

EU RO Mutual Recognition Technical Requirements

| | | |
|--|------------------|----------------|
| BOILER REMOTE LEVEL INDICATOR | Version | 0.2 |
| | Adoption Date | 1 April 2016 |
| | Application Date | 1 October 2016 |
| | Tier | 3 |
| This document is subject to controlled issue and can be found here: http://www.euromr.org/technical-requirements *** Uncontrolled if downloaded or printed *** | | |

| | |
|--|---|
| 1. PRODUCT DESCRIPTION | 1 |
| 2. DESIGN EVALUATION | 3 |
| 3. PRODUCTION REQUIREMENTS | 4 |
| 4. MARKING REQUIREMENTS | 4 |
| 5. TYPE APPROVAL CERTIFICATE CONTENT | 5 |
| 6. APPROVAL DATE AND REVISION NUMBER | 5 |
| 7. BACKGROUND INFORMATION / REFERENCES | 5 |
| 8. MAINTENANCE / CLARIFICATION OF TECHNICAL REQUIREMENTS | 5 |

1. PRODUCT DESCRIPTION

1.a General description of the product

- a) Remote indicators of steam boiler water level, of the "indirect reading design" type. They can be based on different working principles and technologies, such as, for example:
- Conductivity Probes
 - Differential Pressure Transmitters
 - Magnetic Float Indicators
 - Guided Wave Radar Level Indicators
- b) Regardless of technology, their basic configuration includes:
- one or more sensing devices, appropriately connected to the boiler drum (either directly or through an externally located measuring vessel, such as a water column); the sensing devices can be totally or partly immersed in the steam-water space;
 - a transmitter (usually converting the original signal into the 4-20 mA analogic format);
 - a remote level display.
- c) Regardless of technology, the devices normally include some means for correction of density error, generated by difference of temperature between the water in the drum and that contained within a measuring vessel located externally at the boiler drum (e.g. the water column), due to sub-cooling of water in the measuring vessel.

EU RO Mutual Recognition Technical Requirements

| | | |
|--|------------------|----------------|
| BOILER REMOTE LEVEL INDICATOR | Version | 0.2 |
| | Adoption Date | 1 April 2016 |
| | Application Date | 1 October 2016 |
| | Tier | 3 |
| This document is subject to controlled issue and can be found here: http://www.euromr.org/technical-requirements *** Uncontrolled if downloaded or printed *** | | |

- d) The pressure vessels containing the sensor(s) (e.g. externally located measuring vessels, water column or equivalent) are outside the scope of the present Technical Requirement.
- e) Level indicators of the direct reading type (such as reflex gauges, flat glass gauges, ported gauges and similar devices) are outside the scope of the present Technical Requirement.
- f) The equipment for control of the boiler (e.g. water level control, pressure control, temperature control) is subject to individual EU RO approval and is outside the scope of this Technical Requirement.

1.b Application limitations

- a) Applicable for installation on ships as defined by Art. 2 of EU Regulation (EC) No. 391/2009, for the purposes of Art. 10 of the same.
- b) Can be used to provide both level measurement and high-low level alarms; to be independent of the required devices providing low-low level alarm and automatic boiler shutoff command.
- c) The installation of the remote level indicator is subject to the individual EU RO's approval on a case-by-case basis.
- d) The pressure casing of the level indicator sensor, including connection arrangements to the boiler drum or its externally located measuring vessel, is subject to individual EU RO's approval on a case-by-case basis.

1.c Intended use

Primarily intended for remote water level indicating and monitoring, in addition to local direct reading gauge glass. Can also provide local reading as well.

1.d System context

Boilers located in Engine Rooms and Machinery Spaces of Category A above floor plates, in close proximity of hot surfaces.

EU RO Mutual Recognition Technical Requirements

| | | |
|--|------------------|----------------|
| BOILER REMOTE LEVEL INDICATOR | Version | 0.2 |
| | Adoption Date | 1 April 2016 |
| | Application Date | 1 October 2016 |
| | Tier | 3 |
| This document is subject to controlled issue and can be found here: http://www.euromr.org/technical-requirements *** Uncontrolled if downloaded or printed *** | | |

2. DESIGN EVALUATION

2.a Engineering evaluation requirements

2.a.i. Technical Requirements

- a) Materials shall be suitable for the intended service;
- b) Minimum degree of protection for all components located on boiler and those within the machinery space: IP44;
- c) Minimum degree of protection for all components located in control rooms: IP22;
- d) Requirements for electrical/electronic level sensors and transmitters: see EU RO MR technical requirement for "SENSORS";
- e) Requirements for level display monitors: see EU RO MR technical requirement for "DISPLAY MONITORS".

2.a.ii. Technical documents to be submitted

IMPORTANT: The English Language shall be used for all submitted documents.

