

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Engine Safety, Control and Alarm System**with type designation(s)
GECS

Issued to

Kum Oh Mach. & Elec. Co. Ltd.
Busan, Republic of Korea

is found to comply with

Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**Application :****Location classes****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Temperature	B
Humidity	B
Vibration	B
EMC	A
Enclosure	B

This Certificate is valid until **2017-06-30**.Issued at **Busan** on **2015-07-22**DNV GL local station: **Pusan**Approval Engineer: **Eun Sook Kim**for **DNV GL**

Baeg Soon Choi
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

Type Approval covers Diesel Engine Safety, Control and Alarm System, type GECS.

Approved engine type: H21/32 (720/750/900/1000 rpm), H25/33 (720/750/900/1000 rpm), H17/28 (900/1000 rpm) and H32/40 (720/750 rpm)

The GECS (G/E Automatic Control Panel) for the above auxiliary engine, consisting of:

	Unit Name	Software Version
Monitoring Box	OPU-10 (Operating Unit)	0
	MTP-12CA (Temperature & Pressure Monitoring Unit)	1
	ETM-12CA (Exhaust Gas Temperature Monitoring Unit)	0
Starting Box	SCCS-4-8 (Safety Control & Cable Supervision Unit)	0
	ADU-36-TCP (Analog / Digital unit)	2
	SMU-08-SC (Speed Measuring Unit)	2
	MCU-56-DIO (Main Control Unit)	3

Application/Limitation

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Wiring diagram including list of all alarm/safety including type and range.

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

As long as the units are covered by the Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 A202 will not be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.

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 DNVGL for evaluation and approval.

Major changes in the software are to be approved before being installed in the computer.

A Certification of Application Functions may be required for the particular vessel.

The software version documentation is to be submitted when revised, in order to be recorded and filed at DNVGL. The latest version of the document is to be available during testing.

Type Approval documentation

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

Periodical assessment

Job Id: **262.1-009414-3**
Certificate No: **TAA0000023**

The scope of the retention/renewal survey 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 survey 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

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE