DNV·GL

Certificate No:
TAA0000132

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Safety Control Unit for Rotating Machinery

with type designation(s)
ESM 20, ESM 21 & WIP 11, WIP 21

Issued to
Dr. E. Horn GmbH & Co. KG
Schönaich Baden-Württemberg, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**C (panel front only)**

Issued at **Hamburg** on **2017-05-24**
This Certificate is valid until **2022-05-23**.
DNV GL local station: **Augsburg**

Approval Engineer: **Andrea Grün**

for **DNV GL**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

ESM 20, ESM 21 & WIP 11 and WIP 21 units are designed for Wärtsilä diesel and gas fuelled engines. These products may also be used for engines of other manufacturers if class requirements are fulfilled.

The **E**ngine **S**afety **M**odule **ESM 20 / ESM 21** monitors permanently with own sensors engine speed, lube oil pressure, cooling water temperature as well as binary inputs for connection of external functions as for example main controller shutdown, oil mist detector (if installed), stops, override of stop functions and reset of stop or override.

The WIP modules, Wärtsilä Instrument Panel, are electronic instrument panels designed to serve as the standard operator interface on all Wärtsilä 4-stroke engines. Incorporated is the basic instrumentation and engine controls required for local control and monitoring. The WIP's are specified for the engine environment and is based on a modular design to meet
the requirements from different applications:

- **WIP-11**: standard instrument unit (engine speed, LO-pressure , HT-temperature etc.)
- **WIP-21**: optional instrument unit (basically a substitute for the manometer)

Software Version ESM
ESM20.114 dated 29-09-2016
V1.1x COM ; V1.0x DIGI ; V1.0x FREQ ; OILPV1.2x ; V1.0x SPSW (Speed Switch Controller); V1.0x TCSP (Turbo Charger controller); FPGA software: ESM2.1x dated 16-05-2011
ESM21.101 (Version 5) dated 09-12-2016
V1.1x COM ; V1.0x DIGI ; V1.0x FREQ ; OILPV1.2x ; V1.0x SPSW (Speed Switch Controller); V1.0x TCSP (Turbo Charger controller); FPGA software: ESM1.3x dated 24-09-2016

Software Version WIP

- V 1.1x HS dated 24-03-2011 (WIP 11)
- V 1.1x dated 17-09-2009 (WIP 21)
- V 1.1x dated 26-06-2014 (WIP 210)

Application/Limitation

It must be ensured that override possibility upon automatic shutdown in case of oil mist detection is disabled.
Suitability has to be checked for each engine type.

The following documentation of the actual application is to be submitted for approval in each case:
- Reference to this Type Approval Certificate
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of safety functions, setpoints, override possibility
- Test program for certification (if applicable, see below)

The Type Approval covers hardware and software listed under Product description.

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Product certificate
Deliveries of the application system to new engine types are to be certified according to Pt.4 Ch.9 Sec.1. If applicable, the manufacturer to provide - in connection with each delivery - information showing that certification for the particular engine type has previously been carried out. The certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer. Certification of Application Functions may be required for the particular vessel.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

- Manufacturer: Dr. E. Horn GmbH
- Model name: WIP11, WIP21, ESM20, ESM21
- Serial number: Unique for each delivered item

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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE