Final Report

On the level reached in the process of harmonising the rules and procedures and on Mutual Recognition (MR) of certificates for materials, equipment and components, pursuant to Article 10.2 of Regulation (EC) 391/2009

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Study on Article 10.1 of Regulation (EC) 391/2009

Study on the level reached in the process of harmonising the rules and procedures and on Mutual Recognition (MR) of certificates for materials, equipment and components, pursuant to Article 10.2 of Regulation (EC) 391/2009

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Abstract

Regulation No 391/2009 and in particular Article 10 therein suggested that Recognised Organisations should harmonise their rules and procedures related to materials, equipment and components based on equivalent standards issued by them. As a result of the above, the EU ROs Mutual Recognition scheme was initiated.

Article 10.2 requires that the state of implementation of the aforementioned Regulation is examined to establish the level of progress. This study reviews the current implementation of the requirements of Article 10.1 through the analysis of available information from various sources and presents a critical overview of information available. The current implementation regime is also examined through questionnaires, interviews and case studies performed.

Overall, significant progress has been made and momentum has been developed thus far. While safety is considered at the highest level for all products included in the MR scheme, the current implementation needs further improvement and harmonisation of individual rules which can be delivered as the process matures over the next years. Additional information and dissemination of the overall MR process is also required engaging all marine industry. The benefits are clear but will live to their full potential when recognition of the scheme at a global level is achieved.

Executive summary

The European Commission issued in April 2009 the Regulation No 391/2009 (hereinafter referred to as "the Regulation") on common rules and standards for ship inspection and survey organisations to be followed by Recognised Organisations (ROs). Article 10 of this Regulation suggested that ROs should consult with each other and aim towards the harmonisation of their rules and procedures related to materials, equipment and components based on equivalent standards issued by them. As a result of the above, the EU ROs Mutual Recognition scheme was initiated in September 2009 consisting of an Advisory Board and a Technical Committee tasked with the investigation on the ROs Mutual Recognition (MR) of appropriate types of materials, equipment and components used and installed on-board ships based on EU ROs safety considerations. That led to the development of the lists of Technical Requirements for products (Tier 1, 2 and 3 as well as the future Tier 4) for Type Approval.

In order to assess the implementation of the suggested Regulation as per Article 10.2, the study herein includes a comprehensive review of all the work performed so far towards the application of the Regulation and in particular Article 10.1 thereof. Publications and press releases as well as other documentation available through the EC, EU ROs, SEA Europe and other relevant organisations were examined to establish the progress and impact of the Regulation.

This report also examines the availability of information regarding the developments under the scope of Article 10.1 of all stakeholders by reviewing all relevant internet sources and documentation available. The results of this review highlighted the variations in information available online. Some of the internet sources provided a wealth of information related to the MR scheme while several others had very limited, if any, information at all.

To this end, a questionnaire was developed and distributed to a wide range of marine stakeholders in an attempt to gather all views related to the MR certification process and assess its impact so far. The need for additional promotion and education for stakeholders in a global scale was evident through the results of this questionnaire.

Overall, investigating a total of 296 information sources on the internet, 309 sent questionnaires with 19.1% response rate, 11 interviews and case studies with manufacturers having experience with the application process for Mutual Recognition certification, this review has covered the views and opinions of all relevant stakeholders.

It transpires that there are still concerns over the impact of the Regulation at a global scale regarding liability and contractual responsibility as they are yet to be identified. Difficulties in gathering information were encountered when the cost of MR certification was questioned. Through the individual experience of the manufacturers that have achieved MR certification, the cost may vary compared to the traditional Type Approval certification process. Given the overall reduction in administrative burden, the industry reports satisfactory results even though witnessed testing is an obstacle in cases. Unfortunately, in areas of non-acceptance of the MR Certificate multiple Type Approval Certificates are still necessary overshadowing the aforementioned benefits especially when considering the additional burden of strictest rules and witnessed testing.

In a global market and with the current well-established practices it will take some time before the MR Certificate can be fully employed and used for the current list of products; while extending to additional complex items would require a more mature process. The above is supplemented by the limited number of certificates that have been issued thus far while the MR certificates greater impact is yet to be identified.

In summary, significant ground has already been covered in complying with the Regulation and including a wide variety of products in Tiers 1 to 3 (while Tier 4 items have already been suggested). However, the harmonisation of individual EU ROs' rules is not achieved and individual Type Approval certificates are still issued. Several attempts are currently performed in engaging all marine stakeholders while additional dissemination events of the MR scheme will be beneficial. Though, challenges are encountered as the MR process may affect current practices of organisations that are governed by different regulations in several countries worldwide especially outside EU boundaries.

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Abbreviations

AB	Advisory Board
ABS	American Bureau of Shipping
ACBs	Air Circuit Breakers
BIMCO	Baltic and International Maritime Council
BMEA	Busan Marine Equipment Association
BV	Bureau Veritas
CCS	China Classification Society
CESA	Community of European Shipyards Associations
CIMAC	International Council on Combustion Engines
DNV	Det Norske Veritas
EC	European Commission
EG	Risk Expert Group Risk
EMEC	European Marine Equipment Council
EMSA	European Maritime Safety Agency
EU ROs	European Union Recognised Organisations
EUROMOT	European Association of Internal Combustion Engine Manufacturers
GL	Germanischer Lloyd
HGK	Hrvatska Gospodarska Komora
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
LOVAG	Low Voltage Agreement Group
LR	Lloyd's Register of Shipping
MARPOL	International Convention for the Prevention of Pollution from Ships
MCCBs	Moulded-Case Circuit Breakers
MR	Mutual Recognition
NKK	Nippon Kaiji Kyokai,
OCEAN	European Ship Suppliers Organization
OEM	Original Engine/Equipment Manufacturer
PRS	Polski Rejestr Statków S.A.
RINA	Registro Italiano Navale
RINAVE	Registro Internacional Naval
RS	Russian Maritime Register of Shipping
SEA	Ships and Maritime Equipment Association of Europe
SME	Small/Medium Enterprise
SOLAS	International Convention for the Safety of Life at Sea
TA	Type Approval

TAC	Type Approval Certificates
TC	Technical Committee
TR	Technical Requirements
URs	Unified Requirements
VDMA	German Engineering Federation

1. Introduction

Flag administrations can often authorise Classification Societies to carry out surveys and inspections as required by SOLAS (regarding safety of life at sea) and MARPOL (related to the protection of marine environment). The Classification Society acting on behalf of the flag administration is known as Recognised Organisation (RO). Each RO is accountable to the flag administration for the work that it carries out on the administration's behalf.

To ensure access of their products to the markets, marine equipment suppliers need to apply for certificates issued by different Classification Societies. However, they are currently required to comply with different sets of rules since private Class rules are not harmonised.

For decades the absence of mutual recognition of Class certificates between Classification Societies resulted in the need for re-certifications. In order to be able to compete on a global scale (and to have access to a wide range of ship-owners who select a Classification Society to supervise the construction of a ship), marine equipment suppliers were required to obtain, for the same piece of equipment, a certificate from several European Union Recognised Organisations attesting the conformity with very similar requirements and sometimes based on identical tests carried out at the same laboratories (which often happen to be the manufacturer's).

Even though mutually recognised certificates have been used for years in other sectors, such as aviation (EU-USA, 2011), in marine equipment this had not been implemented in grand scale yet. Some work in this direction had been performed by MarED group (MarED, 2014) which is intended to act as a "*conduit for the exchange information between members in order to harmonise technical aspects and by solving unclear situations in reaching a consensus on the procedures of the EC Type Examination and surveillance modules in order to avoid differences between Notified Bodies*" (http://www.mared.org/). However, at that stage it was not obligatory for the ROs to neither harmonise procedures nor accept certificates from other ROs within the EU.

This problem was addressed during the negotiations of Regulation (EC) No 391/2009 (hereinafter referred to as "the Regulation") and while the matter of whether a product is to be certified by one or more Classification Societies is commercially important, it does not compromise safety. Moreover it was of paramount importance to ensure that one single certificate (e.g. a Mutually Recognised (MR) certificate) can provide the same level of safety as all relevant certificates issued from various ROs. This would provide new opportunities for the manufactures in potentially reducing administrative cost and also widening the markets they could reach. Assessing the impact of the Regulation in this respect has been an ongoing target (DMA, 2013). It was introduced in the directorate issued in 2014 (EU RO, 2014) and will also be attempted in this report.

Since 2009 and the Regulation by the European Commission, EU ROs were required to formalize both the harmonisation of requirements for accreditation of the mutual recognition certificate and the processes for all the relevant parties to both accredit and mutually recognise such certificates. Additionally, the European Marine Equipment Council in 2010 issued a report on the implementation of the Regulation (EMEC, 2010). The initial Technical Requirements (TR1) were issued in 2012 (EU ROs, 2012)

including materials, equipment and components of low safety impact. Supplements to this report were issued in 2013 and 2014 (EU ROs, 2013, 2014).

Further to the reports on the progress of the MR implementation process other relevant parties have since reported on the Regulation in their respective areas (PRS 2013, DMA 2014).

Similar reports based on questionnaire responses have been prepared in the past but to a more targeted audience than the current study (SEA Europe, 2014). Another study requested by the European Parliament was also recently issued. This one was related to the implementation, enforcement and effectiveness of the measures in the Third Maritime Safety Package (Milieu Ltd, 2014). Part of this Package is the Regulation discussed in this report, also investigating the implementation of the requirements of the Regulation, the extent of harmonisation of Technical Requirements among EU ROs and some of the obstacles faced.

Finally as it was mandated from the Regulation several actions have been taken to ensure that the industry is aware of the process in place and that all relevant stakeholders are informed of the changes and are also able to provide input to make the MR widely accepted and enable transparent proceedings that will benefit the industry (SEA Europe, 2014).

This report is part of the requirement of the Regulation in order to identify the impact of the implementation of Article 10.1 so far and investigate the extent or existence of the benefits associated with it in the current date. In this respect, the next section of the present study will discuss the aims and objectives of this report. Section 3 reviews the work performed so far and the current progress of the implementation process. In Section 4 the Methodology followed to implement this report is outlined. The results are presented in Section 5. In Sections 6 and 7 the discussion of results and the conclusion are reported respectively along with recommendations.

The present report also includes a number of Appendices. Appendix I shows the efforts demonstrated from EU ROs in way of meetings since 2009. Appendix II shows all the current products included in Tier 1-3 for which MR certificates can be issued together with the forthcoming Tier 4 list of products due for July 2015. Appendix III shows all the online sources accessed in order to retrieve any MR relevant information. Appendix IV provides details on the questionnaire that was used in order to identify the Regulation impact thus far, addressing the wider marine community. Moreover, Appendix V includes copies of all the existing EU ROs MR issued certificates (as of January 2015). Finally, Appendix VI includes all the responses to individual questions of the questionnaire where graphs were needed.

2. Main Aim and Objectives

2.1 Introduction

The main aim of this study is to provide an analysis of the current state in the area of mutual recognition of classification certificates for marine materials, equipment and components, following the provisions of Article 10.2 of the Regulation

> *"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."*

The study will assist the Commission in its assessment of various aspects of the level reached by the EU ROs in the process of harmonising of their rules and procedures and of the Mutual Recognition of their certificates for materials, equipment and components.

Ultimately, the study will provide a detailed report of the progress achieved so far on the implementation of the agreed Mutual Recognition scheme. This study will aim to clarify whether the Mutual Recognition scheme is having a real impact on safety, market access, cost and assess the need for mutual recognition in practice for the efficient functioning of the market for marine materials, equipment and components. It will investigate whether for some areas the proposed scheme is working (if this is the case) and if there are profound reasons why it would not work in certain other areas. Last but not least the study will focus on the steps that have already been taken and indicate what can be done to further improve the Mutual Recognition scheme in the foreseeable future.

2.2 Tasks

The study comprises a number of tasks which will address the main aim and specific objectives adhering to Article 10.2. More specifically, the following tasks will be addressed.

Task 1: Review of existing studies/reports on the Mutual Recognition within ship classification related to equipment materials and components

The review and analysis will include the most updated documents and information published either by EC, ROs as well as any other marine stakeholder in order to establish the current state in terms of mutual recognition among ROs for marine equipment and components and provide an introductory step into the mutual recognition scheme as developed by the EU RO Mutual Recognition Group. In this respect the introduction to the scheme as developed by the EU RO mutual recognition group will be fully described and demonstrated. Additionally, the timeline for the presentation and assessment of the TR1, TR2 and TR3 equipment, materials and components will be carried out also involving the identification of potential additional

appropriate products from the Type Approval category which could be included in the scheme.

Task 2: assess ROs state of recognition of equipment, materials and components

In Task 2 the aspects that will be considered include the Regulation's impact on the development of ROs standards/procedures, accompanied by an analysis of the scheme's compliance with the Regulation. In this respect, the ROs guidelines and recommendations as incorporated and described in their particular publications will be examined. Additionally, the safety impact of the proposed scheme will be assessed establishing areas where mutual recognition cannot be achieved also providing the reasons for this. The cost effectiveness, time effectiveness and administrative burden will be also examined while any changes incurred will be identified with regards to the implementation of the TR1, TR2 and TR3 marine equipment, materials and components.

The above will be achieved through a specific questionnaire that will be prepared and distributed to all relevant stakeholders such as ROs representatives while a number of structured interviews will be also performed in order to examine the above mentioned impact. The returned questionnaires will be analysed using well established soft tools and employing well-known methods and techniques.

Task 3: assess manufacturers, shipyards, ship owners' state of involvement in the mutual recognition scheme on equipment, materials and components

Task 3 will involve the examination and assessment of the impacts of the mutual recognition scheme among manufacturers, shipyards, ship owners including commercial aspects as well. In this respect, the manufacturers, shipyards, ship owners' opinions, suggestions and comments will be also considered in order to establish whether there has been enough time and access to the mutual recognition scheme results and findings and eventually whether these stakeholders' opinion has been also taken into account.

In a similar way as in the case of Task 2, the above will be achieved through a questionnaire that will be prepared and distributed to all relevant stakeholders while interviews will be also performed in order to examine the above mentioned impact. In a similar way, questionnaires will be analysed using similar soft tools while employing well-known methods and techniques.

Task 4: case study on assessing the implementation of the mutual recognition scheme for a particular piece of equipment, materials and/or component

Task 4 will look into generating a specific case study on assessing the implementation of the mutual recognition scheme for particular piece of equipment, material and/or component belonging in the TR1, TR2 or TR3 group. This Task will also investigate the harmonisation of the ROs certification requirements in practice while the way on which the harmonisation has been achieved will be also examined.

Furthermore, additional input in terms of this Task will be provided by investigating the extent to which the Industry has used the mutually recognised certificates so far. Companies that have applied for and obtained such certificates will be contacted to examine the actual application of this process. Details presented in the case study will include the companies' views and comments while their suggestions will be also

accommodated in order to evaluate all legal, contractual and technical aspects and liability issues. Additionally, this task will also include suggestions on additional types of equipment, materials and components that may not be present in the current lists of products, thus incorporating the safety critical aspects related to ROs selection of products and classification procedures to be standardised, certified and harmonised across all ROs.

3. Critical review

3.1 Introduction

The review and analysis of existing studies and reports on the Mutual Recognition within ship classification related to materials, equipment and components included the most updated documents and information published by EC, EU ROs as well as any other marine stakeholder in order to establish its current state. It also provided an introductory step into the mutual recognition scheme as developed by the EU RO Mutual Recognition Group. In this respect, the introduction to the scheme as initially developed has been fully described and demonstrated. Additionally, an overview of the timeline for the presentation and assessment of the TR1, TR2 and TR3 materials, equipment and components has been carried out.

This section outlines the Regulation and the work performed to date in the direction of implementing the obligatory changes in the current framework. The proceedings followed and the resulting rules and regulations are discussed as well as the list of products available for Mutual Recognition Certification and the process for gaining such a certificate.

3.2 Critical review and state-of-the-art

The Regulation refers to common rules and standards for ship inspection and survey organisations. Article 10 places an obligation on EU ROs to harmonise their classification rules and set up a system of mutual recognition of their classification certificates for equipment, material and components. This resembles the philosophy of the New Approach to technical harmonisation and standards (EU, 2004), as the problem to resolve (unjustified technical barriers) is of similar nature.

In particular, as stated in Article 10.1 of the aforementioned Regulation:

> *"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.

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."

After the Regulation was adopted, the EU ROs consulted with each other and set up the EU RO Mutual Recognition Group comprising of representatives of each EU RO. This formal setup was defined and became operational on the 16th of September 2009 and included an Advisory Board (AB) and Technical Committee (TC). The role of AB was to administer the process and adhere to time schedules while setting out the technical requirements that are the main component of the implementation of the MR Certificate. At the same time it was the role of TC to provide all the technical recommendations to AB regarding the requirements as well as the materials, equipment and components that could be accessed for each stage of the implementation of the requirements of Article 10.1. Since then several meetings have taken place which are reported in Appendix I.

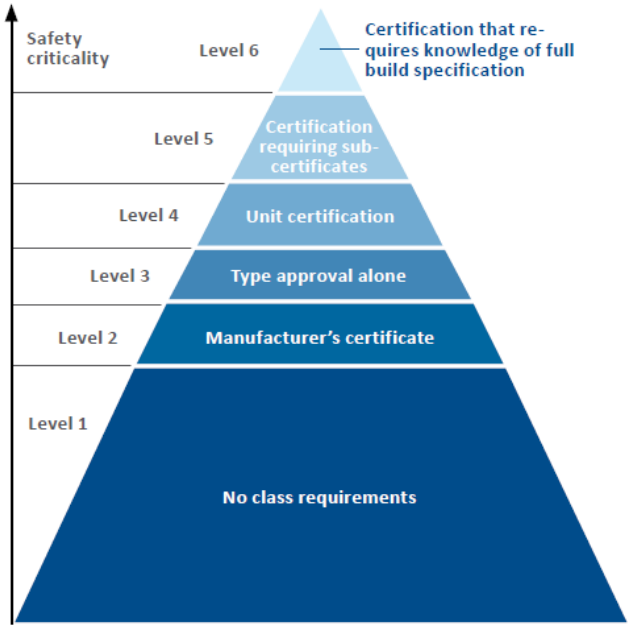

Figure 1: Classification safety hierarchy of materials, equipment and components (EU ROs, 2012)

Throughout those meetings the fundamental objectives were set out that were later followed through the implementation of the requirements of Article 10.1 of the Regulation. The above referred to the implementation of the Regulation without compromising safety while also including all relevant stakeholders such as Insurance Companies, EU ROs, EC-DGMOVE, Other Flag States and the Industry, to ensure a common understanding was reached regarding the end result (EU ROs, 2013).

The EU ROs' overall 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 developed an approach consisting of 6 Levels of materials, equipment and components, based on commonly agreed safety considerations as shown in Figure 1 (EU ROs, 2012) starting from the simplest ones to the most complex items.

In order to create a common ground for deciding what would be the appropriate approach to comply with the Regulation, all materials, components and equipment were assigned a level of safety criticality. Accordingly the focus was placed on the lowest level for which certification was agreed upon (i.e. Level 3 of products as depicted in Figure 1). One of the TC tasks was to decide on the technical requirements for each product within Level 3. Additionally, the products with the least impact to safety were introduced to the first Tier of products to be available for MR Certification. To comply with the Regulation and to ensure that safety is not compromised, the most rigorous and demanding standards for each of those products were brought together to create the products' technical requirements (EU ROs, 2012, 2013, 2014). Opt in and out criteria were developed to assist in the process of choosing the appropriate materials, components or equipment for each Tier of items using a structure risk based approach.

The latter allowed for the relevant classification Type Approval certificate for a specific product (i.e. equipment, material or component) intended for a ship, to be recognised by the EU RO classing the ship. The materials, equipment and components which have been added in Tiers 1-3 (as well as future Tier 4) can be seen in Appendix II (EU ROs, 2012, 2013, 2014).

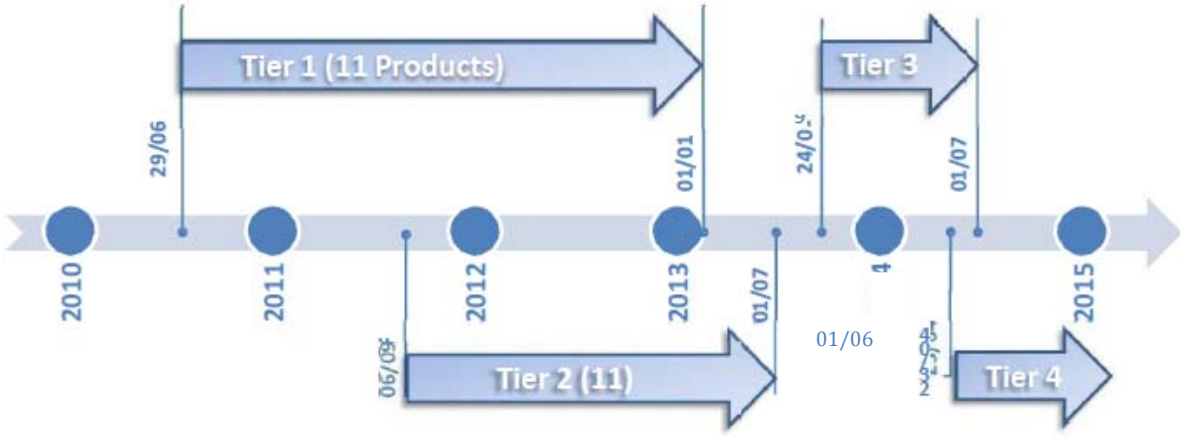

Figure 2: Timeframe for the completion of the four Tiers (EU ROs, 2012)

The time needed for the creation of the four Tiers is illustrated in Figure 2. Additionally constant feedback from the industry for each of the components was received by circulating final drafts of the technical requirements before finalizing the process, allowing for greater transparency and better acceptance of the requirements. A maintenance process was also established for the Technical Requirements of the agreed Tiers of products providing for constant updates as seen in Figure 3.

Furthermore, each RO has established internal processes to disseminate information regarding the state of the MR Certification scheme and educate surveyors. Also, dedicated personnel was assigned to overlook the internal implementation of the Regulation as well as the distribution of information and addressing enquires.

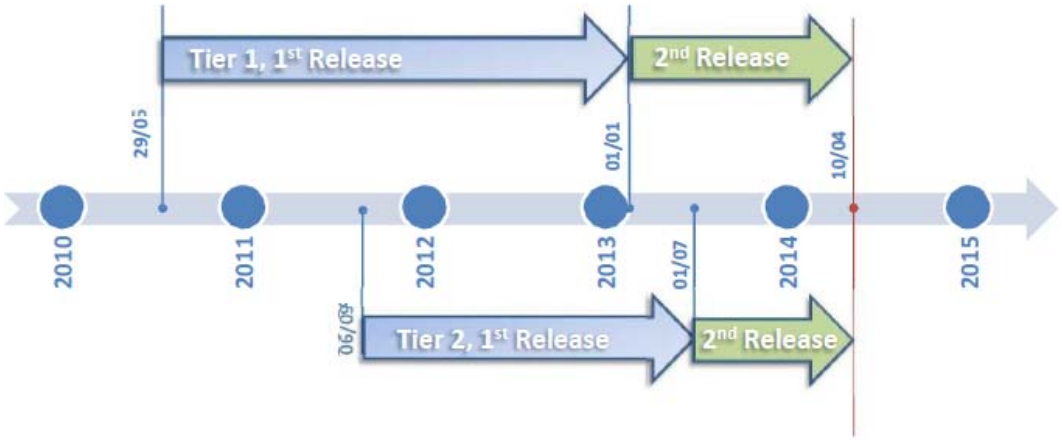

Figure 3: Maintenance process for Tiers 1 and 2 (EU ROs, 2012)

The process for applying for the MR Certificate was initially agreed on and reported in EU ROs 2012 (Figure 4). Additionally an alert system was put in place to allow for non-compliance or refusal of MR certificates to be communicated to all relevant stakeholders and all EU ROs. Finally the www.euromr.org website was released in September 2014 so that awareness is raised and transparency is maintained.

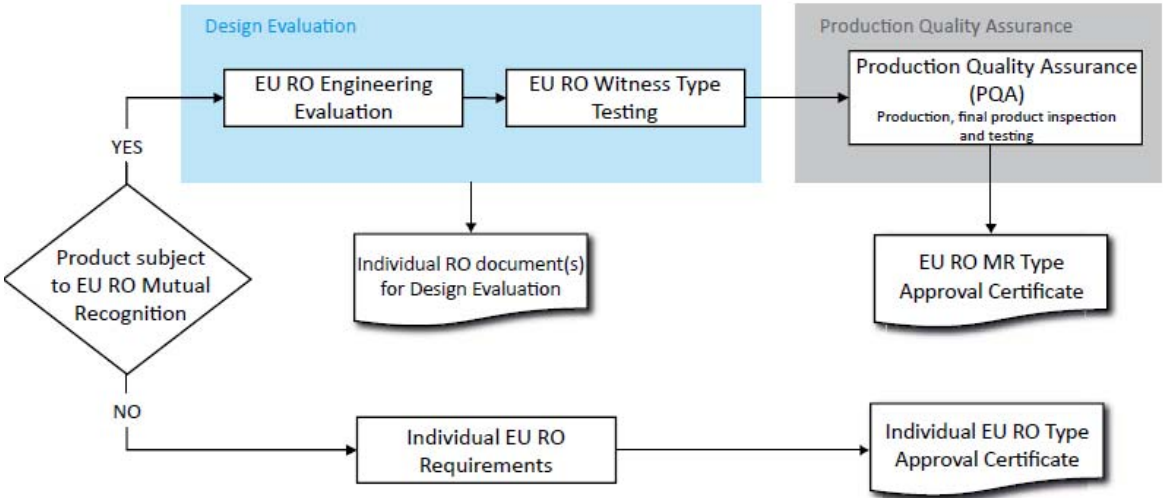

Figure 4: Application process for EU MR Certificate (EU ROs, 2012)

Moreover, a review of the information gathered from various sources and reports has outlined the challenges as well as the use of the MR certificates in the past few years (SKEMA, 2010; SEA, 2014; BALance, 2014). Throughout these reports the main issues can be summarised as challenges in global recognition of the MR Certificate, products not yet listed for MR and information available to stakeholders.

Even though the MR Certificate, as the regulatory authority enforcing it, is more relevant to companies with activity within the EU, due to the globalised nature of the entrepreneurial activity within the sector, it is imperative that a certificate gained within EU is also recognised by other organisations and states where the company may be interested to provide products for, or more importantly already has significant part of its business in.

Additionally the products mentioned in Tiers 1-3 include a certain range of products (non-safety critical) which could be only relevant to certain companies. As a result, and as is often commented on previous attempts to record the market's opinion on the MR certification, several companies are not interested in receiving MR Certificates due to supplying products outside the scope of the Tiers.

A different reason for not choosing the MR certificate often documented is the concern about the procedural impact the MR process may have on established testing and certification procedures that are already used for company products. This for some companies could mean a witnessed testing procedure is necessary or a more rigorous standard is to be met for a product that already uses an EU RO certificate.

At this point, it is important to note that an underlining reason does exist for not applying for an MR certificate even when the product is in the Tiers and the standards to be met are practically identical. That is when the product in question is a sub-part or small part of a larger system. The larger system might involve a difficult process of certification that is depending on the smaller parts having certificates of certain EU ROs, or certificates that comply with specific flag rules and regulations possibly outside the EU. Such complicated processes are not uncommon and can affect the choice of EU RO a smaller company will need to make in order to apply for a certificate.

Additionally, Larger Enterprises (LEs) are usually reporting other issues with the potential use of the MR Certificate within their product portfolios. Their concerns are usually linked to safety and legal aspects, especially when they supply products of a higher safety impact that are not yet included in the Tiers but may be included in the future. Fundamentally, those last concerns originate through the fact that the MR Certificate is still in its early stages of application and companies still face challenges in incorporating it in their current business practices.

Furthermore, the initial review of relevant documentation and reports revealed that a proportion of stakeholders outside the scope of ROs would like to be more involved in the formation of rules and regulations that are currently being developed as part of the implementation of the Regulation. The latter is related to the lack of available information regarding the progress of the MR implementation so far. Especially Small and Medium size Companies (SMEs) had less information compared to Large Enterprises (LEs) which were more involved as they are usually placed in a better position in gaining relevant information.

Some work towards greater involvement and distribution of information was performed during the SEA Europe workshops where a variety of stakeholders were present. Further, impartial information regarding the general understanding of the processes in place and the scope of the MR certificates was gathered through the workshops as well. This has again similarly pointed out the issues with global recognition and the impact of increasingly demanding regulation in current practices as products that might enjoy certification from one EU RO at the moment might need to go through much more rigorous procedures to gain an MR certificate in the future.

Contemplating the above, the existing literature also reflects that a major drive from the manufactures' point of view is related to the reduction of cost and administrative burden when applying for the MR process. Furthermore, the MR Certificate is not globally accepted while it is verified that it enjoys little acceptance at present, partially due to the infant stages that the MR process is currently in. As such, companies that want to supply products outside the EU will still need to certify their products through various EU ROs depending on the target market. This takes them back to issuing multiple certificates of which the MR could be one. It is also considered that at the

same time, one or more of the other certificates will already cover the demands of the various local markets within the EU and as such muting the MR Certificate.

4. Methodology

4.1 Introduction

This section provides an overview of the methodology followed to produce this report. Review of internet sources of information was performed to assess awareness. The results were taken into consideration in designing a questionnaire and formalising questions for interviews. Finally a case study was performed in order to observe the current state in terms of the actual application of the MR certification process.

The developed methodology follows a minor restructuring of the original task description which however complies with the original aims and objectives on the agreement set out for this study (e.g. the interviews as well as the questionnaire developed were targeted to all different groups of marine stakeholders maintaining a consistent representation of all views).

4.2 Methodology flow

The flow chart in Figure 5 describes the process that was followed in this study in fulfilling the aims and objectives laid out in the previous section.

Figure 5: Methodology flow chart of the present study

The review of internet sources was performed in two stages using web site sources as well as document copies of material available on web sites. The first stage was completed by July 2014. A second stage was completed by December 2014 to ensure

the most updated information was used for this study with regards to information available on the web and otherwise.

In the meantime interviews have been also performed in order to examine the above mentioned impact. The interviews were both formal and informal and spanned in duration from of a few hours to a full meeting over two days. Some interviews were performed in person while others via teleconferencing (e.g. Skype calls). All the interviews took place between August and October 2014 assisting in the preparation of the present report.

Based on background work on the results of the review and the information gathered from the interviews a questionnaire was produced. The questionnaire was finalised after several versions were produced which were updated using feedback received. The final version was ready in October 2014 and was distributed to marine stakeholders including ROs, Manufacturers, Suppliers, Marine and Maritime Associations, Shipyards, Ship Owners, Flag State Authorities, Regulatory Authorities, Insurer and Protection and Indemnity Clubs, Charterers and others in a list of more than 300 individual stakeholders.

The generation of a specific case study on assessing the implementation and cost implications of the mutual recognition scheme for a particular piece of equipment, material and/or component belonging in the TR1, TR2 or TR3 group, has been performed as well. Another important issue included the investigation of the harmonisation of the ROs certification requirements in practice. Finally the results of all the aforementioned stages are gathered and presented in the following sections of this report.

4.3 Internet Sources

In order to acquire the most updated and widely available material across the marine industry, a list of internet sources was compiled including 296 weblinks of stakeholders across the marine sector. Table 1 presents a summary of the group of organisations and the total number of sources identified through the online survey.

No	GROUP OF ORGANISATIONS	Links
1	Recognised Organisations	11+1
2	Manufacturer Associations	23
3	Flag States	115
4	Associations	41
5	Industry Links	17
6	Intergovernmental and International Organisations	19
7	International Maritime Law Associations	27
8	Other Organisations	16
9	Marine News	10
10	Other Useful Links	16
	Total	**296**

Table 1: Summary of internet sources

The full table of internet sources used for this study including the links and a brief description of the information found is shown in Appendix III.

4.4 Interviews

In order to achieve the independent, objective and thorough nature of the present study in terms of the investigation and assessment on the Regulation's impact, a number of stakeholders in the maritime industry were contacted and interviews were performed. The above process included Flag authorities, EU ROs, marine equipment manufacturers, ship operators/owners/managers among others.

The interviews were mostly performed through face to face meetings with all interested parties. In order to maximise the outreach of this study teleconferences were also arranged when meetings were not possible. All the above took place at different locations in various places within EU and worldwide so as to enhance the outcome of this study and account for different stakeholders' views.

4.5 Questionnaire

In order to prepare the questionnaire, the aspects towards assessing the ROs state of recognition of materials, equipment and components including the Regulation's impact on the development of EU ROs standards/procedures were considered, also accompanied by an analysis of the scheme's compliance with the Regulation. The above have been achieved through the specific questionnaire that has been prepared and distributed to all relevant stakeholders such as EU ROs representatives, manufacturers, suppliers, shipyards/shipbuilders, ship-owners, flag state and regulatory authorities, insurers/P&I clubs and charterers.

The design of the questionnaire took into account the methodology described in reports by Brace (Brace, 2008) and Groves (Groves, 2009). The above consider the development of the structure of the questions that would cover the various aspects of this study and provide effective results that could be analysed in a meaningful way so as to address the variety of tasks set out in the previous section. Additionally the method for testing and evaluating surveys presented by Presser (Presser et al, 2004) was used to assess the results which are presented in the following section. Software tools were used while well-known methods and techniques were employed to assess the results of the questionnaire.

The complete Questionnaire can be found in Appendix IV. Moreover, the link to the online Qualtrics soft copy is the following:

https://strathenQ.eu.qualtrics.com/WRQualtricsSurveyEngine/?SID=SV_1zB51fQFfTsUt1P&Preview=Survey&_=1

The questionnaire in the editable pdf form was distributed via email as an alternative method to the link provided and was also printed and distributed as a hard copy where other means were not available.

The above link was active for two months and distributed to a wide range of marine stakeholders (total of 306 individuals). As the individuals were encouraged to distribute the survey to colleagues and other interested parties it is likely that additional stakeholders received the link. The aim was to acknowledge and record the views, requirements, interests and expectations of as a wide spectrum of participants as possible in order to ensure the objectivity and independent spirit of the present study. The time window was considered adequate for all interested parties to complete

the survey; thus allowing for satisfactory time to process the questionnaire replies, achieve adequate results and submit the final report within the predefined time frame.

An extract of the questionnaire is shown in Figure 6. In this respect, the questionnaire is demonstrated as it was presented when accessed through the online link when distributed to all relevant contacts via email. This link was the primary source of information so as to avoid the distribution of hard copies. However, if hard copies were needed, a pdf version of the questionnaire was available. The link was created using Qualtrics software which is a well-established tool within the field of web surveys while it also offers a variety of tools for further elaboration of the information collected.

The structure of the questionnaire included initial sections with generic information required (e.g. 'In which of the following categories does your professional identity fall under?', 'What is the size of your enterprise/organisation?' etc.)

The following sections of the questionnaire, additional information was asked including more specific and targeted questions (e.g. 'Are you aware of any updates/developments towards the harmonisation of classification rules by the Recognised Organisations (EU ROs) since the implementation of Article 10.1 of the Regulation, etc.).

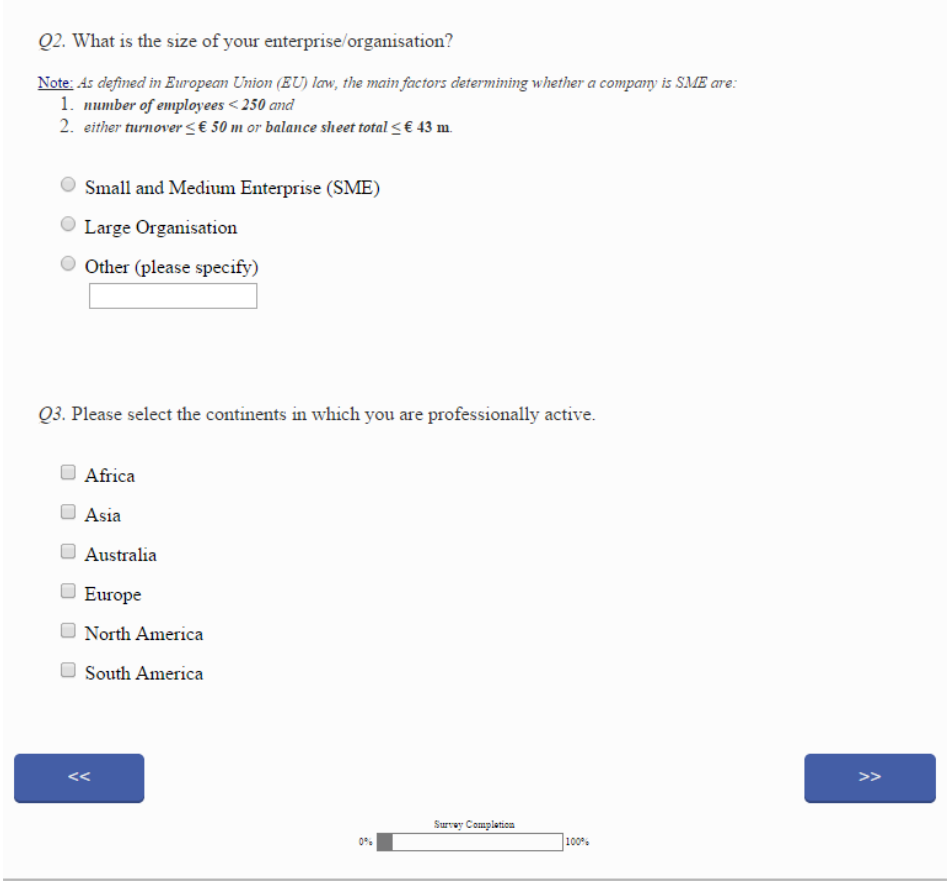

Figure 6: Questionnaire soft copy sample as shown in Qualtrics

Moreover, some questions that were dependent on previous questions were hidden when not necessary in order to make the questionnaire more compact. At the bottom of each page of the online questionnaire, a process bar was displayed to indicate the time needed (progress) for completion. The above constituted useful tools used in

order to create a user friendly interface while also increasing the potential of the questionnaire in an attempt to maximise the response rate.

4.6 Case study

In order to perform the suggested case study, contact with the companies or the manufacturers that have already applied and have been issued with an MR certificate was attempted. A list of all the companies having successfully received the MR certificates is presented in Table 2. It is worthwhile mentioning that not all companies' headquarters exist within EU (e.g. some companies are based in USA, Taiwan, S. Korea, etc.).

Company	Certificate	Company website
Hatteland Display AS	MR-A-1 MR-A-2 MR-A-6	http://www.hatteland-display.com/contact_us.php
ISIC A/S	MR-A-4 MR-A-8	http://www.isic-systems.com/contact/
Marine Service Jaroszewicz S.C.	14.09101.381	http://www.epyresin.eu/1/index.php?option=com_content&task=blogsection&id=21&Itemid=78
Moxa Inc.	MR-A-5	http://www.moxa.com/solutions/maritime/web/contact.htm http://www.moxa.com/about/Contact_Moxa.aspx
ORION Technology Co., Ltd.	MR-A-3	http://www.oriontechnology.co.kr/_eng/sub/sub04-1-1.php
Pentair Thermal Management LLC	14.01285.315 14.01286.315 14.01287.315 14.01288.315 14.01289.315	http://www.pentairthermal.co.uk/support/contact-us/index.aspx
Winel BV	14/00072MR	http://www.winel.nl/contact-winel.html

Table 2: Contacted companies/manufacturers having applied and received MR certificates

5. Results

5.1 Introduction

This section presents the material gathered throughout the initial stages of the present study from all relevant sources and demonstrates the initial results. In the following paragraphs the findings of the state-of-the-art review and the questionnaire are presented as well as the outcomes of interviews and case study performed within the scope of this study.

5.2 Information sources

The analysis of the general information observed in the EU ROs' websites that participated in the development and establishment of the MR certificate proved that all the ROs have adequate information available in their individual websites. In this respect, all websites provide references to a number of sources including the Regulation and information on the MR certificate. It is also important to mention that in some cases information was available through the list of approved products in the database system of each EU RO.

The common EU RO group website is well structured including a plethora of information such as the processes in place for acquiring an MR Certificate as well as the EU ROs that participate in the MR scheme. Additionally it provides information for applying for an MR Certificate, the developments underway for the upcoming Tier of products and the technical requirements of existing products in Tiers 1 to 3. The common EU ROs website also includes a news list of all relevant published information and reviews collected from stakeholders in various occasions. Finally links to all EU ROs websites are available to guide potential applicants further.

Regarding individual EU ROs' weblinks, information found on the ABS website included classification, certification and Type Approval information using the Regulation. A list of products is available and information related to them is given. In the BV website when searching for equipment and materials some information was displayed on the Tiers of products listed for MR certification. The same information was available on the CCS website. On the DNV GL website information was related to the approved products and manufacturers in relation to the MR certificate and the Regulation.

In the KR website a wealth of material on the EU ROs and MR process including updates and current procedures was available. It included information of all products listed in Tiers 1 to 3 together with general information on the certificates. Information on documents to be submitted and the application form were also included while the above were easily traceable. Moreover all this was presented in a simple manner and user-friendly informative interface.

In the LR website the Regulation and EU RO publications (including supplements) were available too. With regards to the NKK website, the pdf documents of the same publications were available. Additionally this information was available on the RINA website (generic information included) while the Type Approval certificates on the RS website included a reference to the MR as well. In the CRS site Type Approval products, approval information for manufacturers and service suppliers were available.

Moreover, on the PRS site the news section was updated to provide information regarding the Regulation and the list of products available for MR certificates.

One of the important findings of the online sources review included additional information retrieved through the EU ROs Group website as shown in the following link:

http://www.euromr.org/links-to-mr-certificates

The latter was related to a number of MR certificates already approved and issued (14 in total globally) as shown in Table 3. A copy of all the currently issued certificates can be found in Appendix V. All the MR certificates are issued for a duration of five years which is the same as the individual EU ROs Type Approval (TA) certificates.

Additionally, within the group of links to manufacturers' sites, one of the most informative is the SEA Europe that includes a list of publications and press releases with information on all aspects of the MR certification process. Additionally, material on recent workshops and information to industry are also included highlighting the need for one single MR certificate. The Regulation with all the published reports on the implementation of all Tiers of products thus far are shown too. In relation to the above, the EU ROs publications in pdf format were available on EUROMOT's website and articles referring to the MR website were available on the VDMA site as well.

Certificate Number	Company	Country	Product category	Number of products covered	Issue date	Duration (years)
MR-A-1	Hatteland Display AS	Norway	Monitors, Terminals	17	2013-10-03	5
MR-A-2	Hatteland Display AS	Norway	Monitors, Terminals	17	2013-10-03	5
MR-A-3	ORION Technology Co., Ltd.	Republic of Korea	Sensors	1	2014-01-29	5
MR-A-4	ISIC A/S	Denmark	Monitors, Terminals	6	2014-06-19	5
MR-A-5	Moxa Inc.	Taiwan	Computers and Programmable Logic Controllers	3	2014-06-17	5
MR-A-6	Hatteland Display AS	Norway	Computers and Programmable Logic Controllers	18	2014-07-11	5
MR-A-8	ISIC A/S	Denmark	Monitors, Terminals	33	2014-09-29	5
14/00072MR	Winel BV	The Netherlands	Venting systems	14	2014-09-19	5
14.09101.381	Marine Service Jarosqewicz S.C.	Poland	Reisin Chocks	1	2014-02-25	5
14.01289.315	Pentair Thermal Management LLC	USA	Electric cables-Heating cables	7	2014-04-03	5
14.01288.315	Pentair Thermal Management LLC	USA	Electric cables-Heating cables	1	2014-04-03	5
14.01287.315	Pentair Thermal Management LLC	USA	Electric cables-Heating cables	1	2014-04-03	5
14.01286.315	Pentair Thermal Management LLC	USA	Electric cables-Heating cables	2	2014-04-03	5
14.01285.315	Pentair Thermal Management LLC	USA	Electric cables-Heating cables	2	2014-04-03	5

Table 3: List of MR certificates issued by EU ROs -DNV GL (7), LR (1) and RS (6)

From the Intergovernmental and International Organisations the one noteworthy site was the EMSA website that included information on all the EU RO publications also including the most recent supplements.

On the other hand, a more oblique result is illustrated in Figure 7. In general, from the 296 links to organisations and stakeholders across the industry and Flag states, only 27 included either generic or specific information on the Regulation (last updated December 2014).

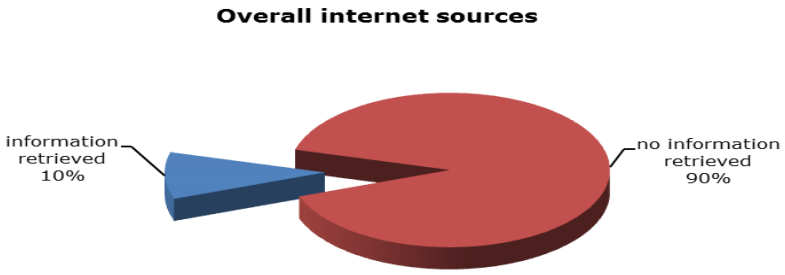

Figure 7: Overall availability of information on internet sources

The majority of information is presented through the EU ROs' and SEA Europe websites. Very few other manufactures had information while there was very little information available in Flag States' websites too. In more detail, EU Flag authorities had in their great majority no information at all on their websites apart from Germany and Norway. The industry and International Maritime Law Associations' had no information either. Also a few of the marine News websites had links and references to the MR Certification. Table 4 presents a breakdown of the number of internet sources per category over the number of internet sources that included any information relevant to the subject of mutual recognition as per the Regulation.

No	GROUP OF ORGANISATIONS	Links	Links with information
1	EU Recognised Organisations	12	12
2	Manufacturer Associations	23	4
3	Flag States	115	2
4	Associations	41	2
5	Industry Links	17	1
6	Intergovernmental and International Organisations	19	4
7	International Maritime Law Associations	27	0
8	Other Organisations	16	0
9	Marine News	10	2
10	Other Useful Links	16	0
	Total	**296**	**27**

Table 4: Number of internet sources with information on the Regulation

5.3 Interviews

Along with the information traced through the online sources and the questionnaire, a number of discussions and interviews have been performed in order to achieve a thorough view into the implementation of the Regulation. In this respect, this section presents the outcomes of the above mentioned interviews.

Table 5 presents a list of interviews and meetings that took place either in person or through teleconferencing with marine stakeholders. Interviews occurred with various stakeholders in order to assess both the local and global impact of the Regulation.

For the purpose of this report meetings were performed with individual manufacturers as well as EU ROs, shipowners, insurers, Flag State Authorities and Marine Associations. The majority of interviews were performed with key stakeholders (i.e. Manufacturers and EU ROs) as well as other maritime stakeholders that had an interest in the Regulation.

The interviews included targeted questions while overall discussion took place including among others the following aspects:

- What steps have already been taken in your organisations to accommodate for the MR certification process?
- What is the involvement of marine stakeholders in the implementation of Article 10.1?
- What is the impact in local and global scale?
- What is the benefit/impact of the MR certificate implementation in your organisation?
- What are the future prospects of the MR initiative in your opinion (short term, mid-term and long term projections)?

Date	ORGANISATION	Location
08/2014	Individual shipowners	Athens
09/2014	SEA Europe	London
09/2014	DNV GL	Oslo
09/2014	The Nordic Association of Marine Insurers (Cefor)	Oslo
09/2014	SEA Europe working group	London
09/2014	LR	Telcom
10/2014	International Chamber of Shipping (ICS)	Telcom
10/2014	Bahamas Maritime Authority	Telcom
10/2014	EU ROs Working Group (DVN GL, KRS)	Telcom
10/2014	EU ROs Communication Group (DNV GL, LR, RS)	Hamburg
10/2014	Individual manufacturers	Houston, USA
11/2014	SEA Europe	Email com
11/2014	EU ROs Group (DVN GL)	Telcom

Table 5: List of meetings and interviews (Telcom: teleconference)

For the latter, short term refers to a period within the next 1 to 2 years; mid-term covers the next 5 years while long term indicates 10 or more years.

Considering the above, the overall mandate on the Regulation's Article 10.1 was initially discussed with the EU ROs. The above included the initial internal process in terms of the implementation within each EU RO. Initial challenges in terms of internal organisational and communication aspects were identified and dealt with taking into account that EU ROs are large organisations employing personnel worldwide while each one of them also operates within specific institutional boundaries. In this case, the MR certification process needed to be initially internally standardised, in order to achieve a common working *"language"* among all EU ROs before further discussion across Working Group and Advisory Board / Technical Committees took place.

During the interviews further attention was raised on the subject of considering the '*most demanding and rigorous standards*' for the initial selection of items (Tiers of products). It was noted that the most demanding standards were reviewed and selected in order to identify a product for inclusion in the Tiers 1 to 3. It was also mentioned that during the implementation of the Tiers of products, the industry was consulted and their feedback was taken into account. Overall, the time needed for an item to be issued through the entire application process could take a year on average.

Discussing potential issues with the current process for the MR certificate, it was reported by the interviewees that the case of an EU RO being able to reject MR certificates issued by another EU RO, could pose a threat for wider MR implementation (even though it is mandatory to communicate internally first and discuss the reasons for such a rejection). Another issue mentioned was related to the challenges associated to Flag Authorities acceptance of the MR certificates and their global implementation.

The issue of global and local trading pattern and application of the Regulation was also discussed (e.g. initial application within EU member countries or applicable to EU Flagged ships only). Such an application could be feasible. However, it was mentioned that the marine industry being a global industrial sector could hinder such a localised application.

The implementation of the Regulation has also initiated a process within each EU RO in terms of structuring and disseminating (internally and externally) information, communicating changes/updates regarding employees and clients alike. The above also includes training EU ROs personnel (i.e. site surveyors) to be able to work with the standards and technical specifications of the Tiers of products on site across the world.

Overall it was mentioned that the EU ROs need to comply with the MR Regulation as it is an obligation when operating within EU borders. Another issue discussed was related to the effect that the issuance of the MR certificates may refer to a ship which may change the Flag under which it is regulated. This issue could be addressed on a case by case scenario mostly involving the Flag state authorities.

The MR Certification process was also discussed having in mind the process and application of the IMO Harmonised Common Structural Rules (HCSR) as a successful example of regulation application in the marine industry at a worldwide context. In this respect, it was suggested that HCSR was initiated through IMO and IACS. Moreover, in terms of addressing previous concerns with regards to the selection process of Tier 1 and Tier 2 products, a risk model for the items included in Tier 3 has been introduced, accepted and implemented by all EU ROs.

Further discussion on the next level of items to be included in the MR certification (Tier 4 and Tier 5) has already been initiated among the EU ROs while the finalised list of Tier 4 products is expected to be issued in July 2015. A challenging point would refer to the extent that the next Tiers of products will be defined in the MR process. In expanding the products included in the initial Tiers above Level 3 for the mid-term developments, it was mentioned that an issue could arise in terms of safety when more complex items and units such as Main Engines and Diesel Generators among others are included to the scheme. Further to the above, it was suggested that longer term plans may also involve updating and further maintaining the existing Tiers of products through feedback received from industry.

On the manufactures side the discussion was initiated with the current implementation of the Regulation and the MR Certification available. It was mentioned that when drafting Article 10.1, its interpretation has been quite broad among different stakeholders. In this case, although clear aims and objectives are mentioned, thorough study of the Regulation was needed in order to comprehend its full scope.

It was also stressed by the interviewees that certain Flag states (e.g. Japan and Russia) are not in favour of the MR certificates. They also mentioned that the definition of the rules is quite broad, leaving space for confusion and this reflects on the MR certification acceptance at a global level too. Furthermore, in contrary to the EU ROs reflection on wider application of the MR certificates, it is believed that in order to cover the market needs, the scope of the MR certification should expand over the current limited Tiers 1 to 3 to cover more complex ship systems (e.g. propeller, etc.). This development is expected to make the MR process a more compelling choice for manufacturers.

Moreover, in order to appreciate the scope of cost benefit of the MR Certificate for the manufacturers, it was discussed that for Small and Medium Enterprises (SME) an average of 10,000€ per certificate may be spent while the process may take from 6 months up to 2 years to be finalised. Overall, it was highlighted that certification amounts to an overall 4% of the OEM budget. In some cases, if certification cost becomes too high, it was mentioned that this may then result to being more profitable for the company to withdraw the particular product from the market instead of maintaining it.

Interviewees also highlighted that even though the MR certificate has a clear cost benefit for SMEs acting within the EU, the OEMs have not yet started applying for the MR in a large scale as the regime is not yet clear to them while MR certificates are not yet available for the majority of ship systems. Regarding the global MR certification process acceptance, it was pointed out by the interviewee that Wheelmark was accepted in the US a year after its issuance (EU, 2004), while the same occurred for China and the Far East. This may become an example to follow for the short term developments in the EU MR process which will also enable wider application of the MR certificate.

Another suggestion related to the development of the MR Certificate was that either an independent body should become involved (e.g. EMSA) or EC-EMSA could be supervising the MR process as it is being developed by the EU ROs. The car industry was described as a suitable analogous to be followed for development of widely accepted rules.

