a piece of equipment is made of several sub-components and as equipment Makers tend to use sub-contractors for sub-components all over the world, a consistency issue might emerge at the end of the process. The reason is that Mutual Recognition could potentially increase the number of Class Societies involved in the entire process, whereas certification has been done up to now by a single Class Society (the one finally classing the ship).

They further emphasized that one of the roles of Class Societies is to be a “safety net”, making sure that minimum requirements are applied globally, while acting on behalf of the Flag States. The individual Makers’ quality Management systems, albeit necessary, were not seen as being a sufficient response should this class global role be reduced.

They also indicated that while they could see some benefit in having a fully harmonised standard, the driver which exists today between Class Societies and which distinguishes them and enhances competition between them, would be lost.

Others were of the opinion that Mutual Recognition should not lead to an expansion of the class rules, that the main issue at stake was the basis for certification itself, i.e. the inspection at works, and that the EU ROs should agree on a common set of procedures.

Shipowners also underlined the complex topic of the integration of a component within the ship’s system, i.e. the same type of equipment may be used for different functions on-board the ship and its safety criticality would ultimately depend on that. They described the example of hydraulic motors which can be integrated either in windlasses or mooring winches, the safety criticality being much higher for the windlass than for the mooring winch.

Shipowners therefore generally expressed their support for a criticality assessment and they clarified that the above example could also be extrapolated for other machinery major equipment such as main engine and rudder/steering gear.

Concern was also expressed as to whether a ship built according to EU Mutual Recognition standards could be reflagged to a non EU flag having in mind that Mutual Recognition may not be accepted by all flags.

The view was expressed that, as main shipbuilders are outside the EU, global solutions would have to be found and that the question on how to deal with extraterritorial aspects needs to be duly considered.

Shipyards:

Yards expressed the view that it has been quite challenging to understand and fully oversee all the consequences of Mutual Recognition, which is a complex issue.

They also stressed that there was room for improvement, in their opinion, in the classed equipment certification process. They indicated that standards between class Societies should not be different.

They advocated practical solutions and asked all industry stakeholders to be as constructive as possible.

They mentioned that they considered that 2013, and not 2014, was the ideal date to start assessing the progress made, in order to allow enough time for discussion and improvement as needed.

Insurers:

They indicated that no information related to Art.10/Mutual Recognition had been received from the International Union of Maritime Insurers (IUMI) at this stage.

They further underlined that, from the insurance point of view, the question of class is a key issue as the insurers normally rely on the final ship's class certificate.

The attending insurer mentioned that his company was assessing around 145 Class Societies.

Their understanding is that Mutual Recognition is an important issue and that it is also related to the Flag States. They conceded that the insurers would also have to work on this subject and would be monitoring the positions of the parties, and in particular the major Flag States.

Lawyers:

They indicated that, in their view, the issue of Mutual Recognition was an important one, involving a number of complex questions and aspects that have to be adequately addressed.

It is clear from a legal perspective that Art. 10 expressly specifies that the agreement among ROs concerning Mutual Recognition should take the most demanding and rigorous standards as reference. Failing to do so would be a clear breach of Art 10.1 paragraph 1.

Notwithstanding the above, the view was expressed that the involvement of more Class Societies in the certification/classification process could have an unwanted side-risk of downgrading safety irrespective of the precautionary measures adopted.

They further commented that liability would become a very difficult question, insofar as various Class Societies would now be involved.

With respect to Intellectual Property Rights/IPR, they expressed the view that Mutual Recognition would oblige class Societies to exchange confidential facts in relation to IPR.

With regard to the contentious issue of the relationship between Art. 10 and implementation of statutory requirements by non-EU Flag States, the situation is that a non-EU flag State has contracted with an organisation recognized to render services in relation to the non-EU flag state's statutory duties under the relevant Maritime Conventions, inter alia to issue certificates on behalf of the Flag State. In this respect the RO, although also recognized by the EU, is solely acting on behalf of the Flag State. As such, the non-EU Flag State is well entitled to question the obligation imposed upon its ship's RO to accept a marine equipment class certificate on the basis of the Mutual Recognition of Art. 10, all the more so if the certificate has been issued by another Class Society which is not authorized by the said non-EU Flag State.

EU ROs

Art. 10 of the Regulation EC/391/2009 consists the legal basis for Mutual Recognition and as such will be implemented fully by the EU ROs.

Additionally, and beyond Mutual Recognition of class equipment certificates, the EU ROs are generally keen to consider the industry needs and seek the most appropriate and efficient ways to address these needs. Because of their position, the EU ROs have to adopt a holistic approach and to preserve the interests of all industry stakeholders as far as this is feasible, taking safety as overarching priority.

In this respect, the EU ROs agreed that there is room for improvement of the certification/approval process of classed marine equipment within the overarching objective of the Regulation EC/391/2009, which is the safety on board the vessels.

The functions of certification of the equipment, appraisal of the integration of the equipment within the on-board systems and the classification of the vessel have until now been exercised by a single entity, the classification society of the vessel. Mutual Recognition of class equipment certificates introduces new actors and changes in the contractual set up and respective obligations and responsibilities for the various parties involved.

This introduces new issues which makes matters more complex to be solved and controlled.

The EU ROs underlined this new triangular relationship between the RO issuing the Type Approval, the RO classing the ship and the maker. The equipment cannot be seen in isolation at the manufacturers' plant, its ultimate function onboard the vessel and integration within the shipboard systems are part of the vessel's classification. The Society classing the ship is no doubt one of the main stakeholders, and must be given access to all information and documentation it deems required in order to perform its appraisal duties and on-board inspection and test functions.

Art. 10 stipulates that where a recognised organisation ascertains by inspection or otherwise that material, a piece of equipment or a component is not in compliance with its certificate, that organisation may refuse to authorise the placing on board of that material, piece of equipment or component. The recognised organisation shall immediately inform the other Recognised Organisations, stating the reasons for its refusal. The EU ROs felt further discussion was necessary on the practical implications and factual implementation of this part of Art. 10. „Guidance is required as this clause obviously could not really apply if the class equipment certificate had to be accepted at face value.

The ship's Class Society would need in fact access to the equipment drawings and certification file, which in the absence of a contract could understandably lead to confidentiality and IPR concerns.

In order to try and resolve this, the EU ROs underlined that this new triangular relationship between the the RO issuing the Type Approval, the RO classing the ship and the maker will need to be formalized in a trilateral agreement covering the various contractual, confidentiality and IPR aspects between the parties.

The EU ROs have now started the harmonisation of the technical requirements and procedures, focusing on the Type Approval Scheme. Nobody denied that this is a complex task. The ROs emphasized that it took a long time, close to a year, to harmonise the technical requirements between all the EU ROs for the first set of 11 items.

In reply to the question from the Shipowners regarding certain types of equipment which to their mind may have to be excluded from Mutual Recognition, the EU ROs clarified in that respect that they were working on the methodology on how to assess the criticality of a given equipment and, once this methodology would have been defined, the EU ROs would have to go through the various equipment types. If the EU ROs have determined that a given item is safety critical, then Mutual Recognition will not be applicable for that item.

The EU ROs further commented that Flag requirements have normally to be fulfilled and if there are conflicts, it is not in the hands of the EU ROs to solve them. This has to be taken care of by the Governments and the legislators. ROs further commented that this issue was highlighting the complexity of this subject.

EU RO WORKSHOP – MARINE EQUIPMENT ON SHIPS

HAMBURG – 14th December 2011 –

Agenda

Morning Session	10.00 am	<ul style="list-style-type: none"> • Presentation of the EC regulation (+ Art 10) and Directive • How ROs are set up to implement MR • The EU RO Group : organization, communication and access to the EU RO works
	10.30 am	<ul style="list-style-type: none"> • MR Procedure for Type Approval • What is Mutual Recognition = a bilateral process
	11.00 am	<ul style="list-style-type: none"> • Legal issues: individual contracts in the context of EU legislation, sharing of tasks and responsibilities, intellectual property rights • Terms and Conditions
	Break	
	11.30 am	Implementation: <ul style="list-style-type: none"> • Harmonization of Rules (highest standards)
	12.30 am	<ul style="list-style-type: none"> • Type test approval and procedure
Lunch Break		
Afternoon Session	14.00 pm	<ul style="list-style-type: none"> • What has been achieved – The 10 Projects • The next steps
	15.00 pm	<ul style="list-style-type: none"> • The Consequence Based/Safety Risk Approach
	Break	
	15.15 pm	The Industry Panel
	16.45 pm	Conclusion of the Industry Panel
Closing	17.00 pm	Closing Address

12.10 – Legislative background

Within the framework of the Maritime Safety Package ERIKA III, the European Commission proposed a recast “Directive on Common Rules and Standards for Ship Inspection and Survey Organisations and for the Relevant Activities of Maritime Administrations” on 23 November, 2005 to replace Directive 94/57/EC.

The proposal was transmitted to the Council and the European Parliament on 30 January, 2006 and followed up by opinions from the Committee of the Regions and the European Economic and Social Committee on 15 June and 13 September respectively.

At the first reading on 25 April, 2007, the European Parliament approved the draft Directive with amendments.

The Council reached a political agreement on 11 November, 2007. At the Council discussions, there was concern about the form of the legal act proposed by the European Commission, as several of the provisions in the draft Directive might have been understood as either imposing obligations directly or devolving the competence to the European Commission to impose such obligations on individuals, namely the EU ROs. Thus, the act was split into a draft Directive and a draft Regulation, with the latter containing all of the provisions relating to recognition at the community level. The draft Regulation as a whole is directed primarily at classification societies. Article 1 of the draft Regulation refers expressly to the Regulation “establish[ing] measures to be followed by organisations entrusted with the inspection, survey and certification of ships for compliance with the international conventions on safety at sea and prevention of marine pollution” (emphasis added). The obligations contained in the draft Regulation hence apply to the EU ROs (as well as, to the extent necessary, to the Member States).

The Council adopted a Common Position on the draft Regulation on June 6, 2008. The Common Position was communicated to the European Parliament on 19 June, 2008. The European Parliament gave its opinion, following a second reading, on 24 September, 2008.

The first official Trilog took place on 4 November, 2008. The European Commission opinion on the European Parliament’s amendments was adopted on 26 November, 2008. Due to negative results of the first negotiations, the second Trilog was postponed to 2 December, 2008. On 8 December, 2008 the Conciliation Committee was convened and an agreement was reached. The Conciliation Committee decision followed on 2 February, 2009.

A Council decision at third reading was reached on 26 February, 2009. The decision of European Parliament followed on 11 March, 2009.

The signature by the European Parliament and the Council took place on 23 April, 2009. The Directive 2009/15/EC and the Regulation (EC) No 391/2009 on Common Rules and Standards for Ship Inspection and Survey Organizations came into effect on 17 June, 2009.

**REGULATION (EC) No 391/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 23 April 2009**

on common rules and standards for ship inspection and survey organisations

(Recast)

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 80(2) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

Having regard to the opinion of the Committee of the Regions ⁽²⁾,

Acting in accordance with the procedure laid down in Article 251 of the Treaty, in the light of the joint text approved by the Conciliation Committee on 3 February 2009 ⁽³⁾,

Whereas:

- (1) Council Directive 94/57/EC of 22 November 1994 on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations ⁽⁴⁾ has been substantially amended several times. Since further amendments are to be made, it should be recast in the interests of clarity.
- (2) In view of the nature of the provisions of Directive 94/57/EC it seems appropriate that its provisions be recast in two different Community legal instruments, namely a Directive and a Regulation.
- (3) Ship inspection and survey organisations should be able to offer their services throughout the Community and compete with each other while providing equal levels of safety and of environmental protection. The

necessary professional standards for their activities should therefore be uniformly established and applied across the Community.

- (4) This objective should be pursued through measures that adequately tie in with the work of the International Maritime Organisation (IMO) and, where appropriate, build on and complement it. Furthermore, the Member States and the Commission should promote the development by the IMO of an international code for recognised organisations.
- (5) Minimum criteria for recognition of organisations should be laid down with a view to enhancing the safety of, and preventing pollution from, ships. The minimum criteria laid down in Directive 94/57/EC should therefore be strengthened.
- (6) In order to grant initial recognition to the organisations wishing to be authorised to work on behalf of the Member States, compliance with the minimum criteria laid down in this Regulation could be assessed more effectively in a harmonised and centralised manner by the Commission together with the Member States requesting the recognition.
- (7) Recognition should be granted only on the basis of the quality and safety performance of the organisation. It should be ensured that the extent of that recognition be at all times in keeping with the actual capacity of the organisation concerned. Recognition should furthermore take into account the differences in legal status and corporate structure of recognised organisations while continuing to ensure uniform application of the minimum criteria laid down in this Regulation and the effectiveness of the Community controls. Regardless of the corporate structure, the organisation to be recognised should provide services worldwide and its legal entities should be subject to global joint and several liability.
- (8) The measures necessary for the implementation of this Regulation should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission ⁽⁵⁾.

⁽¹⁾ OJ C 318, 23.12.2006, p. 195.

⁽²⁾ OJ C 229, 22.9.2006, p. 38.

⁽³⁾ Opinion of the European Parliament of 25 April 2007 (OJ C 74 E, 20.3.2008, p. 632), Council Common Position of 6 June 2008 (OJ C 190E, 29.7.2008, p. 1), Position of the European Parliament of 24 September 2008 (not yet published in the Official Journal), Council Decision of 26 February 2009 and Legislative Resolution of the European Parliament of 11 March 2009 (not yet published in the Official Journal).

⁽⁴⁾ OJ L 319, 12.12.1994, p. 20.

⁽⁵⁾ OJ L 184, 17.7.1999, p. 23.

- (9) In particular, the Commission should be empowered to amend this Regulation in order to incorporate subsequent amendments to the international conventions, protocols, codes and resolutions related thereto, to update the minimum criteria in Annex I and to adopt the criteria to measure the effectiveness of the rules and procedures as well as the performance of the recognised organisations as regards the safety of, and the prevention of pollution from, their classed ships. Since those measures are of general scope and are designed to amend non-essential elements of this Regulation, *inter alia*, by supplementing it with new non-essential elements, they must be adopted in accordance with the regulatory procedure with scrutiny provided for in Article 5a of Decision 1999/468/EC.
- (10) It is of the utmost importance that failure by a recognised organisation to fulfil its obligations can be addressed in a prompt, effective and proportionate manner. The primary objective should be to correct any deficiencies with a view to removing any potential threat to safety or the environment at an early stage. The Commission should therefore be given the necessary powers to require that the recognised organisation undertake the necessary preventive and remedial action, and to impose fines and periodic penalty payments as coercive measures. When exercising these powers, the Commission should do so in a manner that complies with fundamental rights and should ensure that the organisation can make its views known throughout the procedure.
- (11) In accordance with the Community-wide approach, the decision to withdraw the recognition of an organisation which fails to fulfil the obligations set out in this Regulation if the above measures prove ineffective or the organisation otherwise presents an unacceptable threat to safety or the environment, has to be taken at Community level, and therefore by the Commission, on the basis of a committee procedure.
- (12) The continuous *a posteriori* monitoring of the recognised organisations to assess their compliance with this Regulation can be carried out more effectively in a harmonised and centralised manner. Therefore, it is appropriate that the Commission, together with the Member State requesting the recognition, be entrusted with this task on behalf of the Community.
- (13) As part of the monitoring of the operations of recognised organisations, it is crucial that Commission inspectors have access to ships and ship files regardless of the ship's flag in order to ascertain whether the recognised organisations are complying with the minimum criteria laid down in this Regulation in respect of all ships in their respective classes.
- (14) The ability of recognised organisations to identify rapidly and correct weaknesses in their rules, processes and internal controls is critical for the safety of the ships they inspect and certify. That ability should be enhanced by means of a quality assessment and certification entity, which should be independent of commercial or political interests, can propose common action for the sustained improvement of all recognised organisations and ensure fruitful cooperation with the Commission.
- (15) The rules and procedures of recognised organisations are a key factor for increasing safety and preventing accidents and pollution. The recognised organisations have initiated a process that should lead to harmonisation of their rules and procedures. That process should be encouraged and supported by Community legislation, as it should have a positive impact on maritime safety as well as on the competitiveness of the European shipbuilding industry.
- (16) The harmonisation of the rules of recognised organisations for the design, construction and periodic survey of merchant ships is an ongoing process. Therefore, the obligation to have a set of own rules or the demonstrated ability to have own rules should be seen in the context of the process of harmonisation and should not constitute an obstacle to the activities of recognised organisations or potential candidates for recognition.
- (17) Recognised organisations should be obliged to update their technical standards and enforce them consistently in order to harmonise safety rules and ensure uniform implementation of international rules within the Community. Where the technical standards of recognised organisations are identical or very similar, mutual recognition of certificates for materials, equipment and components should be considered in appropriate cases, taking the most demanding and rigorous standards as the reference.
- (18) While each recognised organisation, in principle, should be held responsible solely and exclusively in relation to the parts it certifies, the liability of recognised organisations and manufacturers will follow the agreed conditions or, as the case may be, the applicable law in each individual case.
- (19) Since transparency and exchange of information between interested parties, as well as public right of access to information, are fundamental tools for preventing accidents at sea, recognised organisations should provide all relevant statutory information concerning the conditions of the ships in their class to the port State control authorities and make it available to the general public.

- (20) In order to prevent ships from changing class to avoid carrying out necessary repairs, recognised organisations should exchange all relevant information among themselves concerning the conditions of ships changing class and involve the flag State when necessary.
- (21) The protection of intellectual property rights of maritime stakeholders including shipyards, equipment suppliers and shipowners, should not prevent normal business transactions and contractually agreed services between these parties.
- (22) The European Maritime Safety Agency (EMSA) established by Regulation (EC) No 1406/2002 of the European Parliament and of the Council⁽¹⁾ should provide the necessary support to ensure the application of this Regulation.
- (23) Since the objective of this Regulation, namely the establishment of measures to be followed by organisations entrusted with the inspection, survey and certification of ships, operating in the Community, cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale of the action, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective.
- (24) Measures to be followed by the Member States in their relationship with ship inspection and survey organisations are laid down in Directive 2009/15/EC of the European Parliament and of the Council of 23 April 2009 on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations⁽²⁾,

HAVE ADOPTED THIS REGULATION:

Article 1

This Regulation establishes measures to be followed by organisations entrusted with the inspection, survey and certification of ships for compliance with the international conventions on safety at sea and prevention of marine pollution, while furthering the objective of freedom to provide services. This includes the development and implementation of safety requirements for hull, machinery and electrical and control installations of ships falling under the scope of the international conventions.

⁽¹⁾ OJ L 208, 5.8.2002, p. 1.

⁽²⁾ See page 47 of this Official Journal.

Article 2

For the purpose of this Regulation the following definitions shall apply:

- (a) 'ship' means a ship falling within the scope of the international conventions;
- (b) 'international conventions' means the International Convention for the Safety of Life at Sea of 1 November 1974 (SOLAS 74) with the exception of chapter XI-2 of the Annex thereto, the International Convention on Load Lines of 5 April 1966 and the International Convention for the Prevention of Pollution from Ships of 2 November 1973 (MARPOL), together with the protocols and amendments thereto, and the related codes of mandatory status in all Member States, in their up-to-date version;
- (c) 'organisation' means a legal entity, its subsidiaries and any other entities under its control, which jointly or separately carry out tasks falling under the scope of this Regulation;
- (d) 'control' means, for the purpose of point (c), rights, contracts or any other means, in law or in fact, which, either separately or in combination confer the possibility of exercising decisive influence on a legal entity or enable that entity to carry out tasks falling under the scope of this Regulation;
- (e) 'recognised organisation' means an organisation recognised in accordance with this Regulation;
- (f) 'authorisation' means an act whereby a Member State grants an authorisation or delegates powers to a recognised organisation;
- (g) 'statutory certificate' means a certificate issued by or on behalf of a flag State in accordance with the international conventions;
- (h) 'rules and procedures' means a recognised organisation's requirements for the design, construction, equipment, maintenance and survey of ships;
- (i) 'class certificate' means a document issued by a recognised organisation certifying the fitness of a ship for a particular use or service in accordance with the rules and procedures laid down and made public by that recognised organisation;
- (j) 'location' means the place of the registered office, central administration or principal place of business of an organisation.

Article 3

1. Member States which wish to grant an authorisation to any organisation which is not yet recognised shall submit a request for recognition to the Commission together with complete information on, and evidence of, the organisation's compliance with the minimum criteria set out in Annex I and on the requirement and its undertaking that it shall comply with the provisions of Articles 8(4), 9, 10 and 11.

2. The Commission, together with the respective Member States submitting the request, shall carry out assessments of the organisations for which the request for recognition was received in order to verify that the organisations meet and undertake to comply with the requirements referred to in paragraph 1.

3. The Commission shall, in accordance with the regulatory procedure referred to in Article 12(3), refuse to recognise organisations which fail to meet the requirements referred to in paragraph 1 or whose performance is considered an unacceptable threat to safety or the environment on the basis of the criteria laid down in accordance with Article 14.

Article 4

1. Recognition shall be granted by the Commission in accordance with the regulatory procedure referred to in Article 12(3).

2. Recognition shall only be granted to organisations which meet the requirements referred to in Article 3.

3. Recognition shall be granted to the relevant legal entity, which is the parent entity of all legal entities that constitute the recognised organisation. The recognition shall encompass all legal entities that contribute to ensuring that that organisation provides cover for their services worldwide.

4. The Commission, acting in accordance with the regulatory procedure referred to in Article 12(3), may limit the recognition as regards certain types of ships, ships of a certain size, certain trades, or a combination thereof, in accordance with the proven capacity and expertise of the organisation concerned. In such a case, the Commission shall state the reasons for the limitation and the conditions under which the limitation shall be removed or can be widened. The limitation may be reviewed at any time.

5. The Commission shall draw up and regularly update a list of the organisations recognised in accordance with this Article. That list shall be published in the *Official Journal of the European Union*.

Article 5

Where the Commission considers that a recognised organisation has failed to fulfil the minimum criteria set out in Annex I or its obligations under this Regulation, or that the safety and

pollution prevention performance of a recognised organisation has worsened significantly, without, however, it constituting an unacceptable threat to safety or the environment, it shall require the recognised organisation concerned to undertake the necessary preventive and remedial action within specified deadlines to ensure full compliance with those minimum criteria and obligations and, in particular, remove any potential threat to safety or the environment, or to otherwise address the causes of the worsening performance.

The preventive and remedial action may include interim protective measures when the potential threat to safety or the environment is immediate.

However, and without prejudice to their immediate implementation, the Commission shall give to all Member States which have granted an authorisation to the recognised organisation concerned, advance notice of the measures that it intends to take.

Article 6

1. In addition to the measures taken under Article 5, the Commission may, in accordance with the advisory procedure referred to in Article 12(2), impose fines on a recognised organisation:

(a) — whose serious or repeated failure to fulfil the minimum criteria set out in Annex I or its obligations under Articles 8(4), 9, 10 and 11,

or

— whose worsening performance reveals serious shortcomings in its structure, systems, procedures or internal controls;

or

(b) which has deliberately provided incorrect, incomplete or misleading information to the Commission in the course of its assessment pursuant to Article 8(1) or otherwise obstructed that assessment.

2. Without prejudice to paragraph 1, where a recognised organisation fails to undertake the preventive and remedial action required by the Commission, or incurs unjustified delays, the Commission may impose periodic penalty payments on that organisation until the required action is fully carried out.

3. The fines and periodic penalty payments referred to in paragraphs 1 and 2 shall be dissuasive and proportionate to both the gravity of the case and the economic capacity of the recognised organisation concerned, taking into account, in particular, the extent to which safety or the protection of the environment has been compromised.

They shall be imposed only after the recognised organisation and the Member States concerned have been given the opportunity to submit their observations.

The aggregate amount of the fines and periodic penalty payments imposed shall not exceed 5 % of the total average turnover of the recognised organisation in the preceding three business years for the activities falling under the scope of this Regulation.

4. The Court of Justice of the European Communities shall have unlimited jurisdiction to review decisions whereby the Commission has fixed a fine or periodic penalty payment. It may cancel, reduce or increase the fine or periodic penalty payment imposed.

Article 7

1. The Commission shall withdraw the recognition of an organisation:

- (a) whose repeated and serious failure to fulfil the minimum criteria set out in Annex I or its obligations under this Regulation is such that it constitutes an unacceptable threat to safety or the environment;
- (b) whose repeated and serious failure in its safety and pollution prevention performance is such that it constitutes an unacceptable threat to safety or the environment;
- (c) which prevents or repeatedly obstructs the assessment by the Commission;
- (d) which fails to pay the fines and/or periodic penalty payments referred to in Article 6(1) and (2); or
- (e) which seeks to obtain financial cover or reimbursement of any fines imposed on it pursuant to Article 6.

2. For the purpose of points (a) and (b) of paragraph 1, the Commission shall decide on the basis of all the available information, including:

- (a) the results of its own assessment of the recognised organisation concerned pursuant to Article 8(1);
- (b) reports submitted by Member States pursuant to Article 10 of Directive 2009/15/EC;
- (c) analyses of casualties involving ships classed by the recognised organisations;

(d) any recurrence of the shortcomings referred to in point (a) of Article 6(1);

(e) the extent to which the fleet in the recognised organisation's class is affected; and

(f) the ineffectiveness of the measures referred to in Article 6(2).

3. Withdrawal of recognition shall be decided by the Commission, upon its own initiative or at the request of a Member State, in accordance with the regulatory procedure referred to in Article 12(3) and after the recognised organisation concerned has been given the opportunity to submit its observations.

Article 8

1. All the recognised organisations shall be assessed by the Commission, together with the Member State which submitted the relevant request for recognition, on a regular basis and at least every two years to verify that they meet the obligations under this Regulation and fulfil the minimum criteria set out in Annex I. The assessment shall be confined to those activities of the recognised organisations, which fall within the scope of this Regulation.

2. In selecting the recognised organisations for assessment, the Commission shall pay particular attention to the safety and pollution prevention performance of the recognised organisation, to the casualty records and to the reports produced by Member States in accordance with Article 10 of Directive 2009/15/EC.

3. The assessment may include a visit to regional branches of the recognised organisation as well as random inspection of ships, both in service and under construction, for the purpose of auditing the recognised organisation's performance. In this case the Commission shall, where appropriate, inform the Member State in which the regional branch is located. The Commission shall provide the Member States with a report on the results of the assessment.

4. Each recognised organisation shall make available the results of its quality system management review to the Committee referred to in Article 12(1), on an annual basis.

Article 9

1. Recognised organisations shall ensure that the Commission has access to the information necessary for the purposes of the assessment referred to in Article 8(1). No contractual clauses may be invoked to restrict this access.

2. Recognised organisations shall ensure in their contracts with shipowners or operators for the issue of statutory certificates or class certificates to a ship that such issue shall be made conditional on the parties not opposing the access of the Commission inspectors on board that ship for the purposes of Article 8(1).

Article 10

1. Recognised organisations shall consult with each other periodically with a view to maintaining equivalence and aiming for harmonisation of their rules and procedures and the implementation thereof. They shall cooperate with each other with a view to achieving consistent interpretation of the international conventions, without prejudice to the powers of the flag States. Recognised organisations shall, in appropriate cases, agree on the technical and procedural conditions under which they will mutually recognise the class certificates for materials, equipment and components based on equivalent standards, taking the most demanding and rigorous standards as the reference.

