



Certificate No:
TAA00003A3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Wash Water Monitoring System

with type designation(s)
CSOL-DC1WP1 + 71530009, CSOL-DC1WP1 + 71524710

Issued to
Endress+Hauser Conducta GmbH+Co. KG
Gerlingen, Germany

is found to comply with
DNV rules for classification – Ships

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Temperature	A
Humidity	B
Vibration	A
EMC	B
Enclosure	B

Issued at **Hamburg** on **2024-07-15**

This Certificate is valid until **2029-07-14**.

for **DNV**

DNV local unit: **Augsburg**

Approval Engineer: **Dariusz Lesniewski**

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.



Form code: TA 251

Revision: 2022-12

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Product description

The CSOL-DC1WP1 Wash Water Monitoring System is a continuous water monitoring system.

The system comprises the instrumentation for monitoring of both inlet water to the exhaust gas scrubber as well as wash water at the outlet of the scrubber. As a standard configuration the system monitors PAH, turbidity, pH, temperature as well as sample flow, sample pressure and leakage supervision.

The instruments in the system are Marine type approved sensors:

- pH: CPF81D/E
- Turbidity: CUS52D
- PAH: CFS51 or other Marine type approved sensors or without

The CSOL-DC1WP1 Wash Water Monitoring System communicates typically with an Exhaust Gas Cleaning System (not covered by this Type Approval Certificate) on various digital or analog communication protocols (e.g. Modbus TCP, Ethernet IP, Profibus DP, Profinet, Modbus RS485, 4-20mA, (ref to document "documentation Wash Water Monitoring System").

An automatic compressed cleaning unit for the turbidity and PAH sensor can be added if required.

System main components:

Metallic cabinet ELDON MAS1208040R5 with:

- sample inlet, sample outlet, drain outlet, cleaning connection
- cable glands for power supply and communication cables (cables not included)

Inside metallic cabinet:

- piping part with sample line with valves
- water analyze sensors: CPF81D/E (pH), CUS52D (turbidity), (PAH) CFS51
- instruments: level switch Liquiphant FTL31, pressure transmitter Cerabar PMC21, flow transmitter Promag H100

Inside electrical panel:

- power supply unit: PULS QS5.241
- process transmitter RMA42 E+H

Main technical characteristic and features:

Process conditions:

- Power supply: 230V AC / 50 Hz (nominal), 100 - 240V AC / 50 - 60Hz (min. – max.)
- Pressure range: 0,5 – 3,0 bar (8 – 44 psi)
- Temperature range: 2 – 55 °C (36 – 122 °F)
- Sample demand: 60 – 120 l/h (15-30 gal/h) optimal 60 l/h

Measurement performance:

- Measuring range turbidity: 0,000 – 1.000 FNU
- Measuring range pH: 2 – 10
- Measuring range PAH: 0 – 5.000 µg/l PAH_{phe}
- Sensor Technology Memosens sensors with Heartbeat diagnostics functions (Endress + Hauser sensors only)
- Optional solid-state reference for easy onboard sensor verification

Application/Limitation

The sensors of CSOL-DC1WP1 Water Monitoring System are generally in compliance with the requirements of Resolution MEPC.340(77)-2021 Guidelines for exhaust gas cleaning adopted on 26. November 2021, Chapter 10 "Discharge Water".

Validity of the type approval certificates to be observed:

TAA00002W0, TAA00002HC, TAA00001ZE, TAE00002FY, TAA00002JT

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply 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

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