Through the discussion with insurers, it was mentioned that they tend to follow the EU ROs suggestions and guidelines for further consultation as ROs have the technical expertise and knowledge to address issues related to the products mentioned in Tiers

1-3. Moreover, another important aspect of the interview with insurers was related to the communication of the MR initiative (EU ROs 2013). Since then, they had the opportunity to be further informed, discuss and share comments on the Regulation during the jointly organised by EU ROs and SEA Europe London workshop in May 2014.

The interviewee highlighted that above all other aspects, the overarching aim is to promote and ensure safety is maintained to the highest standards. It was also mentioned that it would be important to continue the introduction of additional MR products based on simple, non-safety critical items, as specified according to EU ROs (Levels 1-3 for Type Approval items). The overall EU ROs approach was deemed a well-defined, structured and standardised process which can promote the MR initiative further. The issue of addressing the MR initiative at a global level was also discussed with participants mentioning that the above was to be discussed during the IUMI conference in Hong Kong (21-24 September 2014).

Overall it was mentioned that insurers are ready to follow the MR initiative while the analysis and product level remains at the non-safety critical item level, thus not including complex equipment and machinery (e.g. engines, Turbochargers, etc.). During the interview the extent of the Regulation implementation was also discussed in relation/comparison to the IACS initiatives. The above question was raised by the interviewee as commonalities are present between the EU ROs and the IACS group (although differences also do exist). It was highlighted by the participant that there is a specific difference in between the existing IACS group non-mandatory regime of a number of guidelines, recommendations and requirements compared to the MR regulatory initiative with which the EU ROs are asked to comply.

Another issue mentioned was related to the impact of the Regulation which needs to be addressed at a global level through additional workshops/seminars accessible to all marine stakeholders in order to promote transparent communication. The above could include Flag State authorities invited to comment on the MR process too (especially ones related to areas such as Far East, the Americas etc.) and in general non-EU authorities in order to capture their view on the subject matter.

Finally it was mentioned that cost and administrative issues will be of importance for further implementation and global acceptance of the Regulation. In terms of future developments, it was mentioned that short term enactment of additional items is a feasible target while cautious steps need to be taken in the long term.

From the ship owners/managers/operators side there seems to be another appreciation of the developments around the Regulation since they are not directly involved in the MR process. While some of them do not have full access to available information related to the MR certification process, safety together with commercial/financial issues was brought forward. An interesting aspect of the MR process was mentioned when considering the traditional trust relations between EU ROs and ship owners related to the issuance of certificates.

Moreover, it was considered that the amount of time spent towards the development of the MR technical requirements and rules, is not significant when compared with the current rules used by EU ROs for individual certificates. The latter have been developed over a number of years and there has been significant feedback and investment put into the process of forming the final outcome. It was felt that the MR Certification process will need to go through a similar process before it can be trusted and used widely in the marine industry. Thus due to the above, it is still unclear what the applicability of the MR process will be on complex systems (i.e. Level 4 and above

items). However, it was mentioned that potential benefits of the MR Certificate may primarily include cost and administrative aspects.

Further to the challenges that might transpire in practice in the next few years, it was mentioned that it is not clear where the liability lays when a product (that is certified through the MR scheme) fails to operate according to its stated function. This is also related to the fact that, at the moment, the MR Certificate is not accepted worldwide while on the other hand all Flag authorities according to the interviewee recognise and work with IACS and its members.

Regarding future developments it was mentioned that it would be expected for the MR to cover Type Approval of all Level 3 items in the short term while move beyond Level 3 with caution in the longer term. This is also related to items produced in large quantities (e.g. mass production) vs. individual items e.g. ship M/E which represent a one-off complex system for a particular ship.

The Flag States on the other hand have a different approach related to the developments of the MR Certification process at a global level. Although information has been available since 2010 and there has been Flag State involvement in the process to a certain extent, it was discussed that some Flag States (e.g. non-EU Flag States) may consider the MR process as a too early and huge leap towards global acceptance as issues may arise with regards to policy implementation. In this respect, when discussing the current state and the mandate for such a certificate, the reasons brought forward by the interviewee were thought to be mainly political and/or commercial. It was also unclear what the benefit of such a certificate could be for Flag Authorities.

Elaborating on the future of the MR Certification within the practices of the Flag States it was mentioned that it is not expected to have an impact on current practices and that no changes are expected. In terms of acceptance of the MR Certificate, it will depend on a variety of issues that are not yet addressed at this stage but may well be addressed in the future.

During the discussion with the EU ROs' communication Group the overall process related to non-European stakeholders towards the MR certificate was discussed. The group constantly consults with big OEM and SME organisations and holds meetings twice a year between stakeholders and individual EU ROs to discuss the rules and technical requirements. A list of all meetings for this group is presented in Appendix I.

A process common for all EU ROs was initially defined facilitating the statutory step change needed to comply with the Regulation. Following that, the definition of Tiers took place as well as the development of the technical requirements for each product. Tier 4 is to be published by summer 2015 including additional products listed for MR certification. In the near future more meetings with the industry are planned so as to finalise the technical requirements for Tier 4 products.

Further to future developments, SEA Europe has suggested that Level 4 items are introduced for MR certification in the near future. On the other side, immediate future developments by the EU ROs should include monitoring industry uptake of the MR certificate for the first four Tiers while also maintaining the technical requirements and collecting feedback.

A subject that was discussed by the EU ROs during the interviews was the resources accommodated for the internal facilitation of the Regulation requirements. During the last communication with the EU ROs Group it was highlighted that the focal point of

the MR Certification process is related to safety considerations of a new certificate that has not yet been tested against the industry and not the competition among the EU ROs. This could potentially be overcome by demanding annual inspection for Type Approval products.

The need of acquiring feedback from the use of MR Certificates and maintaining the current Tier 1-4 technical requirements as well as the overall process was once again stressed in the interview to achieve a good level of quality.

With regards to future developments, it was mentioned that the risk based approach for Level 4 items had already been initiated. This approach was designed with participation from industry as well. When enquired about the cost for current MR Certificates the response was that depending on the product to be certified the cost may be one to two times the cost of normal type approval certificates for the same product.

Moreover, Level 4 items will be considered with a pilot six month study. Additionally, the maintenance of current Tiers 1-4 is considered as a first step and meetings with industry are planned in April 2015 to consult on the development of the next Tier 5 product list (within EU ROs Level 3 of materials, equipment and components). The meetings will report the initial presentation of suggested Tier 5 products along with the proposed technical requirements and facilitate the ground for industry suggestions on the technical specifications and suggestions for additional products to be introduced.

5.4 Questionnaire

The questionnaire was distributed as described in Section 4.5 of this report and a total of 59 responses were received from a sample of 309 recipients by January 2015. This includes all responses both in soft and hard copies. The analysis of these responses is hereby presented.

Overall, this is considered to be a satisfactory response rate as most questionnaires have a response rate similar to the rate of the present study (between 10-20 percent – Presser, 2004; Oppenheim, 2000; Groves, 2009; Brace, 2008). Additionally, similar numbers of responses have been recorded in previous attempts to evaluate the state of implementation of the requirements of Article 10 of the Regulation (EMEC, 2010). While other studies performed in the past included a higher completion rate (SEA Europe, 2014), they targeted a specific range of marine stakeholders. Moreover, the present study achieved a higher number of responses overall, thus assuring the wider participation across the industry.

Both small and large organisations participated in the questionnaire and stakeholders from all sectors of the industry provided their views on the implementation of the Regulation as well as their opinions for future developments. It is important to highlight that 49% of the responses originated from Marine Equipment Manufacturers which also shows their particular interest in the developments on the MR certification process. As a wide range of stakeholders has responded internationally, with a clear increased interest from manufacturers, the outcomes of the questionnaire can be regarded as providing a spherical review of the current views over the MR Certificate including all major stakeholders involved (e.g. EU ROs and manufacturers). The questionnaire results were also validated by similar studies performed quite recently (SEA Europe, 2014; Milieu Ltd, 2014).

The questionnaire was completed by stakeholders such as Flag State Authorities (3%), Insurer Associations (2%), Marine and Maritime Associations (9%), Marine Equipment Manufacturers (49%), Marine Equipment Suppliers (7%), Recognised Organisations (17%), Regulatory Authorities (3%), Shipyards and Shipbuilders (2%), Shipowners (3%) as well as stakeholders form the education and finance sectors of the industry among others (5% in Category Other) (Appendix VI – Question 1).

Of the total number of responses, 47% included large organisations while 41% included small and medium enterprises. An additional 12% were Associations and Organisations that did not identify themselves as either of the two (Appendix VI – Question 2).

The area of activity for the various respondents to the questionnaire is presented in Appendix VI – Question 3. All these questions targeted the better understanding of the questionnaire's sample group. It is worthwhile mentioning that the responses included companies/institutions operating in more than one continent. The respondents covered a wide area of activity on all continents and were all active within Europe.

The remainder of the questionnaire was targeted to the implementation and future expectations of the Regulation. As answering all the questions was not compulsory, some of the respondents chose not to reply when the question was not relevant to their organisation or company.

The respondents' general awareness level towards the regulatory regime related to Mutual Recognition (MR) Article 10.1 of the Regulation was high. Good and Excellent responses accounted for 68% of the responses, while only 21% reported a Fair or Poor awareness level (Appendix VI – Question 4).

Additionally, a majority of 42% reported that the classification standards currently used by different EU ROs differ among them for products already available for MR Certification within Tiers 1–3 (Figure 8). A significant number (24%) was not aware of the existence of any differences. A portion of respondents (14%) did not identify any differences in classification standards among EU ROs.

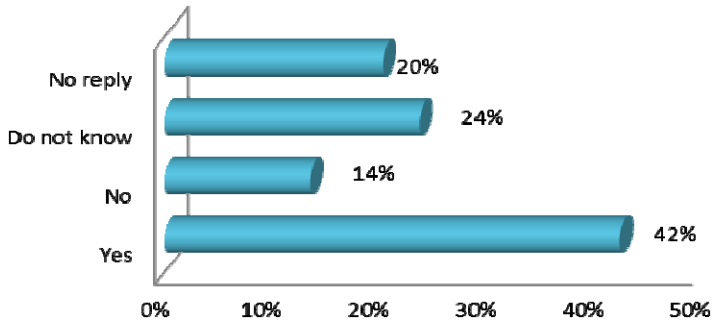

Figure 8: Classification Standards' variation between ROs

The quality of the to-date developed EU ROs MR rules was regarded as average to very good by the majority of respondents (73%) while another 16% consider the current rules to be bad or very bad (Appendix VI – Question 6).

Moreover, 46% of the responses indicated that participants were aware of the harmonisation process of classification rules by the EU ROs since the implementation

of Article 10.1 of the Regulation while another 25% was not aware of them and a further 17% were unaware of the MR approach (Figure 9).

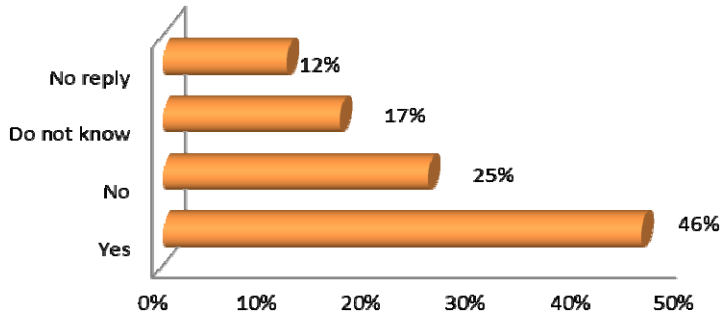

Figure 9: Awareness of harmonisation of EU RO's classification rules

All the respondents that were aware of changes towards the harmonisation of the EU ROs' rules (46%) also responded to the question regarding which changes they were aware of. Their comments included a general recognition of the changes affecting their individual products or area of work within the industry. Additionally, they were aware of the process followed by the EU ROs and Tiers 1-3 as well as the standards followed for the design of the EU ROs MR rules.

Opinions were divided (32% responded yes, and 32% no) when stakeholders were asked to provide their view in the alignment of standards for the accreditation of material, equipment or component certification between each EU RO (Appendix VI question 9). Moreover, there is another 20% of the responses who cannot indicate their views towards alignment of standards.

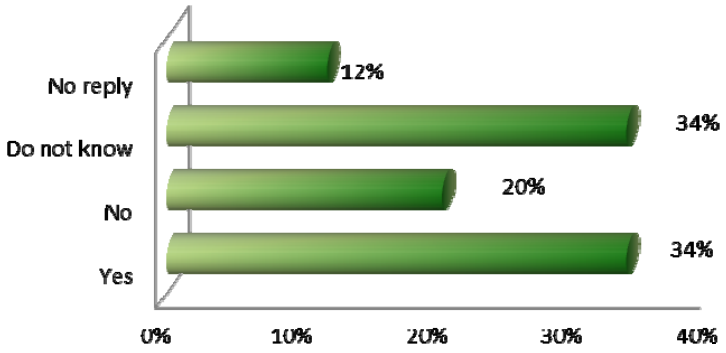

Figure 10: Are you aware whether already issued certificates for materials, equipment and components are being accepted by other European Union Recognised Organisations (EU ROs)?

On the subject of transparency and identification of the industry involvement in the implementation process of the requirements set out in the Regulation, the consultation steps that have been taken by the EU ROs towards industry groups and trade associations were rated as satisfactory (36%) while 17% of the respondents reported having issues with it. It is clear that the process has already moved towards the involvement of the majority of stakeholders and there is a general appreciation of the

result, though some stakeholders would have wanted greater involvement as also denoted by 34% of the responses (Appendix VI – Question 10).

Moreover, related to the respondents' awareness level of the already issued certificates for materials, equipment and components being accepted by other EU ROs, 54% replied that they were not aware or did not know of them. However, another 34% of replies denoted that they were aware of the entire process (Figure 10).

The next question further strengthened the same result as 39% reports no knowledge of whether the new MR certificates issued by a single EU RO is directly recognised by the other EU RO group members. A further 10% also reports non-acknowledgement of MR certificates by other EU ROs (Appendix VI – Question 12). Moreover, 34% of the replies reflect that they are aware of this process.

The same need for better communication between the various stakeholders with regards to the developments around the MR certificates is stressed even further by the responses presented in Figure 11. An outstanding 52% expected to be better informed while only 20% is informed to a satisfactory extent.

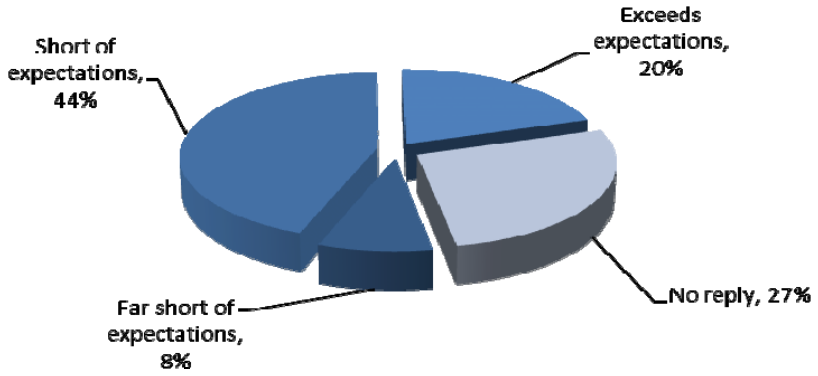

Figure 11: How would you rate, up to now, the overall level of awareness on Mutual Recognition (MR) certification?

Questioned about their knowledge of the three Tiers of products currently available for MR certification, marginally under half of the population sample replied positively (49%) while 17% was unaware of Tier 1-3 products (Appendix VI – Question 14).

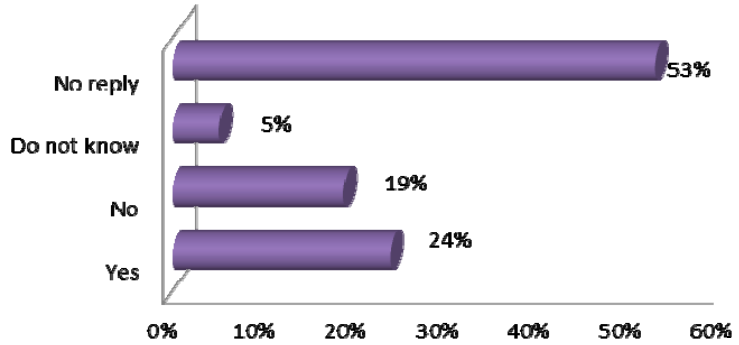

Figure 12: Are all/some of the listed materials, equipment and components in the Tier 1, 2 and 3 part of your company's portfolio?

Additionally, 19% of the respondents indicated that there exist products in Tier 1-3 that are not yet included in their company's portfolio while 24% replied that all/some of the listed Tier 1-3 products are part of their company's portfolio (Figure 12).

When asked if they have applied for at least one MR Certificate for their products, 12% replied positively while 32% did not yet apply (Appendix VI – Question 16). From the results presented in Figure 13 it is illustrated that a number of respondents (25%) are positive towards applying for MR Certificates in the future. The reasons for not having applied yet for MR Certification or not intending to apply, as summarised from the responses to the questionnaire, are associated to not being applicable to a particular organisation, not being expected to apply for a certificate for a specific product prior to MR, cost issues, witnessed testing, uncertainty of the acceptance of the certificate both globally and among EU ROs and thus the value of such a certificate. Most importantly resistance to change when benefits are not obvious was mentioned. A small number of issues have been reported such as the little encouragement from EU ROs to apply for MR Certificates at the moment.

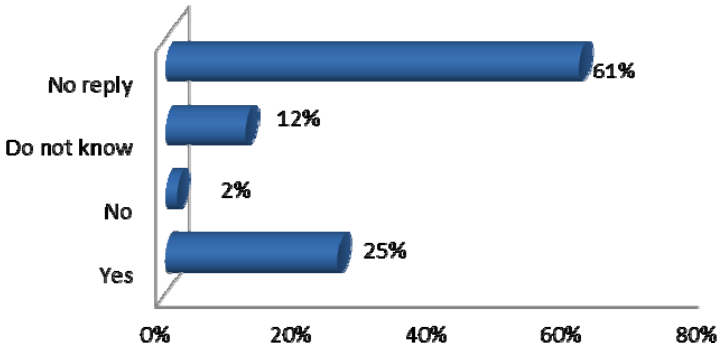

Figure 13: Do you intend to apply for a European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification for at least one of your products?

Evaluating the overall application process, stakeholders underlined through their responses an issue with the additional requirements for new certificates. Furthermore, technical requirements were reported needing refinement while intensity of testing was reported to being overwhelming compared to current practices. It was also brought forward by some stakeholders that due to lack of experience the EU ROs struggle internally to handle new applications. Other than that, the process was found to be straightforward and well documented for interested parties.

Based on the responses received, the benefits of the MR scheme were summarised in the following. For some of the participants the benefit of reduced cost and bureaucracy was evident along with the reduced time to market, even though the lack of worldwide recognition is still overshadowing the benefits. To others, any benefit is yet unclear as products available are still a few and no significant time has passed in order to compare the results of this process to current practices. Also in terms of safety some expect the MR rules to be beneficial while others see neither a positive nor a negative effect.

However, several drawbacks of the Mutual Recognition scheme were mentioned as well. Initially the certification for products previously not requiring any certificate was a concern for manufacturers. Secondly the cost of witnessed tests for some products was reported to be higher than non-witnessed tests available for products in Tiers 1-3

through other certification processes. Furthermore, the global acceptance of the MR certificate is a major consideration which prohibits companies from applying for this certificate. The time for the Regulation to be implemented in practice, and the limited availability of products were also mentioned as inhibiting issues along with the limited implementation so far. Finally legal implications and liability of the certificate were still questioned through the responses due to the limited, if any, applications available. The latter can be associated to the suggestion of withholding the expansion of the MR certification process to Level 4 safety critical items as indicated in the responses to the questionnaire.

However, regardless of the concerns voiced in the previous responses, when rating the status of the content of Tiers 1-3 in terms of number of items included in the scheme and their application, 17% found them to be Poor with an additional 19% rating them as Fair and a further 37% rating them as Good, Very Good to Excellent. (Appendix VI – Question 22).

From the responses to the questionnaire it was suggested that additional items could be included in the MR certification list of Tiers such as steel parts, alloys and materials used in ship construction, components used in propeller systems, softstarters, pilot devices (push buttons), solid-state relays/contactors for non-motor-loads, pipes, fire safety products and pumps among others. Generally, items that have marginal differences in rules between ROs were also suggested. The application of common environmental standards was also recommended though it does not strictly fall within the scope of the current implementation of the Regulation. Finally the need for experience in practice with the currently available products was stressed before any further expansion of the list of products is possible.

To the relevant question, in order to improve the selection process of materials, equipment and components for the MR certification scheme, a number of changes were suggested via the responses. They mostly relate to the simplification of the scheme, the publication of the common rules for all EU ROs and the expansion of the scheme to cover more products. Also greater involvement of industry was suggested through the responses and further work towards the direction of wider recognition. In that extent the use of global standards and globally recognised certification methods could facilitate the desired acceptance as indicated by the respondents.

Attention was further drawn to issues related to the question on which are the main barriers towards the broader acceptance and application of the MR scheme. One of the suggestions mentioned was related to increasing the transition period and constrict the Tiers to the current level (Level 3) until further experience can be accumulated in practice. Again the cost issues due to stringent rules and witnessed testing were reported. Additionally, EU ROs individual interests were identified as barriers. Finally, the level of awareness particularly between shipowners and shipbuilders, the issues with global acceptance, safety considerations by some stakeholders and most importantly contractual considerations between EU ROs and shipowners were reported as obstacles of further MR implementation.

In addition to the above, respondents suggested that the barriers mentioned could be overcome through approaches such as making mutual recognition compulsory or by educating shipbuilders and shipowners. Moreover the involvement of local surveyors was reported as an important step forward. Further on, the publication of information on Type Approval booklets, publication of cost for MR Certificates by all involved EU ROs and expanding the range of products while ensuring safety is adhered was an important suggestion in the responses. Further, as mentioned, ensuring international approval was imperative for wider acceptance of the MR scheme. Moreover,

respondents suggested allowing for an international independent body with no financial benefit (from the current process) to perform the implementation of the MR scheme.

It is important to note that the majority of respondents (61%) was not fully satisfied with the knowledge of and involvement in various initiatives by the EU ROs in informing and educating the stakeholders over the progress achieved and involving them in the process (Appendix VI – Question 27). That is in contrast with a 12% satisfaction rate of the responses received (related to this question).

Responses to the question on incentives considered to be essential for a widely accepted MR certification are summarised in this paragraph. Among others, the increased involvement of EU authorities and EU ROs and better advertisement of the scheme was suggested. The initiation of a general point of contact for information on the MR scheme was another option presented. Finally, the clear identification of responsibility and liability was reported as an incentive for the implementation of the MR scheme to enjoy wider acceptance. On the other hand, reducing the overall cost and paper work for new MR certificates and the overall certification process was suggested as an incentive for the companies to embrace the scheme.

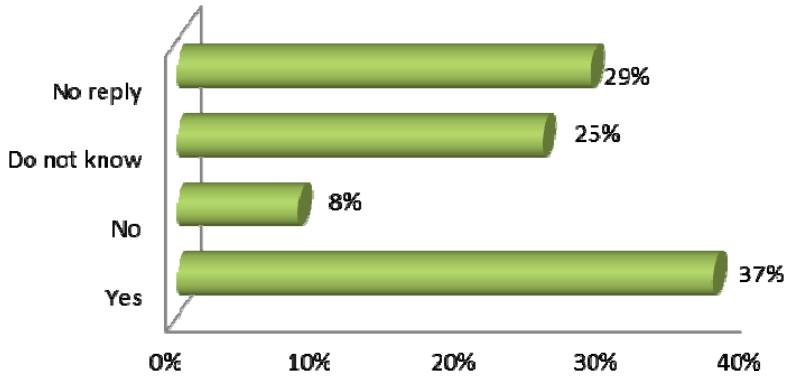

Figure 14: Should the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification scheme be further promoted?

When enquiring if the EU ROs MR scheme should be further promoted the responses were mostly positive (37%) while another 33% is still uncertain or negative about it (Figure 14).

Further promotion should be facilitated - according to the responses - by supporting global acceptance, share information with all marine stakeholders, promotion of MR by IACS members, information to promotion via local surveyors and also by providing better training to surveyors.

Moreover, as shown in Figure 15, a significant part of the respondents (32%) suggested that an EU Regulation is not regarded as the scheme that should appropriate these issues. Reasons reported by the respondents included the need for an easier approach to harmonisation of rules without the need for such a detailed process as well as cost and safety implications. Further, the MR scheme not being a global initiative and the additional bureaucracy in the event of non-acceptance of the scheme in the global market were also mentioned. Moreover, some respondents identified that the EU ROs are not the appropriate organisations to facilitate this Regulation while another body such as the IMO was suggested instead.

On the other side, 24% of the participants mentioned that an EU Regulation is considered appropriate for MR issues while another 15% did not express their views on this subject. Reasons for supporting the EU Regulation as depicted by the provide answers are summarised to the cooperation between EU ROs towards common rules, the protection of the EU market and moving the marine market back to EU.

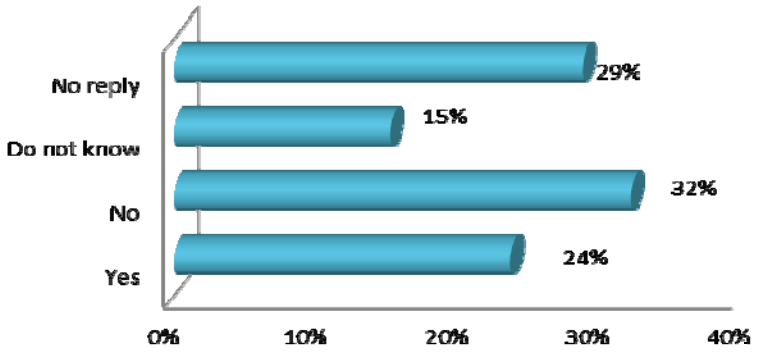

Figure 15: Do you consider a European Union Regulation to be appropriate for these issues?

Other comments recommended that IEC committees and harmonised standards should be consulted prior to finalising the technical requirement specification as well as that EU ROs should not have been involved in statutory work.

5.5 Case Study

In order to review the experience gained by manufacturers that have already applied for and been issued with MR Certificates, a number of direct contacts was performed. The first attempt was via email by late November 2014. At this first stage a contact was established with one of the companies. A second attempt was made via email in the first week of December while a third direct contact via phone calls was consequently performed (Table 6). The most important points drown from those conversations are summarised next.

Date	Company
December 2014	Pentair
	Winel BV
	ORION
	ISIC
	MOXA
	EPYRRESIN
January 2015	Hatteland

Table 6 Dates companies were contacted through direct contact

When a new product (e.g. valve) was developed, the company directly applied for the new MR Certificate. Before choosing which EU RO to apply through, the company contacted a total of three EU ROs. One of them was most helpful in providing information as personal contact was established as well. Moreover, the price regarding the same MR certificate was different among EU ROs which assisted in the selection of the EU RO to be employed.

According to the contacted companies the time from the initial application to acquisition of the MR Certificate was the same as that of any other certificate for the same product within the general framework of Type Approval where applicable.

When asked if the companies had concerns over the validity of the MR certificate worldwide, it was mentioned that the new certificate should be valid as the EU ROs existing Type Approval certificates are already accepted worldwide. Though, it was mentioned by the companies that the validity of MR Certificates was only relevant for use on-board ships and not on offshore applications.

From the manufacturers' experience, the future application of MR certificates is certainly regarded positively. The companies that participated in this case study reported that the cost of certification for the same product for mass produced items such as air pipes was similar to previously acquired Type Approval certificates, although issued by different EU ROs. On the other hand, where individual certificates for specialised products would be required (e.g. water-tight doors), the Type Approval certificate cost was much higher and differed substantially among EU ROs. To this extent, the difference in cost of current practices could lead to similarly differently priced MR certificates in the future. Additionally, it was mentioned that no maintenance fee was applicable for the duration of the MR certificate (5 years).

It is also very important to highlight that EU ROs issued two certificates in a particular case. The new MR Certificate was issued together with an EU RO Type Approval certificate for the same product. The Type Approval certificate was issued for use with ships registered with the particular EU RO. The new MR Certificate on the other hand was issued to be used for ships overseen by other EU ROs (IACS members). Moreover, it was mentioned that a single price was presented for both certificates (i.e. new MR plus the EU RO Type Approval certificate). In this particular case, the price was similar to the existing Type Approval certificate price.

Additional comments from the manufacturers' side included the specification of a single rule set to be used by all 11 EU ROs as then the MR Certificate would be much more easily accepted in US, China, Japan and Russia. This would be particularly beneficial in the event of change of Class as the same certificates could be used. Further recommendations included the expansion of the scheme to higher than Level 3 items such as main engines and propellers.

According to the manufacturers it was a straightforward process to apply for the new MR Certificates; a reduction in administrative load and time-to-market for new products could be achieved. However, time is needed for industry experience to feed back to the MR Certification process before stakeholders are fully convinced to apply the new MR certificates at a larger scale.

6. Discussion

6.1 Introduction

This section presents the discussion on the results mentioned in the previous sections of this study. The most important findings of this report are described along with the reasons that have led to these results. A critical analysis regarding the results of all the preceding sections is presented as well.

6.2 Current state of Article 10.1 implementation

Regarding Article 10.1 of the Regulation, there is consensus in terms of the major aspect that the MR process addresses; in other words, safety issues are of paramount importance and are considered accordingly by all key stakeholders. An issue could potentially include the use of MR Certificates issued from different EU ROs for various sub-systems onboard ships. However, since the strictest rules apply for the preparation and implementation of the Technical Requirements for the MR Certificate, all EU ROs will follow the same rules for issuing the new MR Certificate. Moreover, any new MR certificates that will be issued will have exactly the same standing worldwide. If however there is a non-acceptance incident of an MR certificate by a certain EU RO, the EU ROs group has established internal reporting processes in order to establish the reasons why this was performed and address it accordingly.

The review of the current state of implementation provided evidence of the harmonisation process being underway. However, it must be noted that thus far the extent of the harmonisation is still at its infancy. Although a separate MR certificate has been provided for a certain number of items, it has not yet replaced the individual EU ROs' certificates for the same products as initially expected by the marine industry. The above highlights the need for additional time to test the new MR Certificate in practice, which may eventually become common practice replacing the individually issued certificates.

The present study has highlighted that the marine industry is involved in the MR certification process to a certain extent. On one side, big OEMs are more involved in the MR process due to their own interest and prior knowledge of similar certification processes in the past through other international collaborations e.g. international standardisation activities for electrical or mechanical products and equipment. However, smaller OEMs are not as well informed and involved in the MR process due to their inherent market characteristics e.g. smaller size companies, constraints in terms of administrative and financial resources. It is this part of the marine manufacturers that would appreciate higher level of involvement and availability of information regarding the MR certification scheme. Accordingly, it is this particular sector of stakeholders that would most benefit from the Regulation as multiple certificates are less often affordable by these manufacturers.

The above statement highlights an additional feature revealed through this study including the limited information available to a wide range of stakeholders. This can be attributed to the limited time that the MR certificate has been eventually applied and showcased in the marine market (all current MR certificates have been issued over the last 16 months). As was expected, all EU ROs have developed internal processes for

the MR certification in order to increase awareness within their organisation. The latter has been applied at both within the EU and worldwide level (i.e. EU ROs headquarters and site offices worldwide), very much related to the global operations of each organisation. At the time of the preparation of this study, a total of 14 certificates have already been published.

Moreover, another aspect of the current MR certification process that has evolved through this study is the one related to the competition among EU ROs. In this respect, the development of the new MR scheme may restrict the competition since one single MR rule-set will be in place thus leading to acquiring a single new MR certificate from any EU RO. Accordingly, this could potentially lead to restrain on investment for further development of EU ROs rules (some of the EU ROs have long-standing experience and expertise acquired over years of operation and implementation of rules and regulations in the marine industry). This is a concern that can damage the wider acceptance of the MR certificates as the development of individual EU ROs rules is linked to the trust between various stakeholders (e.g. shipowners) and the EU ROs they choose to acquire certification from, while it also forms a fundamental part of the industry day-to-day operations. On the other hand, it has been revealed that EU ROs competition may be enhanced as different prices and individual agreements between EU ROs and manufacturers for the acquisition of the new MR Certificate for the same products may exist. Thus, it remains to be seen which will be the prevailing concept when more experience is acquired within the MR scheme.

The above is also related to the information available at present regarding the cost of acquiring an MR Certificate. Overall, as the MR scheme is still at its infancy and currently available information is limited (including certification costs). It is difficult to have a full picture of the overall cost at the moment. However it was found that the cost for the new MR certificate may vary according to the item that will be issued for. To this extent, for simple mass produced items (e.g. valves, electrical components, etc.), the cost for the new certificate can be similar to or up to twice the price of the one for the same product for which Type Approval certification was previously required. However, for a category of specific products (e.g. one-off non-mass produced items) the cost of the new MR certificate could potentially be significantly higher. On the other hand, maintenance fees seem to be similar to those for other Type Approval certificates where applicable. The fact that witness testing is needed and more rigorous standards are to be met, have potentially led to the increase in cost in certain cases.

The length of time to acquire such a certificate varies a lot (6 months to 2 years) depending on the product in question and the complexity of the overall process (i.e. administrative load). This is also verified through the case study depicting the introduction of an MR certificate within that time frame. However, the case study also revealed that for that particular product the time to issue the new MR certificate was the same as for the Type Approval certificate. It is though important to identify that as more MR Certificates are issued and the overall process becomes more standardised, the time to acquire the new MR certificate may be significantly reduced (e.g. a few months at the most).

Moreover, it was shown that the duration of the new MR Certificate is 5 years which is the same as the previous certificates. As was revealed through the interviews and the questionnaire results, additional benefits can be generated when applying for the replacement of a number of old certificates with a single new MR certificate for a variety of products under the same category (e.g. one single certificate for a range of

display screens), which will also lead to the overall reduction of cost in addition to minimising the administrative burden for the industry.

At this point it is also significant to highlight that only 14 certificates have been issued so far. These were issued within the last year, identifying the momentum created on the current state of implementation. The above also highlights the efforts made to date and paves the way for more certificates to be issued in the near future. It is important to note that manufacturers which acquired those certificates do not only have their head offices in EU countries but at USA, Taiwan and S. Korea as well. This further highlights the global nature of the industry and the outreach of the Regulation as well as the importance for global acceptance of the issued MR Certificates.

The need for additional involvement by a larger group of stakeholders is stressed, while there is also confusion over the procedure through which the EU ROs accept and issue the MR Certificates as well as the scope of the scheme. The above can be addressed through the publication of additional information on the technical requirements of the products to a larger proportion of stakeholders with different industry interests, also providing for time to process and allow for feedback and recommendations.

Moreover, the EU regulatory framework related to the MR scheme (although it provides support to an industry scheme introduced by EU ROs) has provoked some concerns in terms of its wider implementation worldwide, particularly related to non-EU Flag states. In this case, third countries have raised concerns over sovereignty with regards to the actual application of such a Regulation onboard the ships that carry their flag. This issue could be resolved if a particular agreement (e.g. pilot voluntary multilateral scheme) is in place among the Flag state, EU ROs and end-users that could lead to a wider and global acceptance of the new MR certificate.

It has been also evident that a transparent, well-established and well-documented process is in place for creating, maintaining and applying the products' Technical Requirements in Tiers 1 to 3. The same process is intended to be followed for Tier 4 and 5 products to be further included in the MR Certification scheme in the near future. As safety has been in the heart of the implementation of Article 10.1 of the Regulation, processes have focused on ensuring that the highest level of safety is adhered by implementing the most rigorous and strictest rules.

Moreover, the risk based approach used by the EU ROs to include products in the MR scheme will be followed in the next two Tiers of products to be published in the immediate future (2015-2016). Level 4 safety critical items are to be specked for inclusion in the scheme and a 6 month pilot study is scoped for implementation to ensure that safety is maintained at the highest level. However, since this harmonisation process is not directly linked to the rules of each individual EU RO, it is still short of providing the market need for common rules among all EU ROs.

6.3 Way forward

At this stage of the implementation of Article 10.1 it is important to address the considerations in the area of safety impact. The latter can be addressed by following the same process including the strictest Technical Requirements for all products within the mentioned Tiers as well as for the forthcoming ones and the need for witnessed testing, often necessary for the acquisition of an MR Certificate. In this way, and through both the internal verification and external validation process, the MR approach can gain momentum over time and further address such concerns.

The EU ROs have strived to include the industry in every step of the process as can be also observed from the detailed list of meetings and initiatives taking place since 2009. Industry stakeholders within EU appear to be more active in terms of participation in the EU ROs consultation process while global industry could appreciate higher involvement in the future. A good indication of the above is the fact that out of 7 manufacturers already using the new MR certificate for some of their products, 3 of them have their headquarters outside EU (i.e. USA, Taiwan and S. Korea). This would certainly enhance the global acceptance of the MR Certificates which is also identified as a market need. Additional involvement by small OEMs would be also encouraged as they form the group which is less often involved in the current MR scheme implementation through associations, information workshops and other similar events.

In this case the MR certificates could increase the market access for SMEs. In practice though, due to the current non-acceptance of the MR certificate by several administrations worldwide, this may only be applicable for EU based SMEs. However, when global acceptance will be facilitated, the time to market will be also reduced for those companies targeting a wider audience. The initial capital investment for new products will be also lower, thus allowing further development of the manufacturing market within the EU for those manufacturers that lack resource to develop their products. This also illustrates the potential effect that global acceptance will introduce; that is, further reducing certificates cost while increasing market targets for new products and as such revenue.

Moreover, regarding the list of products for which the MR Certificate is currently available, it is ambiguous whether more complex products can be included in the forthcoming Tiers of items in the near future. On one side, more time is needed to establish the MR process before further and additional safety-critical products could be introduced in the forthcoming Tiers. At an initial stage, the MR certificates could only include products related to Type Approval level. However, when the general impact of the up to Level 3 items is evaluated through time and experience, additional more complex products can be considered for assessment and inclusion in the list of MR certified items. The latter could also enhance the applicability of the MR process worldwide. To this end, further steps have been suggested including planned meetings among major international industry stakeholders in order to discuss and receive feedback and recommendations for incorporating additional products for MR certification.

As illustrated through this study, a significant proportion of marine stakeholders had no information with regards to the use and acceptance of the MR Certificate nor knew whether MR Certificates were currently accepted by all EU ROs. The latter is also supported by respondents' view to participate in further dissemination events (e.g. workshops, seminars, etc.) so as to enlarge the outreach of the MR scheme to a wider audience. To this end, the workshops organised by EU ROs and SEA Europe over the last couple of years have been an excellent step towards that direction.

At the same time, as more experience is accumulated, legal and liability aspects can be resolved and thoroughly addressed. In this context, products that already enjoy common rules among EU ROs could be a good starting point for the expansion of the scheme. Moreover, informing shipowners, shipbuilders and local surveyors of the MR scheme and the Regulation could further enhance its worldwide acceptance. Other measures that can promote the MR scheme are related to the publication of cost for the acquisition of MR certificates and the expansion of the range of products at an international level.

Finally, the Regulation provides an appropriate medium through which the MR certification process is addressed. It is noted that the EU involvement is provided as a supportive element towards the MR scheme leaving the initiative for active participation and development of the MR certification process to the key marine stakeholders. Moreover, this can be taken forward through international regulatory bodies such as IMO, expressing and representing the global maritime industry. The above could also lead to the enhancement of the EU marine market and provide a noteworthy move towards better understanding and cooperation between EU ROs and manufacturers.

7. Conclusions

This study set out a number of objectives which were thoroughly met through several steps. These included the critical review of available published information, the review of internet sources covering the availability of information to a range of stakeholders and information gathered through the distributed questionnaire as well as through interviews and the case study performed.

Through a total of 296 internet information sources , 309 sent questionnaires with 19.1% response rate, 11 interviews and additional case studies with manufacturers having experience with the MR application and certification process, this study has succeeded in critically covering and presenting the views and opinions within the marine industry. The above would not have been possible without the close cooperation with key stakeholders i.e. SEA Europe and EU ROs. Key findings include the following:

- The developed MR scheme is compliant with the EU Regulation. Moreover, full harmonization of individual EU ROs Type Approval certificates is ambiguous as EU ROs may still also issue individual Type Approval certificates for the same products.
- The application process for MR Certificates is straightforward and where experience exists the industry is satisfied by the general cost and administrative burden reduction as well as with the duration of the certificates and their quality. However, when witnessed testing is necessary, it is considered overwhelming (especially for SMEs), as it affects the cost of acquiring an MR certificate compared to previous certification.
- Through the application of the risk based approach for the selection of items included in the latest Tiers and the adherence to the strictest rules, safety is fully promoted through the MR scheme.
- There is a general lack of information outside the immediately affected stakeholders. There is already some level of training provided by EU ROs while Head Offices are in contact with site surveyors through dedicated personnel with particular focus on the implementation of Article 10.1. Further surveyor training and promotion of the scheme would be an asset to the current state of the implementation.
- The industry is supportive of the MR certification scheme and looks forward to its expansion (e.g. include steel plates, propellers, more complex products, etc.) even though the identified issues need to be resolved.
- International acceptance is the most important obstacle to overcome.
- Impact to liability and contractual agreements is yet to be identified; as it is still early stages of the Regulation implementation, such issues have not had to be dealt with as of yet.
- The applicability of the MR Certificates could be expanded to include offshore applications. Moreover, further information on the MR certification process is needed through workshops, public presentations and other dissemination events.

In conclusion there is still a need for greater involvement of various marine stakeholders in order to ensure better communication on the developments of the implementation of the Regulation. Wider participation and additional information provided to key personnel is necessary to acquire experience and address any upcoming issues. Moreover, maintaining the technical requirements for Tiers 1 to 3 should be one of the immediate actions taking into account that Tier 4 of products is

due to be presented by summer 2015. Other suggestions obtained through this report refer to the following:

- It is imperative to satisfy the need for global acceptance of the new MR certificate; in particular in areas at which major marine manufacturing and marine operations take place as well as including areas where major maritime interests are involved. This could initially be facilitated through a voluntary acceptance pilot stage including non-EU flag states so as to observe initial impact and further move to full scale implementation later.
- The processes within EU ROs need to mature and all other aspects to which such certificates are related to be clarified as well.
- Liability and contractual considerations need to be addressed especially when certification of a system relies on MR Certificates for sub-systems, ensuring that safety is not demised at any point when using MR Certificates.
- Further products that can be evaluated for inclusion to the MR certification scheme are related to steel materials and alloys, soft starters, push buttons, pipes and fire safety products which do not fall currently under Directive 96/98/EC on Marine Equipment (MED Directive).
- It is suggested that other global organisations such as IMO which is the International Marine Regulatory body or IACS which is the international association of classification societies, among others, are approached in an attempt to promote worldwide acceptance of the MR Certificate.
- Mutual Recognition agreements, such as the one between EU – USA in the area of Marine Equipment could also be used to increase global acceptance. Useful conclusions can also be drawn from the multilateral UN ECE 1958 agreement for the automotive industry. (EU, 2004; EU-USA, 1998; EU-USA, 2011; UN ECE, 1958)
- Promoting the scheme to shipowners, shipbuilders and the entire global marine industry by making information widely available will enhance the wider knowledge of the process followed for the specification of the product technical requirements.
- Additional experience on the implementation and maintenance of certificates/products should be gained within the current list of items to allow for the process to mature.
- Future developments may include further expansion of the MR scheme to Level 4 items, which need to be initially agreed on, considering industry-wide consensus. To this extend the collaboration between EU ROs and manufacturers will provide a substantial asset and also address the need for earlier involvement of the industry in the Technical Requirements implementation process and the product list choice.
- In future, an additional benefit will result from the replacement of the existing Type Approval certificates with one new MR certificate leading to further reduction of cost and administrative burden and total harmonisation supported by global acceptance.

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Appendix I – EU ROs meetings

Date	Location	City	Meeting Type	Comments
16/9/2009	ABS	London	Inaugural	Set up of the EU RO Group
23/11/2009	ABS	London	Technical Committee	1st Meeting of the Technical Committee
23/11/2009	ABS	London	Advisory Board	1st Meeting of the Advisory Board
25/1/2010	ABS	London	Technical Committee	
17/3/2010	ABS	London	Technical Committee	
18/5/2010	LR	Hamburg	Technical Committee	
16/6/2010	ABS	London	Advisory Board	
21/6/2010	VDMA Nord	Hamburg	Ad hoc	VDMA Class Board Meeting between VDMA, Engine, Manufacturers, BV, DNV and GL*
29/6/2010	ABS	London	Technical Committee	
29/9/2010	ABS	London	Technical Committee	
7/10/2010	LR HQ	London	Advisory Board	
19/10/2010	VDMA Nord	Hamburg	Ad hoc	VDMA & BV, GL, LR workshop preparation
21/10/2010	Sofitel Hotel	Brussels	Workshop	EMEC Workshop on Efficient Class
9/12/2010	ABS	London	Technical Committee	
24/1/2011		London	Advisory Board	
3/3/2011	ABS	London	Technical Committee	
22/3/2011	BV HQ	Neuilly-sur-Seine	Advisory Board	
19/5/2011	ABS	London	Technical Committee	
17/6/2011	BV HQ	Neuilly-sur-Seine	Advisory Board	
29/6/2011	ABS	London	Technical Committee	
6/9/2011	ABS	London	Technical Committee	
26/9/2011	Marriott Hotel	Neuilly-sur-Seine	Advisory Board	
13/12/2011	GL HQ	Hamburg	Advisory Board	
14/12/2011	Hotel	Hamburg	Workshop	
27/1/2012			EU RO MR Expert Group	Risk
15/2/2012	DNV HQ	Oslo	Technical Committee	
2/3/2012	Evergreen Laurel Hotel	Paris	Advisory Board	
15/3/2012	EC	Brussels	Ad hoc	DGMove & EU ROs
20/4/2012			EU RO MR Expert Group	Risk
7/5/2012	EC	Brussels	Ad hoc	DGMove & EU

				ROs
15/5/2012	DNV HQ	Oslo	Technical Committee	
21/5/2012	BV HQ	Neuilly-sur-Seine	Advisory Board	
25/5/2012	LR HQ	London	Working Group	Drafting of Report to EC
27/6/2012	BV HQ	Neuilly-sur-Seine	Advisory Board	
27/6/2012			Working Group	Drafting of Report to EC
9/8/2012	EC	Brussels	Ad hoc	DGMove & EU ROs
9/8/2012			Working Group	Drafting of Report to EC
4/9/2012			Working Group	Drafting of Report to EC
13/9/2012	DNV HQ	Oslo	Technical Committee	
4/10/2012	LR HQ	London	Advisory Board	
17/10/2012			Working Group	Drafting of Report to EC
22/11/2012			EU RO MR Expert Group	Risk
9/12/2012			EU RO MR Expert Group	Risk
10/12/2012	LR HQ	London	Advisory Board	
17/1/2013	DNV HQ	Oslo	Technical Committee	
25/1/2013	KR HQ	Busan	Workshop	MR seminar for Korean marine equipment manufacturers ho sted by KR
7/2/2013	SEA Europe Office	Brussels	Ad hoc	SEA Europe & ROs
5/3/2013	LR HQ	London	Advisory Board	
10/4/2013	DNV HQ	Oslo	Technical Committee	
26/4/2013	RS HQ	St Petersburg	Workshop	MR seminar for Russian manufacturers hosted by RS
6/5/2013	LR	Hamburg	Ad hoc	EU RO workshop preparation
7/5/2013	Madison Hotel	Hamburg	Workshop	Joint workshop with SEA Europe
11/6/2013	LR HQ	London	Advisory Board	
20/6/2013	DNV HQ	Oslo	Technical Committee	
10/9/2013	DNV GL	Hamburg	Advisory Board	
24/9/2013	PRS HQ	Gdansk	Technical Committee	
25/9/2013	PRS HQ	Gdansk	Technical Committee	
15/10/2013	EC	Brussels	Ad hoc	DGMove, DGEntr & AB Chair
12/11/2013	QACE HQ	London	Ad hoc	AB Chair & Qace Executives
21/11/2013	PRS HQ	Gdansk	Technical Committee	
28/11/2013	DNV GL	Hamburg	Advisory Board	

14/1/2014	PRS HQ	Gdansk	Technical Committee	
15/1/2014	PRS HQ	Gdansk	EU RO MR Expert Group	
21/1/2014	DNV GL	Hamburg	Advisory Board	
26/2/2014	KR HQ	Busan	Workshop	MR seminar for Korean marine equipment manufacturers ho sted by KR
4/3/2014	Danish Maritime HQ	Copenhagen	Workshop	Organised by Danish Manufactuer association. LR and DNV GL participated
12/3/2014	EC	Brussels	Ad hoc	DGMove, DGEntr, SEA Europe & AB Chair
20/3/2014	RINA HQ	Genoa	EU RO MR Expert Group	
27/3/2014	PRS HQ	Gdansk	Ad hoc	MR Presentation for Association of Polish Maritime Industries FORUM OKRĘTOWE
23/4/2014	DNV GL	Hamburg	Technical Committee	
24/4/2014	DNV GL	Hamburg	Advisory Board	
27/5/2014	LR HQ	London	Ad hoc	EU RO / SEA Europe workshop preparation
28/5/2014	Grange Tower Bridge	London	Workshop	Joint workshop with SEA Europe
3/6/2014	DNV GL	Hamburg	Advisory Board	
2/7/2014	RINA HQ	Genoa	EU RO MR Expert Group	
15/7/2014	CRS HQ	Split	Ad hoc	CRS, AB Chair, TC Chair & Secretary to discuss CRS joining the EUROMR Group
9/9/2014		Hamburg	Ad hoc	MAN Diesel & Turbo, dnv gl & lr
11/9/2014	SMM	Hamburg	Ad hoc	AB Chair & Netherlands Maritime Technology Members
30/9/2014	PRS HQ	Gdansk	Technical Committee	
14/10/2014	DNV GL	Hamburg	Advisory Board	
15/10/2014	DNV GL	Hamburg	Ad hoc	Comms Group & Dr Lazakis

Additional Information:			
Stakeholder	**Details of Meeting**	**Participants**	**When**
VDMA	*VDMA's Class Board Meeting	ABS,BV,DNV,GL,LR by invitation	Annually
VDR	Ad hoc meeting	ABS,BV,DNV,GL,LR by invitation	2010 & 2011
EC	Ad hoc meeting	AB Chair & DGMove	Δεκ-11
International Chamber of Shipping, London	Ad hoc meeting	AB Chair & ICS	2012
Intercargo, London	Ad hoc meeting	AB Chair & Intercargo	2012
Society of Maritime Industries, London	Ad hoc meeting	AB Chair & SMI	2012
Japan Ship Machinery & Equipment Association and Japan Ship-Machinery Quality Control Association	MR explanatory meeting	JSMEA, JSMQA & NK	Οκτ-12
Japan Ship Machinery & Equipment Association (JSMEA)	MR explanatory meeting	JSMEA & NK	NK has regularly provided these associations with information on the progress of MR when they have had an opportunity to meet with them.
Japan Ship-Machinery Quality Control Association (JSMQA)	MR explanatory meeting	JSMQA & NK	
The Japanese Shipowners' Association (JSA)	MR explanatory meeting	JSA & NK	
The Shipbuilders' Association of Japan (SAJ)	MR explanatory meeting	SAJ & NK	
China Association of the National Shipbuilding Industry (CANSI)	MR explanatory meeting	CCS and CANSI	Οκτ-13

Period		AB Chairmanship	Period		TC Chairmanship
2009		N/A	2009		N/A
2010		ABS	2010/2011		ABS
2011		BV	2012/2013		DNV
2012/2013		LR	01/07/13 31/12/14	to	PRS
01/07/13 **31/12/14**	**to**	DNV GL	01/01/15 30/06/16	to	KRS
01/01/15 **31/12/15**	**to**	RS	01/07/16 31/12/17	to	BV
01/01/16 **31/12/16**	**to**	NK	01/01/18 30/06/19	to	LR
01/01/17 **31/12/17**	**to**	RINA			
01/01/18 **31/12/18**	**to**	CCS			
01/01/19 **31/12/19**	**to**	CRS			