Where mutual recognition cannot be agreed upon for serious safety reasons, recognised organisations shall clearly state the reasons therefor.

Where a recognised organisation ascertains by inspection or otherwise that material, a piece of equipment or a component is not in compliance with its certificate, that organisation may refuse to authorise the placing on board of that material, piece of equipment or component. The recognised organisation shall immediately inform the other recognised organisations, stating the reasons for its refusal.

Recognised organisations shall recognise, for classification purposes, certificates of marine equipment bearing the wheel mark in accordance with Council Directive 96/98/EC of 20 December 1996 on marine equipment ⁽¹⁾.

They shall provide the Commission and the Member States with periodic reports on fundamental progress in standards and mutual recognition of certificates for materials, equipment and components.

2. The Commission shall submit a report to the European Parliament and the Council by 17 June 2014, based on an independent study, on the level reached in the process of harmonising the rules and procedures and on mutual recognition of certificates for materials, equipment and components.

3. The recognised organisations shall cooperate with port State control administrations where a ship of their class is concerned, in particular in order to facilitate the rectification of reported deficiencies or other discrepancies.

4. The recognised organisations shall provide to all Member States' administrations which have granted any of the authorisations provided for in Article 3 of Directive 2009/15/EC and to the Commission all relevant information about their classed fleet, transfers, changes, suspensions and withdrawals of class, irrespective of the flag the ships fly.

Information on transfers, changes, suspensions, and withdrawals of class, including information on all overdue surveys, overdue recommendations, conditions of class, operating conditions or operating restrictions issued against their classed ships, irrespective of the flag the ships fly, shall also be communicated electronically to the common inspection database used by the Member States for the implementation of Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port State control ⁽²⁾ at the same time as it is recorded within the recognised organisation's own systems and in any case no later than 72 hours after the event that gave rise to the obligation to communicate the information. That information, with the exception of recommendations and conditions of class which are not overdue, shall be published on the website of these recognised organisations.

5. The recognised organisations shall not issue statutory certificates to a ship, irrespective of its flag, which has been declassified or is changing class for safety reasons, before giving the opportunity to the competent administration of the flag State to give its opinion within a reasonable time as to whether a full inspection is necessary.

6. In cases of transfer of class from one recognised organisation to another, the losing organisation shall, without undue delay, provide the gaining organisation with the complete history file of the ship and, in particular, inform it of:

- (a) any overdue surveys;
- (b) any overdue recommendations and conditions of class;
- (c) operating conditions issued against the ship; and
- (d) operating restrictions issued against the ship.

New certificates for the ship can be issued by the gaining organisation only after all overdue surveys have been satisfactorily completed and all overdue recommendations or conditions of class previously issued in respect of the ship have been completed as specified by the losing organisation.

Prior to the issue of the certificates, the gaining organisation must advise the losing organisation of the date of issue of the certificates and confirm the date, place and action taken to satisfy each overdue survey, overdue recommendation and overdue condition of class.

⁽¹⁾ OJ L 46, 17.2.1997, p. 25.

⁽²⁾ See page 57 of this Official Journal.

Recognised organisations shall establish and implement appropriate common requirements concerning cases of transfer of class where special precautions are necessary. Those cases shall, as a minimum, include the transfer of class of ships of 15 years of age or over and the transfer from a non-recognised organisation to a recognised organisation.

Recognised organisations shall cooperate with each other in properly implementing the provisions of this paragraph.

Article 11

1. Recognised organisations shall set up by 17 June 2011 and maintain an independent quality assessment and certification entity in accordance with the applicable international quality standards where the relevant professional associations working in the shipping industry may participate in an advisory capacity.

2. The quality assessment and certification entity shall carry out the following tasks:

- (a) frequent and regular assessment of the quality management systems of recognised organisations, in accordance with the ISO 9001 quality standard criteria;
- (b) certification of the quality management systems of recognised organisations, including organisations for which recognition has been requested in accordance with Article 3;
- (c) issue of interpretations of internationally recognised quality management standards, in particular to take account of the specific features of the nature and obligations of recognised organisations; and
- (d) adoption of individual and collective recommendations for the improvement of recognised organisations' processes and internal control mechanisms.

3. The quality assessment and certification entity shall have the necessary governance and competences to act independently of the recognised organisations and shall have the necessary means to carry out its duties effectively and to the highest professional standards, safeguarding the independence of the persons performing them. The quality assessment and certification entity will lay down its working methods and rules of procedure.

4. The quality assessment and certification entity may request assistance from other external quality assessment bodies.

5. The quality assessment and certification entity shall provide the interested parties, including flag States and the Commission, with full information on its annual work plan as well as on its findings and recommendations, particularly with regard to situations where safety might have been compromised.

6. The quality assessment and certification entity shall be periodically assessed by the Commission.

7. The Commission shall report to the Member States on the results and follow-up of its assessment.

Article 12

1. The Commission shall be assisted by the Committee on Safe Seas and the Prevention of Pollution from Ships (COSS) established by Regulation (EC) No 2099/2002 of the European Parliament and of the Council⁽¹⁾.

2. Where reference is made to this paragraph, Articles 3 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

3. Where reference is made to this paragraph, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at three months.

4. Where reference is made to this paragraph, Article 5a(1) to (4) and Article 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

Article 13

1. This Regulation may, without broadening its scope, be amended in order to update the minimum criteria set out in Annex I taking into account, in particular, the relevant decisions of the IMO.

These measures designed to amend non-essential elements of this Regulation shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 12(4).

2. Amendments to the international conventions defined in Article 2(b) of this Regulation may be excluded from the scope of this Regulation, pursuant to Article 5 of Regulation (EC) No 2099/2002.

⁽¹⁾ OJ L 324, 29.11.2002, p. 1.

Article 14

1. The Commission shall adopt and publish:

- (a) criteria to measure the effectiveness of the rules and procedures as well as the performance of the recognised organisations as regards the safety of, and the prevention of pollution from, their classed ships, having particular regard to the data produced by the Paris Memorandum of Understanding on Port State Control and/or by other similar schemes; and
- (b) criteria to determine when such performance is to be considered an unacceptable threat to safety or the environment, which may take into account specific circumstances affecting smaller-sized or highly specialised organisations.

These measures designed to amend non-essential elements of this Regulation by supplementing it shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 12(4).

2. The measures designed to amend non-essential elements of this Regulation by supplementing it relating to the implementation of Article 6 and, if appropriate, Article 7 shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 12(4).

3. Without prejudice to the immediate application of the minimum criteria set out in Annex I, the Commission may, in accordance with the regulatory procedure referred to in Article 12(3), adopt rules on their interpretation and may consider the establishment of objectives for the general minimum criteria referred to in point 3, Part A of Annex I.

Article 15

1. The organisations which, at the entry into force of this Regulation, had been granted recognition in accordance with Directive 94/57/EC shall retain their recognition, subject to the provisions of paragraph 2.

2. Without prejudice to Articles 5 and 7, the Commission shall re-examine all limited recognitions granted under Directive 94/57/EC in light of Article 4(3) of this Regulation by 17 June 2010, with a view to deciding, in accordance with the regulatory procedure referred to in Article 12(3), whether the limitations are to be replaced by others or removed. The limitations shall continue to apply until the Commission has taken a decision.

Article 16

In the course of the assessment pursuant to Article 8(1), the Commission shall verify that the holder of the recognition is the relevant legal entity within the organisation to which the provisions of this Regulation shall apply. If that is not the case, the Commission shall take a decision amending that recognition.

Where the Commission amends the recognition, the Member States shall adapt their agreements with the recognised organisation to take account of the amendment.

Article 17

The Commission shall, on a biennial basis, inform the European Parliament and the Council on the application of this Regulation.

Article 18

References in Community and national law to Directive 94/57/EC shall be construed, as appropriate, as being made to this Regulation and shall be read in accordance with the correlation table in Annex II.

Article 19

This Regulation shall enter into force on the 20th day following its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Strasbourg, 23 April 2009.

For the European Parliament
The President
H.-G. PÖTTERING

For the Council
The President
P. NEČAS

ANNEX I

MINIMUM CRITERIA FOR ORGANISATIONS TO OBTAIN OR TO CONTINUE TO ENJOY COMMUNITY RECOGNITION**(referred to in Article 3)****A. GENERAL MINIMUM CRITERIA**

1. A recognised organisation must have legal personality in the State of its location. Its accounts shall be certified by independent auditors.
2. The recognised organisation must be able to document extensive experience in assessing the design and construction of merchant ships.
3. The recognised organisation must be equipped at all times with significant managerial, technical, support and research staff commensurate with the size of the fleet in its class, its composition and the organisation's involvement in the construction and conversion of ships. The recognised organisation must be capable of assigning to every place of work, when and as needed, means and staff commensurate with the tasks to be carried out in accordance with general minimum criteria under points 6 and 7 and with the specific minimum criteria under part B.
4. The recognised organisation must have and apply a set of own comprehensive rules and procedures, or the demonstrated ability thereto, for the design, construction and periodic survey of merchant ships, having the quality of internationally recognised standards. They must be published and continually upgraded and improved through research and development programmes.
5. The recognised organisation must have its register of ships published on an annual basis or maintained in an electronic database accessible to the public.
6. The recognised organisation must not be controlled by shipowners or shipbuilders, or by others engaged commercially in the manufacture, equipping, repair or operation of ships. The recognised organisation is not substantially dependent on a single commercial enterprise for its revenue. The recognised organisation does not carry out class or statutory work if it is identical to or has business, personal or family links to the shipowner or operator. This incompatibility shall also apply to surveyors employed by the recognised organisation.
7. The recognised organisation must operate in accordance with the provisions set out in the Annex to IMO Resolution A.789(19) on specifications on the survey and certification functions of recognised organisations acting on behalf of the administration, in so far as they cover matters falling within the scope of this Regulation.

B. SPECIFIC MINIMUM CRITERIA

1. The recognised organisation must provide worldwide coverage by its exclusive surveyors or, in exceptional and duly justified cases, through exclusive surveyors of other recognised organisations.
2. The recognised organisation must be governed by a code of ethics.
3. The recognised organisation must be managed and administered in such a way as to ensure the confidentiality of information required by the administration.
4. The recognised organisation must provide relevant information to the administration, to the Commission and to interested parties.

5. The recognised organisation, its surveyors and its technical staff shall carry out their work without in any way harming the intellectual property rights of shipyards, equipment suppliers, and shipowners, including patents, licences, know-how, or any other kind of knowledge whose use is legally protected at international, Community or national level; under no circumstances, and without prejudice to the assessment powers of Member States and the Commission and in particular under Article 9, may either the recognised organisation or the surveyors and technical staff, whom it employs pass on or divulge commercially relevant data obtained in the course of their work of inspecting, checking, and monitoring ships under construction or repair.
6. The recognised organisation's management must define and document its policy and objectives for, and commitment to, quality and must ensure that this policy is understood, implemented and maintained at all levels in the recognised organisation. The recognised organisation's policy must refer to safety and pollution prevention performance targets and indicators.
7. The recognised organisation must ensure that:
 - (a) its rules and procedures are established and maintained in a systematic manner;
 - (b) its rules and procedures are complied with and an internal system to measure the quality of service in relation to these rules and procedures is put in place;
 - (c) the requirements of the statutory work for which the recognised organisation is authorised are satisfied and an internal system to measure the quality of service in relation to compliance with the international conventions is put in place;
 - (d) the responsibilities, powers and interrelation of personnel whose work affects the quality of the recognised organisation's services are defined and documented;
 - (e) all work is carried out under controlled conditions;
 - (f) a supervisory system is in place which monitors the actions and work carried out by surveyors and technical and administrative staff employed by the recognised organisation;
 - (g) surveyors have an extensive knowledge of the particular type of ship on which they carry out their work as relevant to the particular survey to be carried out and of the relevant applicable requirements;
 - (h) a system for qualification of surveyors and continuous updating of their knowledge is implemented;
 - (i) records are maintained, demonstrating achievement of the required standards in the items covered by the services performed, as well as the effective operation of the quality system;
 - (j) a comprehensive system of planned and documented internal audits of the quality related activities is maintained in all locations;
 - (k) the statutory surveys and inspections required by the harmonised system of survey and certification for which the recognised organisation is authorised are carried out in accordance with the provision set out in the Annex and Appendix to IMO Resolution A.948(23) on survey guidelines under the harmonised system of survey and certification;
 - (l) clear and direct lines of responsibility and control are established between the central and the regional offices of the recognised organisation and between the recognised organisations and their surveyors.

8. The recognised organisation must have developed, implemented and must maintain an effective internal quality system based on appropriate parts of internationally recognised quality standards and in compliance with EN ISO/IEC 17020:2004 (inspection bodies) and with EN ISO 9001:2000 (quality management systems, requirements), as interpreted and certified by the quality assessment and certification entity referred to in Article 11(1).
 9. The rules and procedures of the recognised organisation must be implemented in such a way that the organisation remains in a position to derive from its own direct knowledge and judgment a reliable and objective declaration on the safety of the ships concerned by means of class certificates on the basis of which statutory certificates can be issued.
 10. The recognised organisation must have the necessary means of assessing, through the use of qualified professional staff and pursuant to the provisions set out in the Annex to IMO Resolution A.913(22) on guidelines on implementation of the International Safety Management (ISM) Code by administrations, the application and maintenance of the safety management system, both shore-based and on board ships, intended to be covered in the certification.
 11. The recognised organisation must allow participation in the development of its rules and procedures by representatives of the administration and other parties concerned.
-

12.12 – Competition Law Statement

This meeting has been convened for the sole purpose of developing a framework to enable EU ROs to meet the technical cooperation and harmonisation requirements specified in Article 10 of the new EU Regulation (EC) No 391/2009 on Common Rules and Standards for Ship Inspection and Survey Organisations.

We are all competitors and shall remain so. We also intend to comply fully with antitrust and competition legislation as applicable to this Group and to each individual member of this Group.

Any issues relating to commercially sensitive matters such as prices (actual or potential), costs, compensation levels, individual customers and suppliers, markets, business strategy, terms of sale, upcoming bids, capacity levels and similar competition matters should not be raised at all, and if raised will be ruled out of order by the Chair. Anyone who introduces such a topic repeatedly will be asked to leave the meeting, and this will be recorded in the minutes.

If you notice that such a topic has been raised which is not immediately ruled out of order by the Chair, you should clearly and immediately protest, and should ask that this is recorded in the minutes. If you need to describe exact circumstances to illustrate your point, please do not mention any specific commercial information such as particular client names, product models, or specific prices or costs.

We will be adhering strictly to the agenda, which has been checked to ensure that all items are compliant with EU competition law.

We are here to discuss the difficult technical issues presented by the regulatory regime imposed on EU ROs under Article 10 of the Regulation on Mutual Recognition, and with that we turn to the specific requirements of Article 10.

Contact:

Chris Campbell
Chairman
EU RO Mutual Recognition Advisory Board

c/o Lloyd's Register Group Ltd
71 Fenchurch Street, London EC3M 4BS, UK
Phone: +44 (0)20 7423 2918
E-mail: chris.campbell@lr.org

American Bureau of Shipping ("ABS")
16855 Northchase Drive, Houston, TX 77060, USA

Bureau Veritas ("BV")
67-71, boulevard du Château, 92200 Neuilly-sur-Seine, France

China Classification Society ("CCS")
9 Dongzhimen Nan Da Jie, Beijing, 100007 China

Det Norske Veritas ("DNV")
Veritasveien 1, 1363 Hovik, Oslo, Norway

Germanischer Lloyd ("GL")
Brooktorkai 18, 20457 Hamburg, Germany

Korean Register of Shipping ("KR")
36, Myeongji ocean city 9-ro, Ganseo-gu, Busan, Seoul 618-814, Rep. of Korea

Lloyd's Register Group Ltd ("LR")
71 Fenchurch Street, London EC3M 4BS, UK

Nippon Kaiji Kyokai ("NK")
4-7 Kioi-cho, Chiyoda-ku, Tokyo 102-8567, Japan

Polski Rejestr Statków S.A. ("PRS")
Al. Gen. Józefa Hallera 126, 80-416 Gdańsk, Poland

RINAVE – Registro Internacional Naval SA ("Rinave")
Pólo Tecnológico de Lisboa, Lote 21, 1600-485 Lisboa, Portugal

RINA
Via Corsica 12, Genova, Italy

Russian Maritime Register of Shipping ("RS")
191186 St. Petersburg, 8, Dvortsovaya Nab., Russian Federation