DNV·GL

Certificate No:
TAA00002CS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Engine Safety, Control and Alarm System

with type designation(s)
"UNIC" for Wärtsilä W46F diesel engines series used in multi-engine, auxiliary or emergency applications.

Issued to
Wärtsilä Finland Oy
Vaasa, Finland

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.

System minimum location classes according to data listed on page 2:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
"UNIC" for W46F	B	B	B	A*	**

***) EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.**

****)Required protection according to the Rules to be provided upon installation on board**

Issued at **Høvik** on **2020-03-31**
This Certificate is valid until **2022-03-30**.
DNV GL local station: **Finland CMC**

for **DNV GL**

Approval Engineer: **Krzysztof Aleksander Jankowski**

Jan Tore Grimsrud
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.

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Job Id: **262.1-021851-4**
Certificate No: **TAA00002CS**

Place of system manufacture

The UNIC system is manufactured (or assembled), mounted and tested at:

1. **Wärtsilä Finland Oy**,
   Tarhaajantie 2,
   65380, Vaasa,
   Republic of Finland
2. **Wärtsilä Italia S.p.A.**
   Bagnoli della Rosandra, 334
   34018 San Dorligo della Valle, Trieste,
   Republic of Italy
3. **CSSC Wärtsilä Engine (Shanghai) Co.,Ltd. (CWEC)**
   No. 383, Hongyin Road,
   Pudong New District, Shanghai, 201306,
   People Republic of China

Product description

UNIC: Engine control , safety, and monitoring system (with **HSR** communication), intended for type approved Wärtsilä 4-stroke, jerk injectors, engines series **W46F** used in multi-engine, auxiliary or emergency applications.

Separately Type Approved hardware		
Module type	**Description**	**Type Approval Certificate[1)]**
WCS-10	CAN switch module[2)]	TAA00002DV
ESM-20	Engine safety module[2,3)]	TAA0000132 Rev.3
ESM-21	Engine safety module[2,3)]	TAA0000132 Rev.3
ESM-22	Engine safety module[2,3)]	TAA0000132 Rev.3
LDU-30	Local display module[2)]	TAA00000FY
COM-10	Communication module[2)]	TAA00000DW Rev.1
CCM-30	Cylinder Control module[2)]	TAA00000DX Rev.1
IOM-20	I/O module[2)]	TAA00002GM
StG EC 250	Electric Actuator (Timing rack)	TAA00002EX

1) These are the TA numbers valid at the date of issue of this TA. When the TA are renewed during the period of validity of this TA, the new TA applies.
2) Module with internal fuse protection.
3) Modules ESM-20, ESM-21, ESM-22 are used alternatively.

System software and configuration versions			
UNIC type with designation code	Software	Configuration	Code description
UNIC DI	**6.5.X.X**	**Y.Y.Y.Y**	DI: jerk injectors
X - Shall be represented by digit, changes shall be evaluated by DNV GL. Y - Shall be represented by fix number for system configuration, depending on engine designation.			

Maintenance of Software versions is described in document DBAB166787, Rev.i.
The software configuration numbering is defined in the document DBAA030801, Rev. aa.

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.

Application/Limitation

1. This certificate is valid only for systems applications made and delivered by production facilities listed under Place of system manufacture for engines series listed under Product description, provided they hold a valid DNV GL Type Approval Certificate.
2. The Type Approval covers system design principles and software listed under Product description.
3. The UNIC system is suitable for use only in multi-engine propulsion plants, auxiliary or emergency duties.
4. LDU-30 is not fulfilling DNV GL Rules requirements for alarm handling and presentation. Connection to separate/additional equipment shall be provided.
5. List of Control and Monitored points (with defined alarm, load reductions and shutdowns, including identification of which automatic safety actions can be overridden) settings shall be in accordance with engine intended function (propulsion, auxiliary, etc.) and shall comply with vessel main class and relevant class notations requirements from DNV GL Rules.
6. Power supply arrangement shall be in principle as shown in document document: "Engine wiring diagram" (Document id. DAAF436817, Rev.B, dated 2018-10-10), pages 7, 8 and 9.
7. Certification testing / Factory Acceptance Test (FAT) shall be performed according to applicable chapters of "UNIC, additional functional test for FAT" (Document id.: DBAD630104, Rev. n, dated 2019-07-16).
8. Load Sharing function is not covered by this Type Approval Certificate.

Approval conditions

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

- System block diagram showing overall system layout and separation between Safety System and Control and Monitoring,
- Reference to this DNV GL Type Approval Certificate[4)],
- Reference to valid hardware DNV GL Type Approval Certificate numbers, if they are different than the ones listed on table under Product description[4)],
- Planned date for certification test/Factory Acceptance test (FAT)[4)],
- Number of systems to be delivered[4)],
- Place of system manufacture[4)],
- Reference to valid DNV GL Type Approval Certificate for Oil Mist Detector[4)],
- Information about engine type and usage[6)],
- Software and configuration version used in specific delivery[4)],
- Confirmation that Application/Limitation point 5 is fulfilled[4)],
- Confirmation that Application/Limitation point 6 is fulfilled[4)],
- Confirmation that Application/Limitation point 7 will be fulfilled during certification/Factory Acceptance Test (FAT) [4)].

4) Information is to be submitted in document: **"Approval Template for Wärtsilä engine control, safety and monitoring system "UNIC" according to TAA00002CS"** (Doc.id.: DMTA00020663)

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.

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.

Type Approval documentation

Tests carried out

Functional Type Test UNIC serie 6 system on W46F engine, performed at Wärtsilä Italia S.p.A. premises in Trieste, Republic of Italy, dated 2019-06-12 to 2019-06-13.

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