Appendix II – List of Products included in Tiers 1 to 3 and future Tier 4

a/a	Type Approved Components	Tier	Release Date
1	Resin Chocks	1	Jan-13
2	Circuit Breakers	1	Jan-13
3	Contactors	1	Jan-13
4	Display Monitors, Video Screens, Terminals	1	Jan-13
5	LV-Enclosures and Boxes	1	Jan-13
6	Mechanical Joints	1	Jan-13
7	Switches	1	Jan-13
8	LV Transformers	1	Jan-13
9	Fuses	1	Jan-13
10	Electric Motors<20 KW	1	Jan-13
11	Sensors	1	Jan-13
12	Air pipe Closing Devices	2	Jul-13
13	Batteries	2	Jul-13
14	Electric Heating Cables	2	Jul-13
15	Expansion Joints	2	Jul-13
16	Ex-Proof Lights/ enclosures	2	Jul-13
17	Plastic Piping Systems	2	Jul-13
18	Spark Arrestors	2	Jul-13
19	Class III Pipe Fittings	2	Jul-13
20	Computer and PLCs	2	Jul-13
21	Electric Relays	2	Jul-13
22	Cable Ties	2	Jul-13
23	Adjustable steel chocks	3	Jul-14
24	Compressors for general service air	3	Jul-14
25	Battery Chargers	3	Jul-14
26	Cable trays & ducts (glass reinforced plastic)	3	Jul-14
27	Connecting systems for cable repair (cable splices)	3	Jul-14
28	Electrical actuators for valves	3	Jul-14
29	Insulation Panels for Provision Rooms and Chambers	3	Jul-14
30	Boiler remote level indicators	3	Jul-14
31	Pneumatic actuators for valves	3	Jul-14
32	Cable trays & ducts (metallic)	3	Jul-14
33	Solenoid valve assembly	3	Jul-14
34	Stationary lighting fixtures, flood-light projectors	3	Jul-14

a/a	Type Approved Components Of Future Tiers	Tier	Release Date
35	Circuit Breakers with Electronic Devices	4	Jul-15
36	Contactors with Electronic Devices	4	Jul-15
37	Tachometers	4	Jul-15
38	Temperature Gauges & Transmitters	4	Jul-15
39	Thermal Insulation of Organic Foams for Piping	4	Jul-15
40	Valves for Bilge Systems	4	Jul-15
41	Valves for Freshwater Systems	4	Jul-15
42	Valves for Lubricating Oil Systems	4	Jul-15
43	Valves for Sanitary Systems	4	Jul-15
44	Valves for Seawater Systems	4	Jul-15

Appendix III – Associated webpages

No.	ORGANISATIONS	CONTENT	WEB ADDRESS
1	**EU Recognised Organisations (ROs)**		
	EU RO MUTUAL RECOGNITION GROUP	Links and PDF Documents	http://www.euromr.org/
	American Bureau of Shipping ("ABS")	Classification, Certification and Type Approval Information	http://www.eagle.org/eagleExternalPortalWEB/appmanager/absEagle/absEagleDesktop?_nfpb=true&_pageLabel=abs_eagle_portal_svcs_type_approval_book2
	Bureau Veritas ("BV")	Marine Equipment Certification	http://www.veristar.com/portal/veristarinfo/detail?content-id=/repository/collaboration/sites%20content/live/veristarinfo/vi-content-navigation/services/servicesByType/certification/statutoryCertification
	China Classification Society ("CCS")	List of Approved Marine Products	http://www.ccs.org.cn/ccswzen/font/fontAction!moudleIndex.do?moudleId=82
	Det Norske Veritas ("DNV") Germanischer Lloyd ("GL")	Links and PDF Documents	http://www.gl-group.com/infoServices/rules/pdfs/eurecognisedorganisations.pdf https://exchange.dnv.com/DNVX/ApprovedPublic/ApprovedProductsAndManufacturers.html
	Korean Register of Shipping ("KR")	EU Recognized Organization - Mutual Recognition	http://www.krs.co.kr/eng/keyservice/Marine/K_marine_mr1.aspx
	Lloyd's Register Group Ltd ("LR")	PDF Documents	http://www.lr.org/en/_images/213-35914_TA_EU_report_1212.pdf http://www.lr.org/en/_images/213-35912_TA_EU_Report_Supplement_No_1_TR2_requirements_01_July_2013.pdf
	Nippon Kaiji Kyokai ("NK")	PDF Documents	http://www.classnk.or.jp/hp/zh-tw/tech_info/tech_main.aspx?techno=946
	Polski Rejestr Statków S.A. ("PRS")	Links and PDF Documents	http://www.prs.pl/company/news/latest-news/2013/mutual-recognition-of-type-approval-certificates,year:,month:,news:788.html
	RINA – Registro Italiano Navale	Mutual Recognition	http://www.service.rina.it/getec/tipiomologatir5.nsf/mainpage.xsp?info=TOAENG&page=home
	Russian Maritime Register of Shipping ("RS")	Type Approval Certificates	http://www.rs-class.org/sto/menu_cto_e.html

Croatian Register of Shipping (“CRS”)	Type approval products, approval manufactures and service suppliers	http://www.crs.hr/TypeApprovals.aspx http://www.crs.hr/en-us/data/typeapprovals/certificationaccordingtoeudirectives/directiveonmarineequipment9698ec(med).aspx

2	**Manufacturer Associations**

SEA Europe	PDF Documents	http://www.seaeurope.eu/template.asp?f=publications.asp
Association of Croatian Marine Equipment Manufacturers	No information found	http://www.hgk.hr/
Association of Finnish Marine Industries	No information found	http://new.teknologiateollisuus.fi/en/branches/association-of-finnish-marine-industries.html
GICAN - French Marine Industry Group	No information found	http://www.gican.asso.fr/en/
COFRENA - Association of French Marine Equipment Manufacturers	No information found	No link found
CIMAC - The International Council on Combustion Engines	No information found	http://www.cimac.com/
EUROMOT - The European Association of Internal Combustion Engine Manufacturers	PDF Documents	http://www.euromot.eu/search/result
German Engineering Federation (VDMA) Division Marine and Offshore Equipment Industries	Articles	http://mus.vdma.org/en/article/-/articleview/273099
ASSONAVE - The Italian Marine Industry Association – Group of Equipment Suppliers	No information found	http://www.assonave.it/
V.D.S. Video Display Systems S.r.l.	No link found	No link found
Japan Marine Equipment Association (JSMEA)	No information found	http://www.jsmea.or.jp/
Japan Ship Machinery Quality Control Association	Information not in English	http://www.jsmqa.or.jp/index.html

KOMEA - Korea Marine Equipment Association	Information not in English	http://www.komea.kr/indexE.asp
Busan Marine Equipment Association	Information not in English	http://www.bmea.or.kr/eng/01/01.aspx#
Association of Norwegian Marine Equipment Manufacturers	Information not in English	http://www.norskindustri.no/
Forum Okretowe	No information found	http://www.forumokretowe.org.pl/
Unicont Spb	No information found	http://www.unicont.spb.ru/index_en.html
AEDIMAR	Information not in English	www.aedimar.es
Swedocean	No information found	http://www.swedocean.org/
Holland Marine Equipment	No information found	http://www.hme.nl/
GESAD – Turkish Association of Ship Industrialists	Information not in English	http://www.gesad.org.tr/
Society of Maritime Industries	PDF Documents	http://www.maritimeindustries.org/CoreCode/Search/search.aspx?term=No%20391/2009%20EC
Mariner Systems (UK) Ltd., UK	No information found	http://www.marinersystems.co.uk/

3	**Flag States**

Antigua and Barbuda	No information found	http://www.antiguamarine.com/
Argentina	No link found	No link found
Australia	No information found	http://www.amsa.gov.au/vessels/shipping-registration/
Azerbaijan	No link found	No link found
Bahamas	No information found	http://bahamasmaritime.com/downloads/bulletins/71bulltn.pdf
Bangladesh	No information found	http://dos.gov.bd/
Barbados	No information found	http://www.barbadosmaritime.com/
Belize	No information found	http://www.immarbe.com/
Belgium	No information found	http://www.shipregistration.be/
Bermuda	No information found	http://www.bermudashipping.bm/registry/demise-registry
Bolivia	No information found	http://www.isbship.com/php/registrationDetails.php?rr_id=5&s_id=3

Brazil	Information not in English	https://www.dpc.mar.mil.br/
Bulgaria	No information found	http://www.bkrclass.org/Default_en.aspx
Cambodia	No information found	http://isrocam.com/
Canada	No information found	http://www.tsb.gc.ca/eng/index.asp
Canary Island	No information found	http://www.actiweb.es/ships_register/canary_islands_ship_registry.html
Cayman Islands	No information found	http://www.cishipping.com/portal/page?_pageid=4362,1&_dad=portal&_schema=PORTAL
Chile	No information found	http://www.directemar.cl/
China	No information found	http://en.msa.gov.cn/
Colombia	No information found	http://www.guidetoshipregistries.com/shipregistries-country/colombia
Cote d'Ivoire	No link found	No link found
Croatia	No information found	http://www.crs.hr/en-us/home.aspx
Cuba	No link found	No link found
Curacao	No information found	http://www.maritimecuracao.org/home/default.htm
Cyprus	No information found	http://www.mcw.gov.cy/mcw/dms/dms.nsf/index_en/index_en?opendocument
Czech Republic	No information found	http://www.guidetoshipregistries.com/shipregistries-country/czech-republic
Danish Maritime Authority	No information found	http://www.dma.dk/Sider/Home.aspx
Denmark	No information found	http://www.dma.dk/Sider/Home.aspx
Ecuador	No information found	http://www.guidetoshipregistries.com/shipregistries-country/ecuador
Egypt	No information found	http://www.egyptrs.com/
Equatorial Guinea	No information found	http://www.un.org/depts/los/LEGISLATIONANDTREATIES/STATEFILES/GNQ.htm
Estonia	No information found	http://www.vta.ee/atp/?id=1785
Faroe Islands	No information found	http://www.fas.fo/
Fiji	No information found	http://www.msaf.com.fj/
France	No information found	http://www.rif.mer.developpement-durable.gouv.fr/en/
Finland	No information found	http://www.trafi.fi/en/maritime/registers/register_of_ships

Georgia	No information found	http://mta.gov.ge/eng/ship-registration/ships-registration
Germany	Information found	http://www.deutsche-flagge.de/en/construction-and-equipment/ships-equipment
Ghana	No information found	http://www.ghanamaritime.org/
Gibraltar	No information found	http://www.gibraltarport.com/maritimeservices/shipregistry
Greece	Information not in English	http://www.hrs.gr/
Honduras	No information found	http://www.isbship.com/php/registrationDetails.php?rr_id=2&s_id=3
Hong Kong	No information found	http://www.mardep.gov.hk/en/home.html
Hungary	No information found	http://www.nkh.gov.hu/hir-megjelenito/-/hir/194716
Iceland	No information found	http://www.framsyn.is/english/
India	No information found	http://www.irclass.org/
Indonesia	No information found	http://www.belvamas.com/indonesia-registry.html
Ireland	No link found	No link found
Islamic Republic of Iran	No link found	No link found
Isle of Man	No information found	http://www.gov.im/ded/shipregistry/
Israel	No information found	http://en.mot.gov.il/mot-authorities/spa
Italy	Information not in English	http://www.guardiacostiera.it/en/
Jamaica	No information found	http://www.jamaicaships.com/
Japan	No information found	
Kiribati	No information found	http://www.kiribaship.com/EN/Default.aspx
Latvia	No information found	http://www.latvianshipregistry.eu/
Lebanon	No information found	http://www.lebshipping.com/index.htm
Liberia	No information found	http://www.liscr.com/liscr/
Lithuania	No information found	http://www.msa.lt/en/public-services-and-nark/registration-of-ships/registration.html

Luxembourg	No information found	http://www.maritime.lu/
Malaysia	No information found	http://www.mot.gov.my/en/Services/PagePerkhidmatan/Pages/PendaftaranKapalPelesenanBot.aspx
Maldives	No information found	http://transport.gov.mv/
Malta	No information found	http://www.transport.gov.mt/ship-registration
Marshall Islands	No information found	http://www.register-iri.com/
Mauritius	No information found	http://publicinfrastructure.govmu.org/English/Pages/default.aspx
Mexico	No information found	http://www.guidetoshipregistries.com/shipregistries-country/mexico
Micronesia (Federated States of)	No information found	http://knoema.com/UNCTADMF2013/merchant-fleet-by-flag-of-registration-and-by-type-of-ship-annual-1980-2013-august-2013?location=1001200-micronesia-federated-states-of
Moldova	No information found	http://moldovashipregistration.com/
Mongolia	No information found	http://www.mngship.org/
Morocco	No link found	No link found
Myanmar	No information found	http://www.mot.gov.mm/dma/index.html
Netherlands	No information found	http://www.doevemakelaar.nl/en/
New Zealand	No information found	http://www.maritimenz.govt.nz/Commercial/Ship-registration/Ship-registration-in-New-Zealand.asp
North Korea	No link found	No link found
Norway	Articles and Reports	http://www.sjofartsdir.no/en/search/?search=Mutual+Recognition+EC+391/2009&searchfiles=true
Pakistan	No information found	http://www.mercantilemarine.gov.pk/Body/Ship%20Reg/Ship%20Reg.htm
Panama	No information found	http://www.segumar.com/
Papua New Guinea	No information found	http://www.nmsa.gov.pg/
Peru	No information found	https://www.marina.mil.pe/
Philippines	No information found	http://www.marina.gov.ph/
Poland	No information found	http://www.prs.pl/homepage.html
Portugal	No information found	http://www.ibc-madeira.com/Default.aspx?ID=16

Romania	No information found	http://www.guidetoshipregistries.com/shipregistries-country/romania.html
Russian Federation	No information found	http://www.rs-class.org/en/
St. Kitts and Nevis	No information found	http://www.stkittsnevisregistry.net/
Saint Vincent and the Grenadines	No information found	http://www.svg-marad.com/home.asp
Samoa	No information found	http://www.marinetitle.com/boat-registration/AS-American-Samoa.htm
São Tomé and Príncipe	Under construction	http://www.guidetoshipregistries.com/shipregistries-country/sao-tome-and-principe
Senegal	No link found	No link found
Singapore	No information found	http://www.mpa.gov.sg/
Slovenia	No information found	http://www.up.gov.si/en/areas_of_work/
Solomon Islands	No information found	http://www.companyhaus.gov.sb/
South Africa	No information found	http://www.samsa.org.za/
Spain	No information found	http://www.guidetoshipregistries.com/shipregistries-country/spain
Sri Lanka	No information found	http://www.dgshipping.gov.lk/web/
Suriname	No information found	http://www.mas.sr/en/
Sweden	No information found	https://www.transportstyrelsen.se/en/Shipping/Register-of-Ships/Ships/
Switzerland	No information found	http://www.guidetoshipregistries.com/shipregistries-country/switzerland
Thailand	No information found	http://www.guidetoshipregistries.com/shipregistries-country/thailand
Tonga	Ship registry of Tonga is closed	http://www.pbs.org/frontlineworld/stories/spain/tonga.html
Trinidad and Tobago	No information found	www.patnt.com/
Tunisia	No link found	No link found
Turkey	No information found	http://www.turkishmaritime.com/link.aspx
Tuvalu	No information found	http://www.tvship.com/EN/Default.aspx
Ukraine	No information found	http://en.shipregister.ua/
Union of Comoros	No information found	http://www.bihlyumov.com/
United Arab Emirates	Registration requred	http://www.guidetoshipregistries.com/shipregistries-country/united-arab-emirates

United Kingdom	No information found	https://www.gov.uk/government/collections/uk-ship-register-forms-guides-and-notices
Uruguay	Authorisation required to gain access	http://www.guidetoshipregistries.com/shipregistries-country/uruguay
United States of America	No information found	http://www.marad.dot.gov/ships_shipping_landing_page/ships_and_shipping_landing_page.htm
Vanuatu	No information found	http://www.vanuatumaritimeships.com/
Venezuela	No information found	http://vrsclass.com/
Vietnam	No information found	http://www.vr.org.vn/vre/HomeNE.aspx
Virgin Islands	No information found	http://www.vishipping.gov.vg/
Yugoslavia	Most ships have been allocated either to Croatia or Slovenia	No link found

4	**Associations**

ATENA - Italian Association of Maritime Technology, Italy	No link found	No link found
BIMCO - The Baltic and International Maritime Council,	No information found	https://www.bimco.org/
BIPAR- European Federation of Insurance Intermediaries -	No information found	http://www.bipar.eu/
CAJS - The Cooperative Association of Japan Shipbuilders	Information not in English	http://www.cajs.or.jp/en/
CANSI - China Association of National Shipbuilding Industry	No information found	http://www.china-ship.com/en/news.php?id=122
CESA - Community of European Shipyards' Associations	No information found	http://www.cesa-shipbuilding.org/
CIRM - COMITE INTERNATIONAL RADIO-MARITIME - The International Association for Marine Electronics Companies)	Authorisation required to gain access	http://www.cirm.org/

CLIA - Cruise Lines International Association,	No information found	http://www.cruising.org/
CONFITARMA - Italian Shipowners' Association, Italy,	No information found	http://www.confitarma.it/english/page.php?idpage=DBAAAAAA
Danish Shipowners' Association	Information not in English	https://www.shipowners.dk/en/om-os/danmarks-rederiforening/
ECC - European Cruise Council	No information found	http://www.cliaeurope.eu/
ECSA - European Community Shipowners' Association	No information found	http://www.ecsa.eu/
EMPA - European Maritime Pilots Association	No information found	http://www.empa-pilots.org/
ESC - European Shippers' Council	No information found	http://www.europeanshippers.eu/
ESPO - European Sea Ports Organisation	No information found	http://www.espo.be/
HELMEPA - Hellenic Marine Environment Protection Association	No information found	http://www.helmepa.gr/en/
IAPH - The International Association of Ports and Harbours	No information found	http://www.iaphworldports.org/
ICOMIA - International Council of Marine Industry Associations	PDF Documents	http://www.icomia.com/search.aspx?q=Directive%20Reg.%20No.%20391/2009%20EC%20Mutual%20Recognition&s=all
ICS - International Chamber of Shipping ISF - International Shipping Federation	No information found	http://www.ics-shipping.org/
IFSMA - International Federation of Shipmasters' Associations	No information found	http://www.ifsma.org/
IMCA - The International Marine Contractors Association	No information found	http://www.imca-int.com/
INTERCARGO International Association of Dry Cargo Shipowners	No information found	http://www.intercargo.org/
INTERFERRY	Newsletter	http://www.interferry.com/node/281

InterManager International Ship Managers' Association	No information found	http://www.intermanager.org/
INTERTANKO - International Association of Independent Tanker Owners	Authorisation required to gain access	https://www.intertanko.com/Funtional-Pages/Search/?epslanguage=en&quicksearchquery=Reg.+No.+391%2f2009+EC+Mutual+Recognition&page=1&sortdate=true
IUMI - International Union of Marine Insurance	No information found	http://www.iumi.com/
JSA - the Japanese Shipowners' Association	No information found	http://www.jsanet.or.jp/e/
KOSHIPA - Korean Shipbuilder Association	No information found	http://www.koshipa.or.kr/eng/koshipa/koshipa3/index.jsp
MAR.TEC.MA, Greece	No information found	http://www.martec.gr/
Norwegian Maritime Suppliers	Information not in English	http://www.maritime-suppliers.com/supplier/supplierlist.aspx
Norwegian Shipowners' Association	No information found	http://www.rederi.no/nrweb/english.nsf
OCIMF - Oil Companies International Marine Forum	No information found	http://www.ocimf.com/
P & I Clubs International Group of P & I Associations	No information found	http://www.igpandi.org/
Portuguese association of shipyards: Associação das Indústrias Navais	Information not in English	http://www.ain.pt/index.php?mod=search&action=search&area=articles&keywords=Reg.+391%2F2009+EC
RINA - The Royal Institution of Naval Architects	No information found	http://www.rina.org.uk/
SAJ - the Shipbuilders' Association of Japan	No information found	http://www.sajn.or.jp/e/
SIGTTO - Society of International Gas Tanker and Terminal Operators Ltd.	No information found	http://www.sigtto.org/
SNAME - The Society of Naval Architects & Marine Engineers	No information found	http://www.sname.org/home
The Swedish Ship Owners' Association	No information found	http://www.sweship.se/
VDR - German Shipowners' Association	No information found	http://www.reederverband.de/en.html

WSC- World Shipping Council	No information found	http://www.worldshipping.org/

5 Industry Links

AAPA - The American Association of Port Authorities	PDF Documents	http://www.aapa-ports.org/search/SearchResults2.cfm?BTNSEARCH.X=28&BTNSEARCH.Y=15&QUICKSEARCH=Reg.%20No.%20391%2F2009%20EC%20Mutual%20Recognition
AAPMA - The Association of Australian Ports & Marine Authorities	No information found	http://www.portsaustralia.com.au/
EUCC - Coastal Guide Europe	No information found	http://www.coastalguide.org/
ESPO - European Seaports Organisation	No information found	http://www.espo.be/
AIVP - International Association of Cities and Ports	No information found	http://www.aivp.org/
IALA - International Association of Lighthouse Authorities	No information found	http://www.iala-aism.org/
Paris MoU	No information found	https://www.parismou.org/
Mediterranean MoU	No information found	http://81.192.52.109/
Indian MoU	No information found	http://www.iomou.org/
Riyadh MoU	No information found	http://www.riyadhmou.org/
Black Sea MoU	Information not in English	http://www.bsmou.org/default2.htm
Caribbean MoU	No information found	http://www.caribbeanmou.org/index.php
Abuja MoU	No information found	http://www.abujamou.org/index.php
Tokyo MoU	No information found	http://www.tokyo-mou.org/
Vina Del Mar Agreement	No information found	http://www.acuerdolatino.int.ar/
PBS - Panama Bureau of Shipping	No information found	http://www.pbspty.com/
Segumar - Panama Maritime Authority	No information found	http://www.segumar.com/

6	**Intergovernmental and International Organisations**

Indian Register of Shipping (“IRCLASS”)	No information found	http://www.irclass.org/
RINAVE – Registro Internacional Naval SA (“Rinave”)	document not found	http://www.rinave.org/
IACS - International Association of Classification Societies	No information found	http://www.iacs.org.uk/
EMSA - European Maritime Safety Agency	PDF Documents	http://www.emsa.europa.eu/implementation-tasks/visits-and-inspections/assessment-of-classification-societies.html
IEC - International Electrotechnical Commision	No information found	http://www.iec.ch/
IECEE - System of Conformity Testing and Certification of Electrotechnical Equipment and Components	No information found	http://www.iecee.org/
ILAC - International Laboratory Accreditation Cooperation	No information found	https://www.ilac.org/
IMO - International Maritime Organisation	No information found	http://www.imo.org/Pages/home.aspx
ISO - International Organisation of Standardisation	No information found	http://www.iso.org/iso/home.html
LOVAG - Low Voltage Agreement Group	No information found	http://www.lovag.net/home_welcome_at_the_lovag_website.html
MARPOL - International Convention for the Prevention of Pollution from Ships	No information found	http://marpol.com/
OCEAN - European Ship Suppliers Organisation	No information found	http://www.shipsupply.eu/
SEA - Ships and Maritime Equipment Association of Europe	Publications	http://www.seaeurope.eu/template.asp?f=publications.asp
	Press Releases	http://www.seaeurope.eu/template.asp?f=pressreleases.asp
SOLAS - International Convention for the Safety of Life at Sea	No information found	http://www.imo.org/KnowledgeCentre/ReferencesAndArchives/HistoryofSOLAS/Pages/default.aspx
IMLI - International Maritime Law Institute	No information found	www.imli.org

UNCITRAL - The UN Commission on International Trade Law	No information found	www.uncitral.org
UNCTAD - The UN Conference on Trade and Development	PDF Documents	http://unctad.org/SearchCenter/Pages/results.aspx?k=Mutual%20Recognition%20within%20ship%20classification%20Reg.%20391%2F2009%20EC
International Maritime Bureau Piracy Reporting Centre	No information found	www.iccwbo.org/ccs/menu_imb_piracy.asp
United Nations Division for Ocean Affaire and Law of the Sea	Report	http://search.un.org/search?ie=utf8&site=un_org&output=xml_no_dtd&client=UN_Website_en&num=10&lr=lang_en&proxystylesheet=UN_Website_en&oe=utf8&q=Reg.+No.+391%2F2009+EC&Submit=Go

7	**International Maritime Law Associations**

EMLO - European Maritime Law Association	No information found	http://www.emlo.org/
CMI - Comité Maritime International	No information found	http://www.comitemaritime.org/Home/0,271,1132,00.html
AADM - Argentine Maritime Law Association	No information found	www.aadm.org.ar
Maritime Law Association of Australia and New Zealand	No information found	www.mlaanz.org
Association Belge de Droit Maritime	No information found	www.bvz-abdm.be
Brazil	Information not in English	www.abdm.org.br
Canadian Maritime Law Association	No information found	www.cmla.org
China	Information not in English	www.cmla.org.cn
EIMLA - Estonian International Maritime Law Association	No information found	http://www.imla.info/
AFDM - French Association of Maritime Law	No information found	www.afdm.asso.fr
Hong Kong Maritime Law Association	No information found	www.hkmla.org
Italy	No information found	www.aidim.org

Irish Maritime Law Association	No information found	www.irishmaritimelaw.com
Japanese Maritime Law Association	Information not in English	www.jmla.jp
Korean Maritime Law Association	Information not in English	www.kormla.or.kr
Malta Maritime Law Association	No information found	www.mmla.org.mt
Mexico	Information not in English	www.amdm.sytes.net
Dutch Maritime and Transport Law Association	No information found	www.nvzv.nl
Norwegian Maritime Law Association	No information found	www.nmla.no
Panama Maritime Law Association	No information found	www.apdm.org
Russia	No information found	www.scf-group.ru
Maritime Law Association of Singapore	No information found	www.mlas.org.sg
MLASA - Maritime Law Association of South Africa	No information found	www.mlasa.co.za
Southeastern Admiralty Law Institute	No information found	http://www.iclega.org/seali/
Spain	Information not in English	www.aedm.es
BMLA - British Maritime Law Association	No information found	www.bmla.org.uk
MLA - Maritime Law Association of the United States	No information found	www.mlaus.org

8	**Other Organisations**

World Port Development	No information found	http://www.worldportdevelopment.com/
World Shipping Directory	No information found	http://www.world.no/
Sea Companion	No information found	http://www.seacompanion.com/
US Coast Guard	No information found	http://www.uscg.mil/
Singapore Shipping Association	No information found	http://www.ssa.org.sg/
ISOPE - International Society of Offshore and Polar Engineers	No information found	http://www.isope.org/

World Cargo News	No information found	http://www.worldcargonews.com/
Ports of Scotland	No information found	http://www.portsofscotland.co.uk/
PTI - Port Technology International	No information found	http://www.porttechnology.org/
PORTeC - Port Operations Research and Technology Centre	No information found	http://www3.imperial.ac.uk/portoperations/
SNSC - Singapore National Shippers' Council	No information found	http://www.snsc.org.sg/
SMF - Singapore Maritime Foundation	No information found	http://www.smf.com.sg/
SCMA - Singapore Chamber of Maritime Arbitration	No information found	http://www.scma.org.sg/
SAMSA - South African Maritime Safety Authority	No information found	http://www.samsa.org.za/
ABP - Associated British Ports	No information found	http://www.abports.co.uk/
MRC - Marine Resource Centre	No information found	http://www.marineresourcecentre.co.uk/

9	**Marine News**

Ship.gr - Shipping Directory & Maritime News	No information found	http://www.ship.gr/index.htm
Shiptalk - The world's leading seafarer portal	No information found	http://www.shiptalk.com/
Marine Log Magazine	No information found	http://www.marinelog.com
The Marine Web	Resources as PDF Documents	http://www.marineweb.com/google-search-results/index.shtml?cx=partner-pub-2654433393102745%3Agibwhbjhvsx&cof=FORID%3A9&ie=ISO-8859-1&q=Mutual+Recognition+391%2F2009&sa=Search
Houseboat Magazine	No information found	http://www.houseboatmagazine.com
Lloyds Register Fairplay	Articles	http://www.ihs.com/search.aspx?searchinput=type+approval+2009&PrimaryNavigator=&SecondaryNavigator=&ResultsPerPage=50&SortBy=Relevance&offsets=&showtab=0
Safety At Sea International	link to static single page	http://www.sas-intl.com
Bunker World	Subscription required	http://www.bunkerworld.com

Bunker Spot	Subscription required	http://www.bunkerspot.com
Marine Talk	No information found	http://www.marinetalk.com

10 Other Useful Links

Crewseekers International	No information found	http://www.crewseekers.co.uk
The Maritime Law and Admirality Law Page	No information found	http://www.admiraltylaw.com
Office of Boating Safety	No information found	http://www.uscgboating.org
Great Lakes Waypoints	No information found	http://www.marinewaypoints.com/learn/charts/GreatLakes.shtml
Department of Marine Science	No information found	http://www.marine.usm.edu
Brand Tasmania	No information found	http://www.brandtasmania.com
North of England P&I Club	No information found	http://www.nepia.com
National Union of Marine, Aviation and Shipping Transport Officers – NUMAST	No information found	http://www.numast.org
The Federation of European Maritime Associations of Surveyors and Consultants	Webpage no longer active	http://www.femas.net
Marine Support Online	No information found	http://www.marinesupportonline.com
Society Of Accredited Marine Surveyors	No information found	http://www.marinesurvey.org
National Association of Marine Surveyors	No information found	http://www.nams-cms.org
Society of Consulting Marine Engineers and Ship Surveyors	No information found	http://www.scmshq.org
Society of Naval Architects and Marine Engineers	No information found	http://www.sname.org
Boatcrew.com	Webpage no longer active	http://www.boatcrew.com
Maritime Lawyer Tim Akpinar	No information found	http://www.mycounsel.us

Appendix IV – Questionnaire

1. In which of the following categories does your professional identity fall under?

☐ Recognised Organisation
☐ Marine Equipment Manufacturer
☐ Marine Equipment Supplier
☐ Marine/Maritime Association
☐ Shipyard/Shipbuilder
☐ Ship-owner
☐ Flag State Authority
☐ Regulatory Authority
☐ Insurer/Protection & Indemnity club
☐ Charterer
☐ Other (Please specify)

2. What is the size of your enterprise/organisation?

Note: As defined in European Union (EU) law, the main factors determining whether a company is SME are:

1. number of employees < 250 and
2. either turnover ≤ € 50 m or balance sheet total ≤ € 43 m.

☐ Small and Medium Enterprise (SME)
☐ Large Organisation
☐ Other (Please specify)

3. Please select the geographical areas in which you are professionally active.

☐ Africa
☐ Asia
☐ Australia
☐ Europe
☐ North America
☐ South America

4. How would you rate your awareness level towards the regulatory regime related to Mutual Recognition (MR) Article 10.1 of Regulation (EC) No. 391/2009?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Poor	Fair	Good	Very Good	Excellent

5. Do the classification standards for products in Tier 1-3 vary among each Recognised Organisation (RO)?

☐ Yes
☐ No
☐ Do not know
☐ Not applicable

6. **How would you rate the quality of the to-date developed Mutual Recognition (MR) classification rules?**

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Very Bad	Bad	Neither Good nor Bad	Good	Very Good

7. **Are you aware of any updates/developments towards the harmonisation of classification rules by the Recognised Organisations (EU ROs) since the implementation of Article 10.1 of Regulation (EC) No. 391/2009?**

☐ Yes
☐ No
☐ Do not know

8. **If Yes, which are the changes that you are aware of?**

9. **Are the standards for the accreditation of a material, equipment or component certification aligned between each EU RO?**

☐ Yes
☐ No
☐ Do not know

10. **How would you rate the consultation steps that have been made by the EU Recognised Organisations (EU ROs) with industry groups and trade associations?**

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Very Ineffective	Ineffective	Neither Effective nor Ineffective	Effective	Very Effective

11. **Are you aware whether already issued certificates for materials, equipment and components are being accepted by other European Union Recognised Organisations (EU ROs)?**

☐ Yes
☐ No
☐ Do not know

12. Are the certificates for new materials, equipment and components issued by a single EU Recognised Organisation (EU RO) being recognised by other EU Recognised Organisations too?

☐ Yes
☐ No
☐ Do not know

13. How would you rate, up to now, the overall level of awareness on Mutual Recognition certification?

☐ 1	☐ 2	☐ 3	☐ 4
Far short of expectations	Short of expectations	Exceeds expectations	Far exceeds expectations

14. Are you aware of the materials, equipment and components lists (Tier 1, 2 and 3) that have been added so far by the EU Recognised Organisations (EU ROs) for Mutual Recognition (MR) certification?

☐ Yes
☐ No
☐ Do not know

15. Are all/some of the listed materials, equipment and components in Tiers 1, 2 and 3 part of your company's portfolio?

☐ Yes
☐ No
☐ Do not know
☐ Not applicable

16. Have you applied for the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certificate for at least one product?

☐ Yes
☐ No
☐ Do not know
☐ Not applicable

17. How would you evaluate the application process for the Mutual Recognition (MR) certificate?

18. Do you intend to apply for a European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certificate for at least one of your products?

☐ Yes
☐ No
☐ Do not know
☐ Not applicable

19. If you have not yet applied/do not intend to apply, why not?

20. Based on your experience, what are the benefits of the European Union Recognised Organisations EU ROs Mutual Recognition (MR) scheme?

21. Based on your experience, what are the drawbacks of the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) scheme?

22. How would you rate the current status (number of items and application/use) of materials, equipment and components included in Tier 1, 2 and 3?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Poor	Fair	Good	Very Good	Excellent

23. In your opinion, which other additional materials, equipment and components should be considered by the European Union Recognised Organisations (EU ROs) for Mutual Recognition (MR)?

24. In your view, what changes should be suggested to improve the selection process of the materials, equipment and components for the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification scheme?

25. To your mind, which are the main barriers towards the broader acceptance and application of the Mutual Recognition (MR) Article 10.1 of Regulation (EC) No. 391/2009 certification scheme?

26. In which ways do you consider that these barriers may be overcome?

27. In your opinion, are adequate incentives being provided towards the broader implementation of the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification scheme?

☐ Yes
☐ No
☐ Do not know

28. Which incentives would you consider to be essential for a widely applied European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification scheme?

29. Should the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification scheme be further promoted?

☐ Yes
☐ No
☐ Do not know

30. If YES, how?

31. Do you consider a European Union Regulation appropriate for these issues?

☐ Yes
☐ No
☐ Do not know

32. Why or why not?

33. Please share with us any additional comments or suggestions for further improvement related to EC Regulation 391/2009 on Mutual Recognition within ship classification EC 391/2009.

Appendix V –MR Certificates issued (as of February 2015)

DET NORSKE VERITAS

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **MR-A-1**

is issued to

Hatteland Display AS
NEDRE VATS, Norway

for
Monitors, Terminals

with type designation(s)
TFT Displays
JH 15T15/15T17/19T12/19T14/20T17/22T11/23T12/23T14/26T11/27T11 MMD,
JH 19T14 STD and HM 20T07 MIL

The product is found to comply with
DNV TA program for EU-RO-MR for Monitors, Terminals

Intended service
Display for alarm and monitoring systems subject to classification.

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirementsversion 0.0 dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

This Certificate is valid until **2018-10-03**.

Issued at **Høvik** on **2013-10-03**

for **Det Norske Veritas AS**

DNV local station: **Haugesund**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
Head of Section

Certificate No.: MR-A-1
File No.: MR-A001
Job Id.: 262.4-000003-1

Product description

Series 1 TFT Display monitors from Hatteland Display AS, as listed below:

Display Type No.	Description	Power supply options[1)]	Standard compass safe distance	Steering compass safe distance
JH 15T15 MMD	Maritme Multi Display	A, D	125 cm – 130 cm	85 cm – 100 cm
JH 15T17 MMD	Maritme Multi Display	A, D	130 cm	100 cm
JH 19T12 MMD	Maritme Multi Display	A, D, M	105 cm – 160 cm	75 cm – 105 cm
JH 19T14 MMD	Maritme Multi Display	A, D, M	65 cm – 160 cm	35 cm – 105 cm
JH 20T17 MMD	Maritme Multi Display	A, D, M	75 cm	35 cm
JH 22T11 MMD	Maritime Multi Display	A, D, M	160 cm	90 cm
JH 23T12 MMD	Maritme Multi Display	A	160 cm	105 cm
JH 23T14 MMD	Maritime Multi Display	A, M	60 cm	25 cm
JH 26T11 MMD	Maritime Multi Display	A, M	125 cm	80 cm
JH 27T11 MMD	Maritme Multi Display	A	50 cm	30 cm
JH 19T14 STD	Industrial Display	A, M	85 cm	45 cm
HM 20T07 MIL	Military Display	A	115 cm	70 cm

1) A = 115/230VAC – 50/60Hz
D = 24VDC
M = 115/230VAC – 50/60Hz + 24VDC

Compass safe distance differs for the different configurations of displays of type JH 15T15, JH 19T12, and JH 19T14.

The type approved configurations are described by the respective data sheets listed under Type Approval documentation.

Overview of tested firmware versions and revision history up to date of issue of this certificiate are listed in Hatteland Display's Firmware statement No. DOC101670-1 rev.1 listed under Type Approval documentation.

Series 1 Brackets (optional accessories):

Bracket Type No.	Displays of Equivalent Size
JH 19BRD STD-A1	JH 19T02 MMD, JH 19T12 MMD, JH 19T14 MMD
JH 22BRD STD-A1	JH 22T11 MMD
JH 23BRD STD-A1	JH 23T02 MMD, JH 23T12 MMD, JH 23T14 MMD
JH 36BRD STD-A1	JH 26T11 MMD
JH 27BRD STD-A1	JH 27T11 MMD

Place of manufacture

Hatteland Display
5578 Nedre Vats, Norway

Application/Limitation

The Type Approval covers all hardware listed under Product description. The display monitors are intened for use in alarm and monitoring systems subject to classification.

All monitors are availble with touch screen functionality, which is beyond the scope of this approval. The touch screen hardware has been verified according to the DNV TA program for EU-RO-MR for monitors and terminals, but any use of touch functionality in classed applications needs to be verified through functional testing.

The dimming function is programmable and needs to be verified through functional testing when used in a system subject to classification.

Certificate No.: MR-A-1
File No.: MR-A001
Job Id.: 262.4-000003-1

Type Approval documentation

Marking of product

Manufacturer's name:	Hatteland Display
Type No.:	Main type as listed under product description + 7 characters to describe the options
Unique serial No.	
Date of manufacture:	YYYYMMDD
Power supply ratings:	Input voltage as listed under product description + power rating (W)

Other conditions

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0, dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

Environmental test parameters

Temperature:	-15°C and 55°C
Vibration:	±1mm / 0,7g
EMC:	All locations including bridge and open deck
Enclosure:	IP22 standalone, IP66 when sealed to console (IP ratings according to IEC 60529)

Periodical assesment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE

6.8.3 MR

EU RO Mutual Recognition

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

Изготовитель
Manufacturer — *PENTAIR THERMAL MANAGEMENT LLC*

Адрес
Address — *307 Constitution Drive, Menlo Park, CA-94025, USA*

Изделие*
Product* — *Саморегулирующиеся нагревательные кабели типа BTV, QTV*

Heating cables of self-regulating type BTV, QTV

Код номенклатуры
Code of nomenclature — *11150005*

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) Согласованным техническим требованиям Организаций, признанных Европейским Союзом и нижеуказанным требованиям Правил/Стандартам:

This is to certify that on the basis of the survey and tests carried out the above mentioned product(s) comply with the Agreed Technical Requirements of European Union Recognized Organization and below mentioned Rules/Standards:

1. *Правила классификации и постройки морских судов, Часть XI "Электрическое оборудование", 2014*
   Rules for classification and construction of sea-going ships, Part XI "Electrical Equipment", Edition 2014
2. *EU Mutual Recognition Technical Requirements. Electric cables-Heating cables. 2013-03-04.*

Настоящее Свидетельство о типовом одобрении действительно до
This Type Approval Certificate is valid until — *03 Апреля 2019 / 03 April, 2019*

Настоящее Свидетельство о типовом одобрении теряет силу в случаях, установленных Процедурой взаимного признания Организаций, признанных Европейским Союзом.

This Type Approval Certificate becomes invalid in cases stipulated in European Union Recognized Organization Mutual Recognition Procedure.

Место выдачи / Place of issue: *Санкт Петербург / Saint Petesburg*
Дата выдачи / Date of issue: *03 Апреля 2014 / 03 April, 2014*
№ *14.01285.315*

Российский морской регистр судоходства
Russian Maritime Register of Shipping

М.П.
L.S.

(подпись / signature)

Евенко В.И. / V.I. Evenko
(фамилия, инициалы / name)

*Дополнительную информацию смотри на обороте.
Additional information see overleaf.

Технические данные
Technical data

Типы кабеля / Kable types	BTV	QTVR
Напряжение, В / Power supply, VAC	230	230
Сечение, материал жилы / Conductor section, material QTVR)	1,2 mm², Медь/Cu	1,4 mm², Медь/Cu (10 QTVR and 15 2,3 mm², Медь/Cu (20 QTVR)
Нагревательный элемент / Heating element	Саморегулируемый проводник / Self-regulating conductive core	
Внутренняя изоляция / Inner sheath	Модиф.полиолефин / Modified polyolefin	Фторполимер / Fluoropolymer
Наружная изоляция / Outer sheath	Модиф.полиолефин / Modified polyolefin (BTV-CR) Фторполимер / Fluoropolymer (BTV-CT)	Фторполимер / Fluoropolymer
Рабочая темп. / Maintain temp.	до 65°C / up to 65°C	до 110°C / up to 110°C
Мин. темп. монтажа / Min. install temp.	-60°C	-60°C
Номинальная мощность при 10°C, Вт / м Nominal power output at 10°C, W / m	9 (3 BTV2-CT) 16 (5 BTV2-CT) 25 (8 BTV2-CT) 30 (10 BTV2-CT)	38 (10 QTVR2-CT) 51 (15 QTVR2-CT) 63 (20 QTVR2-CT)

Перечень комплектующих изделий и материалов для монтажа кабелей указан в Дополнении к этому Свидетельству
The list of accessories and materials for installation of cables is specified in Supplement to this Certificate

Свидетельство о соответствии типового образца изделия (EU DE) No. *14.01285.315* от *03 Апреля 2014*
Design Evaluation Certificate No. of *03 April, 2014*

выдано RS являющимся(-ейся) организацией признанной ЕС в соответствии со Ст.10 Правила No. 391/2009
issued by which is EU RO and meets Article 10 of Regulation (EC) No.391/2009

Европейского Парламента ЕС.
of the European Parliament.

Оценка качества производства (PQA) выполнены Российским морским регистром судоходства
Production quality assurance assessment has been carried out by Russian Maritime Register of Shipping

Акт № *14.01707.315* от 03 Апреля 2014 / 03 April, 2014
Report No. of

Область применения и ограничения
Application and limitations

Местный электрообогрев судовых трубопроводов, арматуры, леерных ограждений и т.д. на судах и ПБУ с классом признанной организации, а также на других объектах, находящихся под наблюдением признанной организации.

Local electrical heating of pipeline systems, fittings, railings etc. onboard RO-classed vessels, MODUs and other objects supervised by RO.

Изделие должно поставляться с копией настоящего Свидетельства о типовом одобрении
The product shall be delivered with a copy of this Type Approval Certificate

06/2013

EU RO Mutual Recognition

ДОПОЛНЕНИЕ

SUPPLEMENT

(к форме 6.8.3 MR / to 6.8.3 MR)

К СВИДЕТЕЛЬСТВУ О ТИПОВОМ ОДОБРЕНИИ № _____

TO TYPE APPROVAL CERTIFICATE No.

Технические данные:
Technical Data:

Российский морской регистр судоходства
Russian Maritime Register of Shipping

_____ _____

М.П. (подпись / signature) (фамилия, инициалы / name)

L.S.

6.8.3 MR

EU RO Mutual Recognition

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

Изготовитель
Manufacturer — *PENTAIR THERMAL MANAGEMENT LLC*

Адрес
Address — *307 Constitution Drive, Menlo Park, CA-94025, USA*

Изделие*
Product* — *Саморегулирующиеся нагревательные кабели типа XTV, KTV*

Heating cables of self-regulating type XTV, KTV

Код номенклатуры
Code of nomenclature — *11150005*

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) Согласованным техническим требованиям Организаций, признанных Европейским Союзом и нижеуказанным требованиям Правил/Стандартам:

This is to certify that on the basis of the survey and tests carried out the above mentioned product(s) comply with the Agreed Technical Requirements of European Union Recognized Organization and below mentioned Rules/Standards:

1. *Правила классификации и постройки морских судов, Часть XI"Электрическое оборудование", 2014*
   Rules for classification and construction of sea-going ships, Part XI "Electrical Equipment", Edition 2014
2. *EU Mutual Recognition Technical Requirements. Electric cables-Heating cables. 2013-03-04.*

Настоящее Свидетельство о типовом одобрении действительно до
This Type Approval Certificate is valid until — *03 Апреля 2019 / 03 April, 2019*

Настоящее Свидетельство о типовом одобрении теряет силу в случаях, установленных Процедурой взаимного признания Организаций, признанных Европейским Союзом.

This Type Approval Certificate becomes invalid in cases stipulated in European Union Recognized Organization Mutual Recognition Procedure.

Место выдачи / Place of issue: *Санкт Петербург / Saint Petesburg*
Дата выдачи / Date of issue: *03 Апреля 2014 / 03 April, 2014*
№ *14.01286.315*

Российский морской регистр судоходства
Russian Maritime Register of Shipping

М.П. / L.S.

(подпись / signature)

Евенко В.И. / V.I. Evenko
(фамилия, инициалы / name)

*Дополнительную информацию смотри на обороте.
Additional information see overleaf.

Технические данные
Technical data

Типы кабеля / Kable types	***XTV***	***KTV***
Напряжение, В / Power supply, VAC	***230***	***230***
Сечение, материал жилы / Conductor section, material	***2,3 mm², Медь/Cu***	***2,3 mm², Медь/Cu***
Нагревательный элемент / Heating element fibres	***Саморегулируемые токопроводящее волокна / Self-regulating conductive***	
Внутренняя изоляция / Inner sheath	***Фторполимер / Fluoropolymer***	
Наружная изоляция / Outer sheath	***Фторполимер / Fluoropolymer***	
Рабочая темп. / Maintain temp.	***до 120°C / up to 120°C***	***до 150°C / up to 150°C***
Мин. темп. монтажа / Min. install temp.	***-60°C***	***-60°C***
Номинальная мощность при 10°C, Вт / м Nominal power output at 10°C, W / m	***12 (4 XTV2-CT-T3) 25 (8 XTV2-CT-T3) 30 (10 XTV2-CT-T3) 38 (12 XTV2-CT-T3) 47 (15 XTV2-CT-T2) 63 (20 XTV2-CT-T2)***	***16 (5 KTV2-CT) 25 (8 KTV2-CT) 47 (15 KTV2-CT) 65 (20 KTV2-CT)***

Перечень комплектующих изделий и материалов для монтажа кабелей указан в Дополнении к этому Свидетельству
The list of accessories and materials for installation of cables is specified in Supplement to this Certificate

Свидетельство о соответствии типового образца изделия (EU DE) No. ***14.01286.315*** от ***03 Апреля 2014 / 03 April, 2014***
Design Evaluation Certificate No. of

выдано RS являющимся(-ейся) организацией признанной ЕС в соответствии со Ст.10 Правила No. 391/2009
issued by which is EU RO and meets Article 10 of Regulation (EC) No.391/2009

Европейского Парламента ЕС.
of the European Parliament.

Оценка качества производства (PQA) выполнены Российским морским регистром судоходства
Production quality assurance assessment has been carried out by Russian Maritime Register of Shipping

Акт № ***14.01707.315*** от ***03 Апреля 2014 / 03 April, 2014***
Report No. of

Область применения и ограничения
Application and limitations

Местный электрообогрев судовых трубопроводов, арматуры, леерных ограждений и т.д. на судах и ПБУ с классом признанной организации, а также на других объектах, находящихся под наблюдением признанной организации.

Local electrical heating of pipeline systems, fittings, railings etc. onboard RO-classed vessels, MODUs and other objects supervised by RO.

Изделие должно поставляться с копией настоящего Свидетельства о типовом одобрении
The product shall be delivered with a copy of this Type Approval Certificate

06/2013

EU RO Mutual Recognition

ДОПОЛНЕНИЕ

SUPPLEMENT (к форме 6.8.3 MR / to 6.8.3 MR)

К СВИДЕТЕЛЬСТВУ О ТИПОВОМ ОДОБРЕНИИ № _____

TO TYPE APPROVAL CERTIFICATE No.

Технические данные:
Technical Data:

Российский морской регистр судоходства
Russian Maritime Register of Shipping

_____ _____

М.П. (подпись / signature) (фамилия, инициалы / name)

L.S.

6.8.3 MR

EU RO Mutual Recognition

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

Изготовитель
Manufacturer: PENTAIR THERMAL MANAGEMENT LLC

Адрес
Address: 307 Constitution Drive, Menlo Park, CA-94025, USA

Изделие*
Product*: Кабели нагрева, с ограничением мощности типа VPL

Heating cables of power-limiting type VPL

Код номенклатуры
Code of nomenclature: *11150005*

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) Согласованным техническим требованиям Организаций, признанных Европейским Союзом и нижеуказанным требованиям Правил/Стандартам:

This is to certify that on the basis of the survey and tests carried out the above mentioned product(s) comply with the Agreed Technical Requirements of European Union Recognized Organization and below mentioned Rules/Standards:

1. ***Правила классификации и постройки морских судов, Часть XI"Электрическое оборудование", 2014***
   Rules for classification and construction of sea-going ships, Part XI "Electrical Equipment", Edition 2014
2. ***EU Mutual Recognition Technical Requirements. Electric cables-Heating cables. 2013-03-04.***

Настоящее Свидетельство о типовом одобрении действительно до
This Type Approval Certificate is valid until: ***03 Апреля 2019 / 03 April, 2019***

Настоящее Свидетельство о типовом одобрении теряет силу в случаях, установленных Процедурой взаимного признания Организаций, признанных Европейским Союзом.

This Type Approval Certificate becomes invalid in cases stipulated in European Union Recognized Organization Mutual Recognition Procedure.

Место выдачи / Place of issue: ***Санкт Петербург / Saint Petesburg***
Дата выдачи / Date of issue: ***03 Апреля 2014 / 03 April, 2014***
№ ***14.01287.315***

Российский морской регистр судоходства
Russian Maritime Register of Shipping

М.П.
L.S.

(подпись / signature)

Евенко В.И. / V.I. Evenko
(фамилия, инициалы / name)

*Дополнительную информацию смотри на обороте.
Additional information see overleaf.

Технические данные
Technical data

Типы кабеля / Kable types	***VPL***
Напряжение, В / Power supply, VAC	***230***
Сечение, материал жилы / Conductor section, material	***3,3 mm², медь с никелевым покрытием / Cu-Ni***
Нагревательный элемент / Heating element conductive	***Токопроводящее волокно с ограничением мощности / Power-limiting fibres***
Внутренняя изоляция / Inner sheath	***Fluoropolymer / Фторполимер***
Наружная изоляция / Outer sheath	***Fluoropolymer / Фторполимер***
Рабочая темп. / Maintain temp.	***до 230°C / up to 230°C***
Мин. темп. монтажа / Min. install temp.	***-60°C***
Номинальная мощность при 10°C, Вт/м / Nominal power output at 10°C, W/m	***15 (5 VPL2-CT) 30 (10 VPL2-CT) 45 (15 VPL2-CT) 60 (20 VPL2-CT)***

Перечень комплектующих изделий и материалов для монтажа кабелей указан в Дополнении к этому Свидетельству
The list of accessories and materials for installation of cables is specified in Supplement to this Certificate

Свидетельство о соответствии типового образца изделия (EU DE) No. ***14.01287.315*** от ***03 Апреля 2014 / 03 April, 2014***
Design Evaluation Certificate No. of

выдано RS являющимся(-ейся) организацией признанной ЕС в соответствии со Ст.10 Правила No. 391/2009
issued by which is EU RO and meets Article 10 of Regulation (EC) No.391/2009

Европейского Парламента ЕС.
of the European Parliament.

Оценка качества производства (PQA) выполнены Российским морским регистром судоходства
Production quality assurance assessment has been carried out by Russian Maritime Register of Shipping

Акт № ***14.01707.315*** от ***03 Апреля 2014 / 03 April, 2014***
Report No. of

Область применения и ограничения
Application and limitations

Местный электрообогрев судовых трубопроводов, арматуры, леерных ограждений и т.д. на судах и ПБУ с классом признанной организации, а также на других объектах, находящихся под наблюдением признанной организации.

Local electrical heating of pipeline systems, fittings, railings etc. onboard RO-classed vessels, MODUs and other objects supervised by RO.

Изделие должно поставляться с копией настоящего Свидетельства о типовом одобрении
The product shall be delivered with a copy of this Type Approval Certificate

06/2013

EU RO Mutual Recognition

ДОПОЛНЕНИЕ

SUPPLEMENT

(к форме 6.8.3 MR / to 6.8.3 MR)

К СВИДЕТЕЛЬСТВУ О ТИПОВОМ ОДОБРЕНИИ № _____

TO TYPE APPROVAL CERTIFICATE No.

Технические данные:
Technical Data:

Российский морской регистр судоходства
Russian Maritime Register of Shipping

_____ _____

М.П. (подпись / signature) (фамилия, инициалы / name)

L.S.

6.8.3 MR

EU RO Mutual Recognition

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

Изготовитель
Manufacturer — PENTAIR THERMAL MANAGEMENT LLC

Адрес
Address — 307 Constitution Drive, Menlo Park, CA-94025, USA

Изделие*
Product* — Кабели нагрева, последовательного типа XPI

Heating cables of serial type XPI

Код номенклатуры
Code of nomenclature — ***11150005***

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) СогласованнымРтехническимРтребованиямРОрганизаций, признанныхРЕвропейскимРСоюзомР иРнижеуказаннымРтребованиямРПравил/Стандартам:

This is to certify that on the basis of the survey and tests carried out the above mentioned product(s) comply with the Agreed Technical Requirements of European Union Recognized Organization and below mentioned Rules/Standards:

1. Правила классификации и постройки морских судов, Часть XI "Электрическое оборудование", 2014
Rules for classification and construction of sea-going ships, Part XI "Electrical Equipment", Edition 2014
2. EU Mutual Recognition Technical Requirements. Electric cables-Heating cables. 2013-03-04.

Настоящее Свидетельство о типовом одобрении действительно до
This Type Approval Certificate is valid until — ***03 Апреля 2019 / 03 April, 2019***

НастоящееРСвидетельствоРоРтиповомРодобренииРтеряетРсилуРвРслучаях, установленныхРПроцедуройР взаимногоРпризнанияРОрганизаций, признанныхРЕвропейскимРСоюзом.

This Type Approval Certificate becomes invalid in cases stipulated in European Union Recognized Organization Mutual Recognition Procedure.

МестоРвыдачиР / Place of issue — ***Санкт Петербург / Saint Petesburg***
Дата выдачи / Date of issue — ***03 Апреля 2014 / 03 April, 2014***
№ — ***14.01288.315***

Российский морской регистр судоходства
Russian Maritime Register of Shipping

М.П. / L.S.

(подпись / signature)

Евенко В.И. / V.I. Evenko
(фамилия, инициалы / name)

*Дополнительную информацию смотри на обороте.
Additional information see overleaf.

Технические данные
Technical data

Типы кабеля / Kable types	***XPI***
Напряжение, В / Power supply, VAC	***450 ; 750***
Сечение жилы / Conductor section	***2,5 - 25 mm²***
Номин. сопротивление жилы Ом / км Rated resistance of conductor, Ohm / km	***0,8 - 8000***
Нагревательный элемент / Heating element	***Термостойкая греющая жила / Heat-resistant heating conductor***
Внутренняя изоляция / Inner sheath	***ПТФЭ +Фторполимер / PTFE+Fluoropolymer***
Наружная изоляция / Outer sheath	***ПТФЭ / PTFE***
Поддерживаемая темп. / Rated temp.	***до 260°C / up to 260°C***
Мин. темп. монтажа / Min. install temp.	***-70°C***
Номинальная мощность при 10°C, Вт/м Nominal power output at 10°C, W/m	***35***

Перечень комплектующих изделий и материалов для монтажа кабелей указан в Дополнении к этому Свидетельству
The list of accessories and materials for installation of cables is specified in Supplement to this Certificate

Свидетельство о соответствии типового образца изделия (EU DE) No. ***14.01288.315*** от ***03 April, 2014***
Design Evaluation Certificate No. of

выдано RS являющимся(-ейся) организацией признанной ЕС в соответствии со Ст.10 Правила No. 391/2009
issued by which is EU RO and meets Article 10 of Regulation (EC) No.391/2009

Европейского Парламента ЕС.
of the European Parliament.

Оценка качества производства (PQA) выполнены Российским морским регистром судоходства
Production quality assurance assessment has been carried out by Russian Maritime Register of Shipping

Акт № ***14.01707.315*** от ***03 Апреля 2014 / 03 April, 2014***
Report No. of

Область применения и ограничения
Application and limitations

Местный электрообогрев судовых трубопроводов, арматуры, леерных ограждений и т.д. на судах и ПБУ с классом признанной организации, а также на других объектах, находящихся под наблюдением признанной организации.

Local electrical heating of pipeline systems, fittings, railings etc. onboard RO-classed vessels, MODUs and other objects supervised by RO.

Изделие должно поставляться с копией настоящего Свидетельства о типовом одобрении
The product shall be delivered with a copy of this Type Approval Certificate

06/2013

EU RO Mutual Recognition

ДОПОЛНЕНИЕ

SUPPLEMENT (**к форме 6.8.3 MR** / **to 6.8.3 MR**)

К СВИДЕТЕЛЬСТВУ О ТИПОВОМ ОДОБРЕНИИ № _____

TO TYPE APPROVAL CERTIFICATE No.

Технические данные:
Technical Data:

Российский морской регистр судоходства
Russian Maritime Register of Shipping

_____ _____

М.П. (подпись / signature) (фамилия, инициалы / name)

L.S.

6.8.3 MR

EU RO Mutual Recognition

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

Изготовитель
Manufacturer: PENTAIR THERMAL MANAGEMENT LLC

Адрес
Address: 307 Constitution Drive, Menlo Park, CA-94025, USA

Изделие*
Product*: Кабели нагрева, с минеральной изоляцией типа HCH/HCC, HDF/HDC, HSQ, HIQ, HAx (HAx2M, HAx2N, HAx1N)

Код номенклатуры
Code of nomenclature: ***11150005***

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) Согласованным техническим требованиям Организаций, признанных Европейским Союзом и нижеуказанным требованиям Правил/Стандартам:

This is to certify that on the basis of the survey and tests carried out the above mentioned product(s) comply with the Agreed Technical Requirements of European Union Recognized Organization and below mentioned Rules/Standards:

1. Правила классификации и постройки морских судов, Часть XI"Электрическое оборудование", 2014
Rules for classification and construction of sea-going ships, Part XI "Electrical Equipment", Edition 2014
2. EU Mutual Recognition Technical Requirements. Electric cables-Heating cables. 2013-03-04.

Настоящее Свидетельство о типовом одобрении действительно до
This Type Approval Certificate is valid until: ***03 Апреля 2019 / 03 April, 2019***

Настоящее Свидетельство о типовом одобрении теряет силу в случаях, установленных Процедурой взаимного признания Организаций, признанных Европейским Союзом.

This Type Approval Certificate becomes invalid in cases stipulated in European Union Recognized Organization Mutual Recognition Procedure.

Место выдачи / Place of issue: ***Санкт Петербург / Saint Petesburg***
Дата выдачи / Date of issue: ***03 Апреля 2014 / 03 April, 2014***
№ ***14.01289.315***

Российский морской регистр судоходства
Russian Maritime Register of Shipping

М.П.
L.S.

(подпись / signature)

Евенко В.И. / V.I. Evenko
(фамилия, инициалы / name)

*Дополнительную информацию смотри на обороте.
Additional information see overleaf.

Технические данные
Technical data

Типы кабеля / Kable types	*HCH/HCC*	*HDF/HDC*	*HSQ*	*HIQ*	*HAx*
Напряжение, В / Power supply, VAC	*300/500*	*300/500*	*300/500 460/800*	*300/500 460/800*	*300/600*
Нагревательный элемент / Heating element	*Cu, Cu-Ni*	*Cu, Cu-Ni*	*NiCr*	*NiCr*	*Cu, Cu Alloy*
Номин. сопротивление жилы Ом / км Rated resistance of conductor, Ohm / km	*1,08 - 2000*	*4 - 1600*	*160 - 10000*	*2,0 - 36000*	*160 - 10000*
Внутренняя изоляция / Inner insulation	*Оксид магния / Magnesium oxide*				
Оболочка кабеля / Cable sheath	*Cu*	*Cu-Ni*	*Alloy321*	*Alloy600*	*Alloy825*
Наружный даметр, мм / Outer diameter, mm	*2,8 - 8,3*	*3,2 - 5,9*	*3,2 - 6,5*	*3,2 - 6,5*	*3,2 - 13,8*
Рабочая темп. / Maintain temp. (700)°C / (700)°C	*до 200°C / up to 200°C*	*до 400°C / up to 400°C*	*до 450 (700)°C / up to 450 (700)°C*	*до 450 (700)°C / up to 450 (700)°C*	*до 550 up to 550*
Мин. темп. монтажа / Min install temp.			*-60°C*		
Номинальная мощность при 10°C, Вт/м Nominal power output at 10°C, W/m	*50*	*70*	*150*	*300*	*210 - 270*

Перечень комплектующих изделий и материалов для монтажа кабелей указан в Дополнении к этому Свидетельству
The list of accessories and materials for installation of cables is specified in Supplement to this Certificate

Свидетельство о соответствии типового образца изделия (EU DE) No. *14.01289.315* от *03 Апреля 2014 / 03 April, 2014*
Design Evaluation Certificate No. of

выдано RS являющимся(-ейся) организацией признанной ЕС в соответствии со Ст.10 Правила No. 391/2009
issued by which is EU RO and meets Article 10 of Regulation (EC) No.391/2009

Европейского Парламента ЕС.
of the European Parliament.

Оценка качества производства (PQA) выполнены Российским морским регистром судоходства
Production quality assurance assessment has been carried out by Russian Maritime Register of Shipping

Акт № *14.01707.315* от *03 Апреля 2014 / 03 April, 2014*
Report No. of

Область применения и ограничения
Application and limitations

Местный электрообогрев судовых трубопроводов, арматуры, леерных ограждений и т.д. на судах и ПБУ с классом признанной организации, а также на других объектах, находящихся под наблюдением признанной организации.

Local electrical heating of pipeline systems, fittings, railings etc. onboard RO-classed vessels, MODUs and other objects supervised by RO.

Изделие должно поставляться с копией настоящего Свидетельства о типовом одобрении
The product shall be delivered with a copy of this Type Approval Certificate

06/2013

EU RO Mutual Recognition

ДОПОЛНЕНИЕ

SUPPLEMENT

(к форме 6.8.3 MR / to 6.8.3 MR)

К СВИДЕТЕЛЬСТВУ О ТИПОВОМ ОДОБРЕНИИ № _____

TO TYPE APPROVAL CERTIFICATE No.

Технические данные:
Technical Data:

Российский морской регистр судоходства
Russian Maritime Register of Shipping

_____ _____

М.П. (подпись / signature) (фамилия, инициалы / name)

L.S.

РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА
RUSSIAN MARITIME REGISTER OF SHIPPING

6.8.3 MR

EU RO Mutual Recognition

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

Изготовитель
Manufacturer *Marine Service Jaroszewicz S.C.*

Адрес
Address *ul. Bielanska 23, 70-703 Szczecin, Poland*

Изделие*
Product* *Двухкомпонентный полимерный материал на основе эпоксидной смолы EPY*
Two Component Polymer Material on the Base of Epoxy EPY

Код номенклатуры
Code of nomenclature *13350000*

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) Согласованным техническим требованиям Организаций, признанных Европейским Союзом и нижеуказанным требованиям Правил/Стандартам:

This is to certify that on the basis of the survey and tests carried out the above mentioned product(s) comply with the Agreed Technical Requirements of European Union Recognized Organization and below mentioned Rules/Standards:

EU RO Technical Requirements for Resin Chocks, version 1.0 dated 01.01.2013

Настоящее Свидетельство о типовом одобрении действительно до
This Type Approval Certificate is valid until *25.02.2019*

Настоящее Свидетельство о типовом одобрении теряет силу в случаях, установленных Процедурой взаимного признания Организаций, признанных Европейским Союзом.

This Type Approval Certificate becomes invalid in cases stipulated in European Union Recognized Organization Mutual Recognition Procedure.

Место выдачи / Place of issue *Санкт-Петербург, Россия / Saint-Petersburg, Russia*
Дата выдачи / Date of issue *25.02.2014*
№ *14.09101.381*

Российский морской регистр судоходства
Russian Maritime Register of Shipping

М.П.
L.S.

(подпись / signature)

А.В. Филиппов / A. Filippov
(фамилия, инициалы / name)

*Дополнительную информацию смотри на обороте.
Additional information see overleaf.

Технические данные
Technical data

Максимальные допустимые величины давления на подкладку следующие:

максимальная температура эксплуатации, °C:	***40***	***50***	***60***	***70***	***80***
для центруемых механизмов, Н/мм²:	***10.0***	***8.7***	***7,8***	***6,4***	***5,0***
для нецентруемых механизмов Н/мм²:	***30.0***	***30,0***	***30,0***	***15,0***	***15,0***

Максимальная удельная нагрузка на подкладку от массы механизма: 0,9 Н/мм²;

Maximum total surface pressure:

Max. service temperature, °C:	***40***	***50***	***60***	***70***	***80***
For equipment that should be aligned, N/mm²:	***10.0***	***8.7***	***7,8***	***6,4***	***5,0***
For equipment that should not be aligned, N/mm²:	***30.0***	***30,0***	***30,0***	***15,0***	***15,0***

Max. specific load due to weight: 0,9 N/mm².

Свидетельство о соответствии типового образца изделия (EU DE) No. ***14.09099.381*** от ***04.02.2014***
Design Evaluation Certificate No. of

выдано RS являющимся(-ейся) организацией признанной ЕС в соответствии со Ст.10 Правила No. 391/2009
issued by which is EU RO and meets Article 10 of Regulation (EC) No.391/2009

Европейского Парламента ЕС.
of the European Parliament.

Оценка качества производства (PQA) выполнены Российским морским регистром судоходства
Production quality assurance assessment has been carried out by Russian Maritime Register of Shipping

Акт № ***14.09100.381*** от ***25.02.2014***
Report No. of

Область применения и ограничения
Application and limitations

Полимерный материал предназначен для использования в качестве подкладок для судовых главных и вспомогательных двигателей, передач главных и вспомогательных двигателей, рулевых машин, подшипников валопровода, дейдвудных труб, палубных и других вспомогательных механизмов.

The chocking compound is approved for foundation choking of main and auxiliary engines, reduction gears, rudder actuators, stern tubes and bearings, deck machinery and other auxiliary machinery.

Ограничения приведены в Дополнении к настоящему свидетельству.
The limitations are listed in the Supplement to this Certificate .

Изделие должно поставляться с копией настоящего Свидетельства о типовом одобрении
The product shall be delivered with a copy of this Type Approval Certificate

06/2013

ДОПОЛНЕНИЕ
SUPPLEMENT

к Свидетельству № ***14.09101.381***
to Certificate No.

Ограничения:
1. Установка механизмов с использованием материала должна осуществляться в соответствии с технической документацией, которая одобряется на соответствие требованиям признанной организации EU RO. Техничекая документация, предоставляемая на одобрение, должна включать, как минимум, следующую информацию:
- масса устанавливаемых механизмов;
- количество, размер, расположение, тип и материал используемых болтов;
- расчеты удельных нагрузок для принятых размеров подкладок от массы механизма и затяжки фундаментных болтов, а также расчеты моментов затяжки фундаментных болтов и соответствующих напряжений в болтах;
- фиксирующие устройства для болтов и расчет удлинения болтов для фиксации болтовых соединений;
- информация об устройствах для предотвращения продольного и поперечного смещения;
- информация об уплотнительных устройствах (при установке дейдвудных труб или опорных подшипников);
- информация об используемых стопорных устройствах (для подшипников валопровода, подшипников и втулок баллера руля);
- инструкции изготовителя.
2. Укладка подкладок может выполняться только компаниями, которые авторизованы изготовителем - Marine Service Jaroszewicz S.C., в рамках ограничений предусмотренных технологическим процессом. По запросу инженера -инспектора должны быть представлены документы изготовителя - Marine Service Jaroszewicz S.C., подтверждающие факт обучения персонала авторизованной компаний выполнению технологического процесса установки подкладок.

Application limitations:
1. Each specific installation of cast resin chocks is to be carried out in compliance with installation drawings approved on case-by case basis, according to each specific R.O.'s Rules. Such specific approval will normally take into account, as 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-loaded and/or elongation, complete with details of tightening procedures;
- Locking arrangements for bolts and calculations of bolt elongation for bolt connection securing;
- Longitudinal and lateral stopping arrangements;
- Sealing arrangements (for installation in stern tube or shafts struts);
- Anti-rotation devices (for shaft bearings and rudder stock bearings/bushes);
- Manufacturer instructions (including instruction for special cases e.g. Thin small chock height or cracks in chocks).
2. 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.

Инженер-инспектор
Surveyor _____ ***А.В. Филиппов / A. Filippov***

М.П. (подпись / signature) (фамилия, инициалы / name)
L.S.

DET NORSKE VERITAS

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **MR-A-2**

is issued to

Hatteland Display AS
NEDRE VATS, Norway

for
Monitors, Terminals

with type designation(s)
Maritime Multi Displays and Standard Displays – Series X

The product is found to comply with
DNV TA program for EU-RO-MR for Monitors, Terminals

Intended service
Display for alarm and monitoring systems subject to classification.

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0 dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

This Certificate is valid until **2018-10-03**.

Issued at **Høvik** on **2013-10-03**

for **Det Norske Veritas AS**

DNV local station: **Haugesund**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
Head of Section

Certificate No.: MR-A-2
File No.: MR-A001
Job Id.: 262.4-000003-1

Product description

Maritime Multi Displays and Standard Displays – Series X, comprising the following models:

Type	Description	Power supply options	Standard compass safe distance	Steering compass safe distance
HD 12T21 MMD	MMD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 15T21 MMD	MMD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 17T21 MMD	MMD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 19T21 MMD	MMD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 24T21 MMD	MMD Series X	115/230VAC – 50/60Hz + 24VDC	70 cm	45 cm
HD 26T21 MMD	MMD Series X	115/230VAC – 50/60Hz + 24VDC	130 cm	70 cm
HD 08T21 STD	STD Series X Compact	24VDC	45 cm	30 cm
HD 13T21 STD	STD Series X Compact	24VDC	45 cm	30 cm
HD 12T21 STD	STD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 15T21 STD	STD Series X	115/230VAC – 50/60Hz + 24VDC	55 cm	40 cm
HD 17T21 STD	STD Series X	115/230VAC – 50/60Hz + 24VDC	80 cm	50 cm
HD 19T21 STD	STD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 24T21 STD	STD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	75 cm
HD 26T21 STD	STD Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	80 cm

The type approved configurations are described by the respective data sheets listed under Type Approval documentation.

Overview of tested firmware versions and revision history up to date of issue of this certificiate are listed in Hatteland Display's Firmware statement No. DOC101669-1 rev.1 listed under Type Approval documentation.

Series X Brackets (optional accessories):

Bracket Type No.	Displays of Equivalent Size
HD TMB SX1-A1	Series X sizes 12" and 15"
HD TMB SX1-B1	Series X sizes 17" and 19"
HD TMB SX1-C1	Series X sizes 24" and 26"

Place of manufacture

Hatteland Display
5578 Nedre Vats, Norway

Application/Limitation

The Type Approval covers all hardware listed under Product description. The displays are intened for use in alarm and monitoring systems subject to classification.

All monitors are availble with touch screen functionality, which is beyond the scope of this approval. The touch screen hardware has been verified according to the DNV TA program for EU-RO-MR for monitors and terminals, but any use of touch functionality in classed applications needs to be verified through functional testing.

The dimming function is programmable and needs to be verified through functional testing when used in a system subject to classification.

Type Approval documentation

Marking of product

Manufacturer's name: Hatteland Display
Type No.: Main type as listed under product description + 7 characters to describe the options
Unique serial No.
Date of manufacture: YYYYMMDD
Power supply ratings: Input voltage as listed under product description + power rating (W)

Certificate No.: MR-A-2
File No.: MR-A001
Job Id.: 262.4-000003-1

Other conditions

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0, dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

Environmental test parameters
Temperature: -15°C and 55°C
Vibration: ±1mm / 0,7g
EMC: All locations including bridge and open deck
Enclosure: IP22 standalone, IP66 when sealed to console (IP ratings according to IEC 60529)

Periodical assesment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE

DET NORSKE VERITAS

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **MR-A-3**

is issued to

ORION Technology Co., Ltd.
Gyeongbuk, Republic of Korea

for
Sensors

with type designation(s)
ISO-D0A, ISO-D0B

The product is found to comply with
DNV TA program for EU-RO-MR for Sensors

Intended service
Applicable for a ship as defined in Mutual Recognition provisions Article 10 Regulation on Common Rules and Standards For Ship Inspection and Survey Organizations.
Sensors intended for measuring the movement of the fuel oil plunger in the high pressure fuel oil pump and measuring the movement of the exhaust valve spindle.

This Certificate is valid until **2019-01-29**.

Issued at **Høvik** on **2014-01-29**

for **Det Norske Veritas AS**

DNV local station: **Ulsan**

Approval Engineer: **Nils Jarem**

Odd Magne Nesvåg
Head of Section

Certificate No.: MR-A-3
File No.: MR-A002
Job Id.: 262.4-000005-1

Product description

Inductive analog proximity sensor.

- Measuring range 7 mm (distance 0.5 - 7.5 mm)
- Output 4-20 mA, $R_L \leq 400\ \Omega$, $C_L < 1\ \mu F$
- Connection type Raychem type CL105-2x2x0.75
- Housing material Stainless steel SUS316
- Sensing face PEEK
- Protection degree IP67

Inductive sensor model:

Model : ISO-D0*

*: A = 64mm probe length, mass 940g. Firmware version: ISO-DOA_130618, V0.1, dated 2013-06-18.

*: B =120mm probe length, mass 1060g. Firmware version: ISO-DOB_130618, V0.1, dated 2013-06-18.

Rated voltage: 24V DC

Manufactured by

Orion Technology Co., Ltd.
1242, Apo Industrial Zone,
Kimcheon-Shi, Kyung-Buk,
Korea

Application/Limitation

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

Type Approval documentation

Marking of product

Flange:

ISO-D0A or ISO-D0B
Orion Technology

Housing:

MAN logo
MAN part no.
Serial no.

Certificate No.: MR-A-3
File No.: MR-A002
Job Id.: 262.4-000005-1

Other Conditions

The sensors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0, dated 2012-07-08.

Environmental test parameters

Temperature:	5℃ and 55℃
Vibration:	±1,6mm / 4,0g
EMC:	All locations except bridge and open deck
Enclosure:	IP67 (IP ratings according to IEC 60529)

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE

DET NORSKE VERITAS

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **MR-A-4**

is issued to

ISIC A/S
BRABRAND, Denmark

for
Monitors, Terminals

with type designation(s)
DuraMON 26 WS LED, DuraMON 26 WS LED Full,
Display MD26 ECDIS MK3, Display MD26 ECDIS KM05 MK3

The product is found to comply with
DNV TA program for EU-RO-MR for Monitors, Terminals

Intended service
Display for alarm and monitoring systems subject to classification.

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirementsversion 0.0 dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

This Certificate is valid until **2019-06-19**.

Issued at **Høvik** on **2014-06-19**

for **Det Norske Veritas AS**

DNV local station: **Aalborg**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
Head of Section

Certificate No.: MR-A-4
File No.: MR-A001
Job Id.: 262.4-000013-1

Product description

ISIC 26" WS (16:10) Marine Monitor Build in w/LED backlight, comprising the following models:

Model name	Part No.	Description
DuraMON26WS LED	05226-012	26" WS (16:10) Marine Monitor Build in w/LED backlight
DuraMON26WS LED Full	05226-013	26" WS (16:10) Marine Monitor Build in w/LED backlight
Display MD26 ECDIS MK3	05226-019	26" WS (16:10) Marine Monitor Build in w/LED backlight
Display MD26 ECDIS KM05 MK3	05226-020	26" WS (16:10) Marine Monitor Build in w/LED backlight – front KM05

Options for all models:
– Power supply 100-240 VAC 50/60 Hz (marine approved for 115-230 VAC nominal voltage)

Compass safe distance measurements:
DuraMON26WS LED / MD 26 LED – all versions and options: Standard 225 cm. Steering 135 cm.

Overview of tested hardware/firmware including name and versions are listed in ISIC's statement "Additional comment / document overview – DNV certificate on DuraMON26LED".

Place of manufacture

ISIC A/S
Edwin Rahrs Vej 54
DK-8220 Brabrand

Application/Limitation

The Type Approval covers all hardware listed under Product description. The display monitors are intened for use in alarm and monitoring systems subject to classification.

Type Approval documentation

Marking of product

Manufacturer's name:	ISIC
Type No.:	Model name as listed under product description
Unique serial No.	
Year of manufacture:	YYYY
	(Additionally to the year of manufacture, year and week of production is included in the serial No.)
Power supply ratings:	Mains voltage as listed under product description + Mains current 0.6-1.3A

Other conditions

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0, dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

Environmental test parameters

Temperature:	-15°C and 55°C
Vibration:	±1mm / 0,7g
EMC:	All locations including bridge and open deck
Enclosure:	IP2X standalone, IP65 when console mounted (IP ratings according to IEC 60529)

Certificate No.: MR-A-4
File No.: MR-A001
Job Id.: 262.4-000013-1

Periodical assesment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE

DET NORSKE VERITAS

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **MR-A-5**

is issued to

Moxa Inc.
New Taipei City, Taiwan

for
Computers and Programmable Logic Controllers

with type designation(s)
M-Vision series

The product is found to comply with
DNV TA program for EU-RO-MR for Computers and Programmable Logic Controllers

Intended service
Control, monitoring, alarm, and safety functions subject to classification requirements.

System context
Application of the control, monitoring, alarm, and safety systems are subject for approval of the individual RO classing the vessel.

This Certificate is valid until **2019-06-17**.

Issued at **Høvik** on **2014-06-17**

for **Det Norske Veritas AS**

DNV local station: **Kaohsiung**

Approval Engineer: **Nils Jarem**

Odd Magne Nesvåg
Head of Section

Certificate No.: MR-A-5
File No.: MR-A003
Job Id.: 262.4-000014-1

Product description

MOXA Panel Computer, M-Vision series:

MOXA Panel Computer	Display size	Compass safe distance	
		Standard	Steering
MPC-226a	26"	135 cm	75 cm
MPC-224a	24"	180 cm	80 cm
MPC-219a	19"	180 cm	80 cm

a= CPU type: 0 : Intel Celeron, 3 : Intel Core i3, 5 : Intel Core i5, 7 : Intel Core i7

Ratings: 24 VDC
115 to 230 VAC, 50/60 Hz

Tested firmware versions:
BIOS Version V1.00S02
Touch Keypad Firmware Version 1.0
Scalar firmware version 1.0

Manufactured by

Moxa Inc.
Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City,
Taipei 235,
Taiwan, R.O.C.

Application/Limitation

This approval covers hardware only. This excludes firmware, application software, and hardware designed for specific applications subject to classification. Firmware, system software, and application software are subject to additional separate approval, according to UR E22 and the rules of the classing RO (FAT and on-board review / tests).

Models with Z suffix are availble with touch screen functionality, which is beyond the scope of this approval. The touch screen hardware has been verified according to the DNV TA program for EU-RO-MR for monitors and terminals, but any use of touch functionality in classed applications needs to be verified through functional testing.

The dimming function is programmable and needs to be verified through functional testing when used in a system subject to classification.

Type Approval documentation

Marking of product

Manufacturer's name: Moxa Inc
Type No.: Types as listed under product description
Unique serial No.
Date of manufacture: YYYYMMDD
Power supply ratings: Input voltage as listed under product description + power rating (W)

Certificate No.: MR-A-5
File No.: MR-A003
Job Id.: 262.4-000014-1

Other Conditions

The units have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0, dated 2012-07-08.
Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.
Test of serial interfaces according to IEC 61162-2: Ed.1, 1998, for MPC series computers on NMEA 0183 ports only.
Color verification: According to IEC 61174:2008 Ed. 3.0 §6.7.3.1 (with reference to Annex L).

Environmental test parameters
Temperature: 0°C and 70°C
Vibration: ±1mm / 0,7g
EMC: All locations including bridge and open deck
Enclosure: IP2X standalone.

Periodical Assesment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE

DET NORSKE VERITAS

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **MR-A-6**

is issued to

Hatteland Display AS
NEDRE VATS, Norway

for
Computers and Programmable Logic Controllers

with type designation(s)
Maritime Computers, Series 1 MMC, Series X MMC

The product is found to comply with
DNV TA program for EU-RO-MR for Computers and Programmable Logic Controllers

Intended service
Computers for control, monitoring, alarm, and safety functions subject to classification requirements.

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0 dated 2013-04-30. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

This Certificate is valid until **2019-07-11**.

Issued at **Høvik** on **2014-07-11**

for **Det Norske Veritas AS**

DNV local station: **Haugesund**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
Head of Section

Certificate No.: MR-A-6
File No.: MR-A003
Job Id.: 262.4-000011-1

Product description

Maritme computers from Hatteland Display AS. Series 1 and Series X Maritime Multi Computers are panel computers, while the other maritime computers are different types of stationary computers without integrated display panel. The type approval covers the following computer types:

Type	Description	Power supply options	Compass safe distance	
			Standard	Steering
Series 1 Maritime Multi Computer:				
JH 15T17 MMC	Maritime Multi Computer	115/230VAC – 50/60Hz + 24VDC	55/115 cm	35/75 cm
JH 15T17 MMC	Maritime Multi Computer (slim)	115/230VAC – 50/60Hz + 24VDC	75 cm	45 cm
JH 19T14 MMC	Maritime Multi Computer	115/230VAC – 50/60Hz + 24VDC	115 cm	75 cm
Maritime Computer:				
HT B17 STD	Maritime Stand-alone Computer	115/230VAC – 50/60Hz + 24VDC	75 cm	45 cm
HT B18 STD	Maritime Stand-alone Computer	115/230VAC – 50/60Hz + 24VDC	75 cm	45 cm
HT 216 STD	Maritime Rackmount Computer	115/230VAC – 50/60Hz	140 cm	80 cm
HT 416 STD	Maritime Rackmount Computer	115/230VAC – 50/60Hz	135 cm	90 cm
HT C01 STD	Industrial Computer	115/230VAC – 50/60Hz + 24VDC	155 cm	95 cm
HM C01 STD	Industrial Computer	115/230VAC – 50/60Hz + 24VDC	155 cm	95 cm
HT B22xx STC	Compact Fanless Computer	115/230VAC – 50/60Hz + 24VDC	135 cm	85 cm
Series X Maritime Multi Computer				
HD 08T21 MMC	MMC Series X Compact	24VDC	45 cm	25 cm
HD 13T21 MMC	MMC Series X Compact	24VDC	80 cm	45 cm
HD 12T21 MMC	MMC Series X	115/230VAC – 50/60Hz + 24VDC	40 cm	20 cm
HD 15T21 MMC	MMC Series X	115/230VAC – 50/60Hz + 24VDC	55 cm	40 cm
HD 17T21 MMC	MMC Series X	115/230VAC – 50/60Hz + 24VDC	115 cm	70 cm
HD 19T21 MMC	MMC Series X	115/230VAC – 50/60Hz + 24VDC	70 cm	45 cm
HD 24T21 MMC	MMC Series X	115/230VAC – 50/60Hz + 24VDC	115 cm	70 cm
HD 26T21 MMC	MMC Series X	115/230VAC – 50/60Hz + 24VDC	125 cm	80 cm

Overview of tested firmware versions are listed in Hatteland Display's type approval request No. LET_DNV20140220AK listed under Type Approval documentation.

The type approved configurations are described by the respective data sheets listed under Type Approval documentation.

SSD and HDD:

Manufacturer	Type	Description	Size
Toshiba	MK2565GSX	Standard 2.5" HDD	250 GB
Fujitsu	MHW2080BH	Standard 2.5" HDD	80 GB
Fujitsu	MHZ2120BH	Standard 2.5" HDD	120 GB
PQI	SSM PQI S982-II	Disk On Chip Module	64 GB
Transcend	TS16GSSD25S	SSD 2.5"	16 GB
Transcend	TS32GSSD25S-M	SSD 2.5"	32 GB
Transcend	TS128GSSD25S-M	SSD 2.5"	128 GB
Intel	S3500	SSD 2.5"	Up to 600 GB
Toshiba	HG6	SSD 2.5"	Up to 512 GB
Innodisk	CFast 3ME	CompactFlash card	Up to 128 GB
Innodisk	CFast 3SE	CompactFlash card	Up to 128 GB
Innodisk	SlimSata 3MG-P	mSata SSD	Up to 128 GB
Innodisk	SLC 3SE-P	SSD 2.5"	Up to 256 GB
Toshiba	MQ01ABD100	Standard 2.5" HDD	Up to 1 TB

Certificate No.: MR-A-6
File No.: MR-A003
Job Id.: 262.4-000011-1

Accessories/Options:

Product name	Description	
HT 00262 OPT-A1	USB to NMEA COM (RS422/485), Ext. module	
PCA100293	USB to NMEA COM (RS422/485), Int. module	
HT 00263 OPT-A1	USB to COM (RS232), External module	
PCA100294	USB to COM (RS232), Internal module	
HT 00264 OPT-A1	USB to CAN, External module	
HT 00254 OPT-A1	USB to CAN, Internal module	
HT 00273 OPT-A1	USB to DIO, External module	
HT 00268 OPT-A1	USB to DIO, Internal module	
HT 00271 OPT-A1	Amplified Audio Output	
HT 00272 OPT-A1	LPT1	
JH C01MF A-A	USB Cable	

Brackets (optional accessories):

Bracket Type No.	Description
JH 19BRD STD-A1	Bracket for Series 1 model JH 19T14 xxx-xxxx
HD TMB SX1-A1	Bracket for Series X sizes 12" and 15"
HD TMB SX1-B1	Bracket for Series X sizes 17" and 19"
HD TMB SX1-C1	Bracket for Series X sizes 24" and 26"

Place of manufacture

Hatteland Display
5578 Nedre Vats, Norway

Application/Limitation

The Type Approval covers all hardware listed under Product description. The computers are intended for use in control, monitoring, alarm, and safety functions subject to classification requirements.

Type Approval documentation

Certificate No.: MR-A-6
File No.: MR-A003
Job Id.: 262.4-000011-1

Marking of product

Manufacturer's name: Hatteland Display
Type No.: Main type as listed under product description + 7 characters to describe the options
Unique serial No.
Date of manufacture: YYYYMMDD
Power supply ratings: Input voltage as listed under product description + power rating (W)

Other conditions

EU Mutual Recognition Technical Requirements for "Computers and programmable logic controllers" version 0.0, dated 2013-04-30 have been verified for all product listed under Product description.

EU Mutual Recognition Technical Requirements for "Display Monitors, Video Screens, Terminals" version 0.1, dated 2014-01-31 have additionally been verified for all panel computers (Series 1 MMC and Series X MMC), including the accessories and brackets listed under Product description.

Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified for all products listed under Product description.

Environmental test parameters
Temperature: -15℃ and 55℃
Vibration: ±1mm / 0,7g
EMC: All locations including bridge and open deck
Enclosure: Series 1: IP20 standalone, IP66 when sealed to console
Series X: IP22 standalone, IP66 when sealed to console
Others: IP20 (all IP ratings according to IEC 60529)

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE

DNV·GL

Certificate No:
MR-A-8
File No:
MR-A001
Job Id:
262.4-000016-1

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

This Certificate is issued to
ISIC A/S
BRABRAND, Denmark

for
Monitors, Terminals

with type designation(s)
DuraMON 19 GLASS, DuraMON 24 GLASS, DuraMON 26 GLASS

The product is found to comply with
DNV TA program for EU-RO-MR for Monitors, Terminals

Intended service
Display for alarm and monitoring systems subject to classification.

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirementsversion 0.0 dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

This Certificate is valid until **2019-09-28.**

Issued at **Høvik** on **2014-09-29**

for **DNV GL**

DNV GL local station: **Aalborg**

Approval Engineer: **Ståle Sneen**

.....
Odd Magne Nesvåg
Head of Section

Certificate No: **MR-A-8**
File No: **MR-A001**
Job Id: **262.4-000016-1**

Product description

ISIC 19", 24" and 26" Marine Monitor Build in w/Glass front panel, comprising the following models:

Model name	Part No.	Description
DuraMON 19 GLASS	07019-XXX	19" (5:4) Marine Monitor Build in w/Glass front panel
DuraMON 24 GLASS	07024-XXX	24" WS (16:10) Marine Monitor Build in w/Glass front panel
DuraMON 26 GLASS	07026-XXX	26" WS (16:10) Marine Monitor Build in w/Glass front panel

XXX designate OEM variants of the products. The variants will include PSU option and optional OEM logo.

Options for all models:
- Power 100-240 VAC 50/60 Hz (marine approved for 115-230 VAC nominal voltage)
- Power supply 24 VDC (marine approved for 24VDC nominal voltage)
- Power supply 24 VDC and 100-240 VAC 50/60 Hz (redundant)
  (marine approved for 24VDC and 115-230 VAC nominal voltage)

Compass safe distance measurements:
DuraMON 19 GLASS: Standard 165 cm. Steering 105 cm.
DuraMON 24 GLASS: Standard 225 cm. Steering 135 cm.
DuraMON 26 GLASS: Standard 190 cm. Steering 115 cm.

Overview of tested hardware/firmware including name and versions are listed in ISIC's statement "Additional comment / document overview – DNV certificate on DuraMON 19 / 24 / 26 GLASS".

Manufactured by

ISIC A/S
Edwin Rahrs Vej 54
DK-8220 Brabrand

Application/Limitation

The Type Approval covers all hardware listed under Product description. The display monitors are intened for use in alarm and monitoring systems subject to classification.

Type Approval documentation

Marking of product

Manufacturer's name: ISIC
Type No.: Model name as listed under product description
Unique serial No.
Year of manufacture: YYYY
(Additionally to the year of manufacture, year and week of production is included in the serial No.)
Power supply ratings: Mains voltage as listed under product description + Mains current

Certificate No: **MR-A-8**
File No: **MR-A001**
Job Id: **262.4-000016-1**

Other Conditions

The monitors have been verified for compliance with EU Mutual Recognition Technical Requirements version 0.0, dated 2012-07-08. Applicable tests for protected equipment according to IEC 60945 (Fourth edition - 2002) including Corrigendum 1 have additionally been verified.

Environmental test parameters

Temperature:	-15°C and 55°C
Vibration:	±1mm / 0,7g
EMC:	All locations including bridge and open deck
Enclosure:	IP2X standalone, IP65 when console mounted (IP ratings according to IEC 60529)

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
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- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE

Lloyd's Register

Mutual Recognition Type Approval Certificate

This is to certify that for the Manufacturer named below, the undernoted Product has been inspected, pursuant to the relevant requirements of the European Union Recognised Organisation Mutual Recognition procedure, required by Article 10 of EU Regulation 391/2009, and has been found in accordance with those requirements.

PRODUCT	Aluminium Tank Vent Check Valve Type designation CM Size DN 40 / 50 / 65 / 80 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 and 450 mm
MANUFACTURER	Winel BV Dr Philipsweg 55 9403 AD Assen The Netherlands
PLACE OF PRODUCTION	Winel Vietnam Limited Landplot E-3a, Nomura - Hai Industrial Zone An Duong District Hai Phong, Vietnam Winel BV Dr Philipsweg 55 9403 AD Assen The Netherlands
STANDARD(S)	EU Mutual Recognition Technical Requirements for Air Pipe Automatic Closing Devices
APPLICATION	Marine venting systems. See Design Appraisal Document No. 14/00072MR for the reverse air flow test results.
PRODUCT LIMITATIONS	Tank Vent Check Valves Type CM are not acceptable for venting flammable liquid tanks

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the Product certified herein. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

Certificate No.	14/00072MR
Issue Date	19 September 2014
Expiry Date	18 September 2019
Sheet	1 of 1

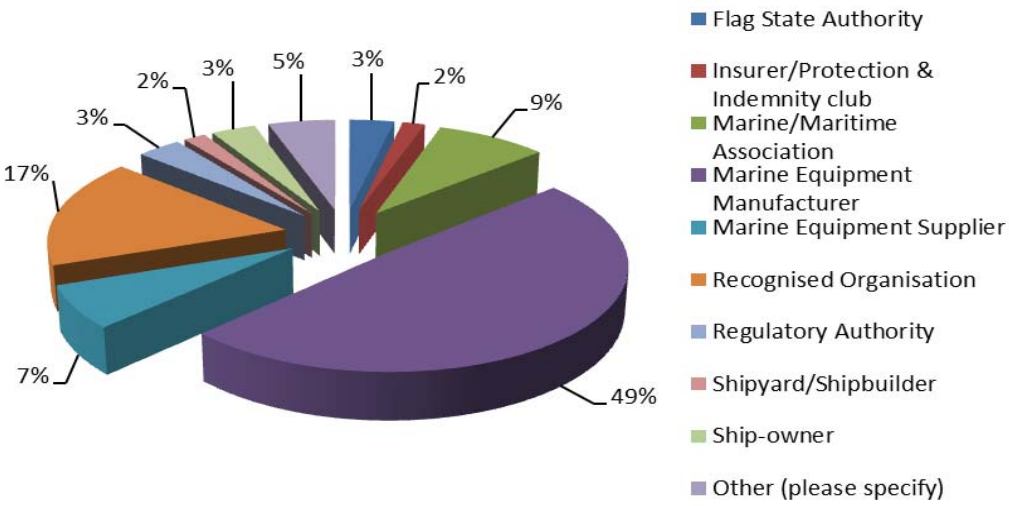
P.A. Stanney
Marine Technology & Engineering Services Southampton
Lloyd's Register EMEA

Mountbatten House, 1 Grosvenor Square, Southampton, SO15 2JU.

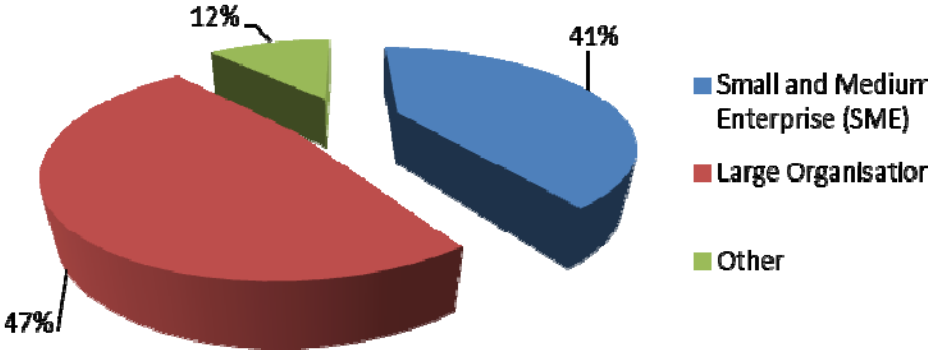
Lloyd's Register EMEA
Is a subsidiary of Lloyd's Register Group

Appendix VI – Graphs from responses to questionnaire

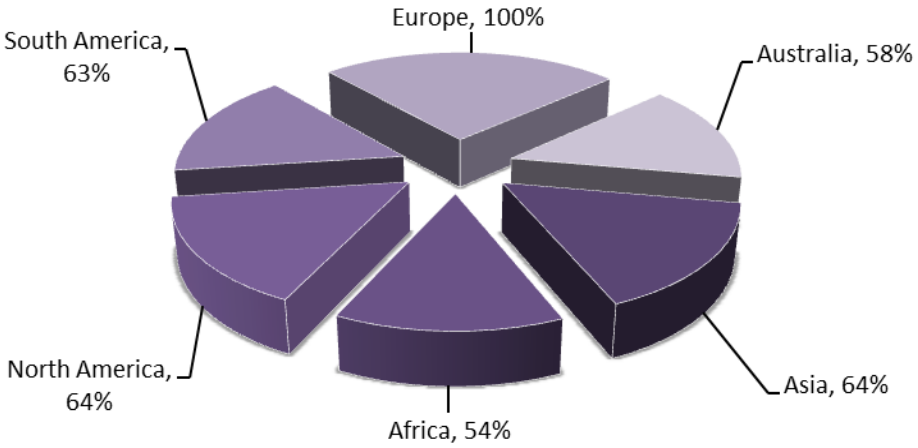
Question 1: In which of the following categories does your professional identity fall under?



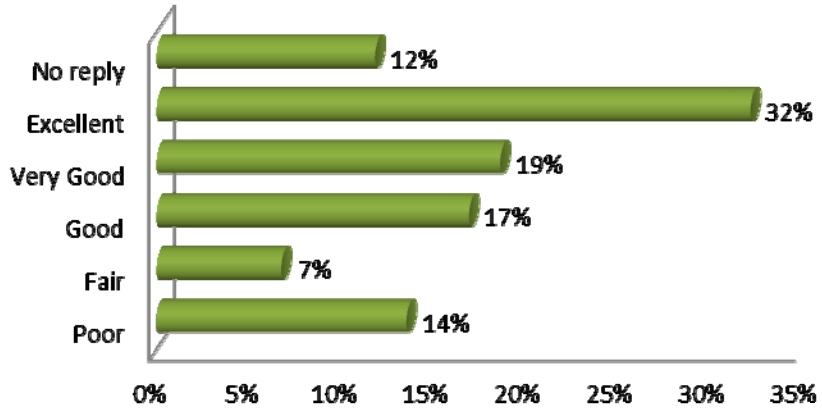
Question 2: What is the size of your enterprise/organisation?



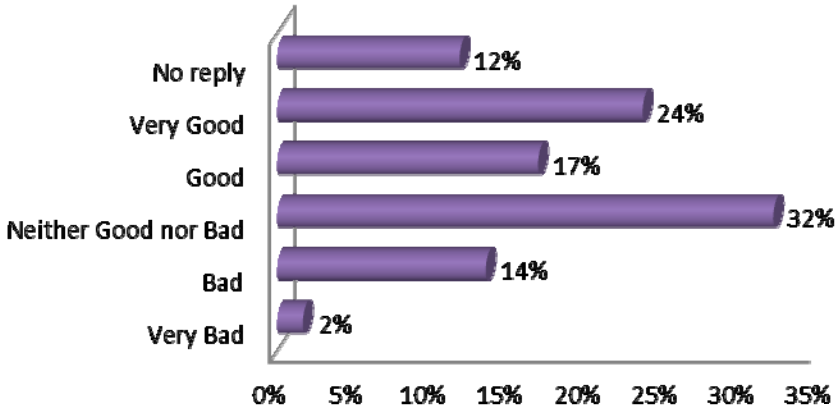
Question 3: Please select the geographical areas in which you are professionally active



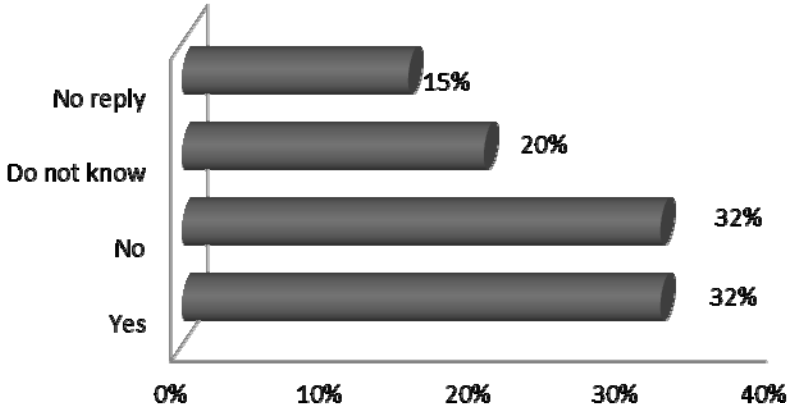
Question 4: How would you rate your awareness level towards the regulatory regime related to Mutual Recognition (MR) Article 10.1 of Regulation (EC) No. 391/2009?



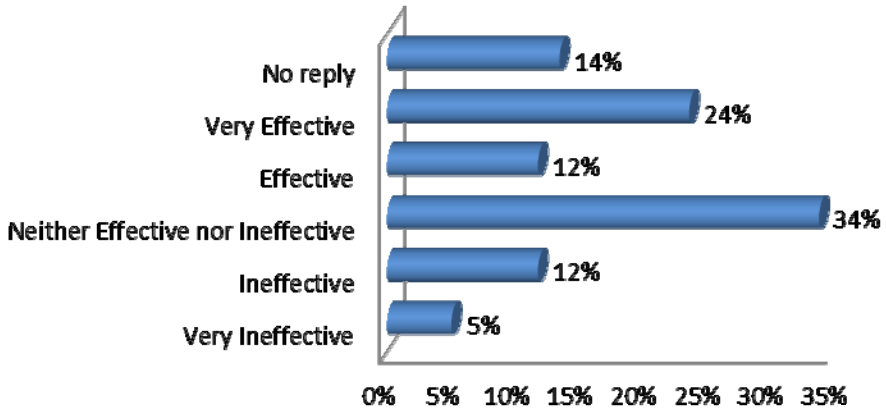
Question 6: How would you rate the quality of the to-date developed Mutual Recognition (MR) classification rules?



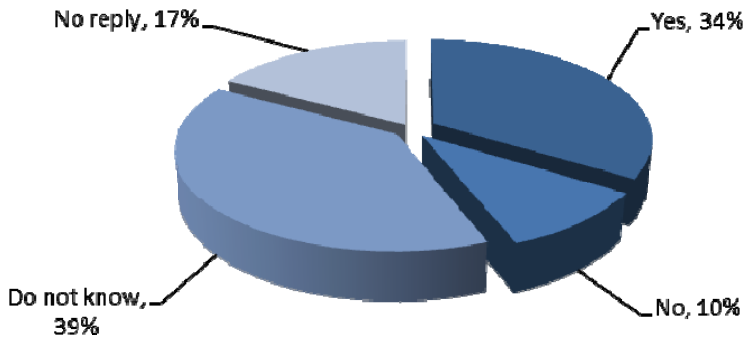
Question 9: Are the standards for the accreditation of a material, equipment or component certification aligned between each EU RO?



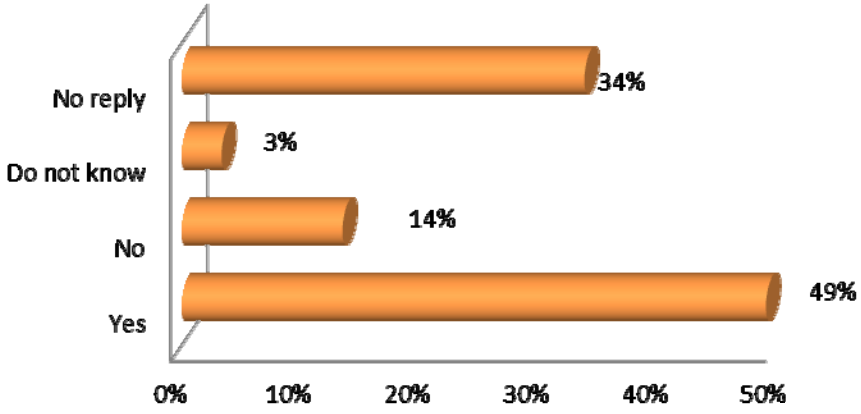
Question 10: How would you rate the consultation steps that have been made by the EU Recognised Organisations (EU ROs) with industry groups and trade associations?



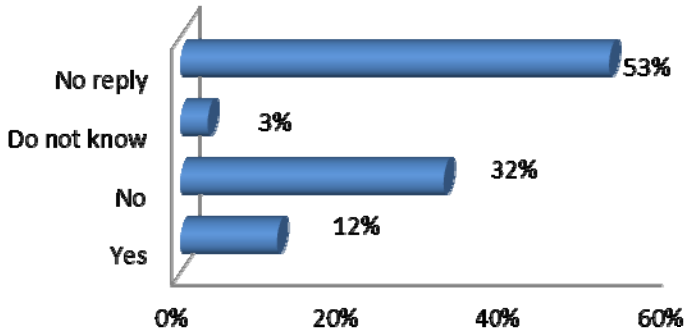
Question 12: Are the certificates for new materials, equipment and components issued by a single EU Recognised Organisation (EU RO) being recognised by other EU Recognised Organisations too?



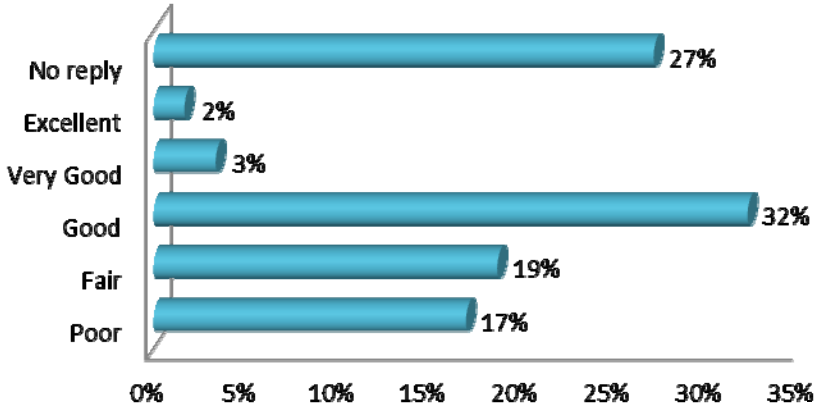
Question 14: Are you aware of the materials, equipment and components lists (Tier 1, 2 and 3) that have been added so far by the EU Recognised Organisations (EU ROs) for Mutual Recognition (MR) certification?



Question 16: Have you applied for the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certificate for at least one product?



Question 22: How would you rate the current status (number of items and application/use) of materials, equipment and components included in Tier 1, 2 and 3?



Question 27: In your opinion, are adequate incentives being provided towards the broader implementation of the European Union Recognised Organisations (EU ROs) Mutual Recognition (MR) certification scheme?