DNV·GL

Certificate No:
TAA00002WY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Control and Monitoring System

with type designation(s)
GVU-P1

Issued to
Shanghai Marine Diesel Engine Research Institute
Shanghai, 020, China

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	**A**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**B (IP44)**

Issued at **Hamburg** on **2021-06-16**
This Certificate is valid until **2023-06-15**.
DNV GL local station: **Shanghai**

Approval Engineer: **Jens Dietrich**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Place of system manufacture

Shanghai Marine Diesel Engine Research Institute
No.1 Lane 357, Gongqing Road, Yangpu District
Shanghai, P.R. China

Product description

Gas Valve Unit control panel with HMI panel for GVU Type A
Functions: Gas supply control; gas leakage monitoring; manual inerting downstream to consumer; monitoring of gas pressure and temperature, instrument air pressure, inert gas pressure, enclosure ventilation, valve position feedback; system self-check.
Binary outputs for driving pneumatic solenoid valves
Valve status and alarm history indication on HMI
Power supply: 24VDC
SW Version V2.0.

Application/Limitation

-The monitoring and independent safety functions according to Pt.6 Ch.2 Sec.5 with regard to gas detection and control of ventilation are not covered by this type approval and need to be checked for the respective application.
-The required ventilation between the GVU and the engine according to Pt.4 Ch.3 Sec.1, 10.2.7.4 is not covered by this certificate.
-Warning signs have to be placed on the GVU enclosure demanding gas-freeing of the GVU before opening the enclosure.
-Interlock for bleed valve V02 with GVU inlet supply line valve is to be provided externally.
-Inerting of the first section of GVU is not covered by this certificate and needs to be described for the respective application.

Approval conditions

The Type Approval covers hardware and basic design principles of the control system. The following documentation for the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Functional description
- Related P&I diagram
- Details of connected gas consuming unit
- List of control and monitored points / instrument list
- Circuit diagrams
- Test program for application software at manufacturer

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 before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Application software control
All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board.

Tests carried out

-Applicable tests according to DNV GL CG-0339, December 2019,
-Functional Performance test.

Marking of product

Metal name plate showing manufacturer, type designation, serial number, production date, IP-rating, electric ratings

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE