



Certificate No:
TAA000033Y

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Condition Monitoring System

with type designation(s)
XTS-W2, XTS-W+

Issued to

OK T&T Co., Ltd.
Busan, Korea, Republic of

is found to comply with

DNV 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.

Temperature D

Humidity B

Vibration A

EMC A

Enclosure Required protection according to DNV Rules shall be provided upon installation on board

Issued at **Busan** on **2022-05-12**

This Certificate is valid until **2027-05-11**.

for **DNV**

DNV local station: **Gimhae Station**

Approval Engineer: **Eun Jin Lee**

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Hanwee Low
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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.



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Page 1 of 3

Product description

The XTS-W+ Bearing Condition Monitor is designed to measure and display critical wear in the primary drive train bearings, namely the main, crank pin and crosshead bearings, in low speed diesel marine engines.

The XTS-W2 Bearing Condition Monitoring System includes an embedded PC running Windows Embedded 2009 instead of a touch screen PC running Windows XP thereby providing graphical user interface to remote PCs and automation systems through a web browser.

The products covered by this type approval are:

- Signal processing unit (SPU), part number S4600-SPU+003
- Interface box, part number S4600-IF+003
- Embedded PC (for XTS-W2), model number S4600-CPU+001
- Proximity sensor, 4-20mA, part number SPXSZ0003
- Water in oil sensor, part number S4600-WIO-001(optional)

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for software control will be put into force.

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 for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Application/Limitation

1. The products SPU, proximity sensor and WIO are approved for vibration location class B.
2. The above mentioned equipment does not substitute any class related surveys on bearings, depending on the survey arrangement applied.
3. For XTS-W+, a PC which is type approved by DNV shall be used, alternatively, compliance with DNV rules shall be demonstrated upon request.
4. The system is also suitable for performing shaft line earth monitoring (SLEM) providing an earth for the shaft and a means of monitoring the potential difference between the shaft and earth. Electronic equipment used in this application shall be type approved by DNV, alternatively, compliance with DNV rules shall be demonstrated upon request.

Type Approval documentation

Tests carried out

Applicable tests according to DNV Class Guideline, DNV-CG-0339, August 2021

Marking of product

Manufacturer

Part number or model number listed in section "product description"

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



Job Id: **262.1-036577-1**
Certificate No: **TAA000033Y**

- 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