- a) Technical specifications, drawings, installation sheets and type test reports, describing the type and working principles of remote level indicator for which approval is requested, and showing compliance with the relevant requirements;
- b) Documents to be submitted for electrical/electronic level sensor and transmitter: see EU RO MR technical requirement for "SENSORS";
- c) Documents to be submitted for level display monitor: see EU RO MR technical requirement for "DISPLAY MONITORS".

2.b Type testing requirements

- a) Type Testing Requirements for electrical/electronic level sensor and transmitter: see EU RO MR technical requirement for "SENSORS";
- b) Type Testing Requirements for level display monitor: see EU RO MR technical requirement for "DISPLAY MONITORS".
- c) Test specimens shall be taken from the production line or from stocks†.

EU RO Mutual Recognition Technical Requirements

| | | |
|--|------------------|----------------|
| BOILER REMOTE LEVEL INDICATOR | Version | 0.2 |
| | Adoption Date | 1 April 2016 |
| | Application Date | 1 October 2016 |
| | Tier | 3 |
| This document is subject to controlled issue and can be found here: http://www.euomr.org/technical-requirements *** Uncontrolled if downloaded or printed *** | | |

- d) Tests shall be carried out in the presence of the EU RO Surveyor. In cases where the tests are conducted at Nationally Accredited Laboratories, the presence of the EO RO surveyor may be omitted †.

† For further clarification of witnessing of tests and sampling the test specimen(s), refer to paragraphs 6, 7 and 8 of the EU RO "Design Evaluation Scheme" procedure (Appendix V of EU RO Framework Document for the Mutual Recognition of Type Approval found on <http://www.euomr.org/Guidance%20for%20Mutual%20Recognition>)

3. PRODUCTION REQUIREMENTS

- a) Every remote level indicator shall be certified by the Manufacturer, subject to satisfactory performance of routine test(s) as per applicable standard or specification;
- b) Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval).

4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment as per referenced standard. In addition, and as a minimum, the following items to be marked at the suitable place:

- a) Manufacturer's Name;
- b) Model Name / Type / Version;
- c) Serial Number;
- d) Degree of Protection;
- e) Rating (rated voltage, current and frequency of required power supply, rated pressure and temperature of sensing device, rated measurement range);
- f) Date of manufacture.

EU RO Mutual Recognition Technical Requirements

| | | |
|--|------------------|----------------|
| BOILER REMOTE LEVEL INDICATOR | Version | 0.2 |
| | Adoption Date | 1 April 2016 |
| | Application Date | 1 October 2016 |
| | Tier | 3 |
| This document is subject to controlled issue and can be found here: http://www.euomr.org/technical-requirements *** Uncontrolled if downloaded or printed *** | | |

5. TYPE APPROVAL CERTIFICATE CONTENT

The EU RO MR Type Approval Certificate shall contain the minimum information as defined in the "EU RO Framework Document for the Mutual Recognition of Type Approval" - see Appendix I EU RO MR Type Approval Certificate Information.

6. APPROVAL DATE AND REVISION NUMBER

| Date | Revision | Comment |
|-----------------|----------|--|
| 31 January 2014 | 0.0 | Accepted by Advisory Board |
| 31 January 2015 | 0.1 | CRF018 – Revision to par. 2.a.ii - Technical documents to be submitted in English; CRF020 – Revision to par. 5 - 'Type Approval Certificate Content' |
| 1 April 2016 | 0.2 | CRF025 – Updated to new MR TR document format incl. par. 8; CRF026/026a – Witness testing & control of test specimen; CRF028 – addition of 6 month application clause. |

7. BACKGROUND INFORMATION / REFERENCES

- IACS UR E10 "Test Specification for Type Approval";
- IEC 60092-504 "Electrical Installations in Ships - Special Features, Control and Instrumentation";
- IEC 60533 "Electrical and Electronic Installations in Ships - Electromagnetic Compatibility";
- EU RO MR Technical Requirements for SENSORS and DISPLAY MONITORS;
- EU RO Framework Document for the Mutual Recognition of Type Approval.

8. MAINTENANCE / CLARIFICATION OF TECHNICAL REQUIREMENTS

Anyone wishing to propose changes to this document or request clarification of technical issues should contact the EU RO MR Group Secretariat in the first instance: Secretariat@euomr.org.

EU RO Mutual Recognition Technical Requirements

| | | |
|--|------------------|----------------|
| BOILER REMOTE LEVEL INDICATOR | Version | 0.2 |
| | Adoption Date | 1 April 2016 |
| | Application Date | 1 October 2016 |
| | Tier | 3 |
| This document is subject to controlled issue and can be found here: http://www.euomr.org/technical-requirements *** Uncontrolled if downloaded or printed *** | | |

Review and approval of change requests shall follow the EU RO MR Maintenance Process detailed in the EU RO Framework Document for the Mutual Recognition of Type Approval: <http://www.euomr.org/Guidance%20for%20Mutual%20Recognition>.

- END -

CONTROLLED DOCUMENT