DNV·GL

Certificate No:
TAA00000DS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Monitoring System

with type designation(s)
Combustion Measurement System CMS6/CRT6

Issued to
IMES Intelligent Measuring Systems GmbH
Kaufbeuren, 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 are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	**B**
Humidity	**B**
Vibration	**B**
EMC	**A**
Enclosure	**B**

This Certificate is valid until **2018-09-29**.
Issued at **Høvik** on **2016-09-30**

DNV GL local station: **Augsburg**

Approval Engineer: **Krzysztof Aleksander Jankowski**

for **DNV GL**
Digitally Signed By: Sneen, Ståle
Location: DNV GL Høvik, Norway
Signing Date: 2016-11-17, on behalf of

Odd Magne Nesvåg
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

Combustion Measurement System CMS6/CRT6.
The system consist of a data aquisition module ZAD and a sensor terminal box interconntected with approved cable, and is part of a larger system where:
CMS = Combustion Monitoring System
CRT = Common Rail Timing system

Firmware versions:
DSP_2014-06-18 (for DSP) / C167_2014-02-28

Application/Limitation

1. The Type Approval covers hardware and firmware listed under Product description.
2. System is equipped with internal shortcircuit protection.

The following documentation of the actual application is to be submitted for approval in each case:
- Reference to this Type Approval Certificate
- Functional description
- Firmware and software versions used in specific delivery
- Circuit diagrams
- System block diagram showing overall system layout
- Power supply arrangement (may be part of block diagram)
- List of control & monitored points (indications, alarms, load reductions, shutdown list)
- Test program for certification

Product certificate
Each delivery of the application system is **to be** certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system, preferably at the engine/system application maker integrating control, monitoring and safety 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 function 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.

Software update notification
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.

Type Approval documentation

900133 dated 2014-02-21; CMS6/CRT6 system overview
ZAD_en_06-2013 ; Data acquisition unit ZAD
14TH0308_ClassNKp7ch1_2 rev. 2; TEST REPORT
2221784KAU-009 dated 2014-09-11; Environmental Simulation Testing
Additional CMS/CRT documentation and improvements as discussed during type approval test 2016-08-17, dated 2016-09-05
Type Test report, dated 2016-08-17

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.
Functional Type Testing performed at Imes GmbH premises, Kaufbeuren, Federal Republic of Germany at 2016-08-17.

Marking of product

The products to be marked with:
- manufacturer name
- model name
- firmware
- serial number

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