

TYPE APPROVAL CERTIFICATE

This is to certify:

That the 5 ppm Bilge Water Separator

with type designation(s)

"DELTA" OWSAN models: 0.5, 1.0, 2.5, 5.0, 7.5, 10.0. and 12.5;

"DELTA" OWSAN-1.0/15749

Issued to

DESARROLLO TECNICAS INDUSTRIALES DE GALICIA, S.A
LA CORUÑA, Spain

is found to comply with

DNV GL class programme DNVGL-CP-0208 – Type approval – 5 ppm bilge water separators

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL with optional notation Clean(Design).

Type:	Capacity:
"DELTA" OWSAN-0.5	0.5 m3/hr
"DELTA" OWSAN-1	1.0 m3/hr
"DELTA" OWSAN-1.0/15749	1.0 m3/hr
"DELTA" OWSAN-2.5	2.5 m3/hr
"DELTA" OWSAN-5.0	5.0 m3/hr
"DELTA" OWSAN-7.5	7.5 m3/hr
"DELTA" OWSAN-10	10.0 m3/hr
"DELTA" OWSAN-12.5	12.5 m3/hr

Issued at **Høvik** on **2019-08-21**

This Certificate is valid until **2025-02-26**.

DNV GL local station: **NB/CMC Team West**

for **DNV GL**

Approval Engineer: **Thomas Grafton**

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Dag Sæle-Nilsen
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.



Product description

The OWSAN Series of bilge water separators are intended for installation onboard ships or other marine units to reduce the oil content in the bilge water to less than 5 ppm. The equipment is designed and tested to meet the requirements of DNVGL-CP-0208.

The design is made up of a first treatment phase, consisting of a gravity static separator with an inner coalescent filter, followed by a secondary treatment, consisting of an adsorption process.

Model DELTA OWSAN-1/15749 is a modified unit with specific requirements for shock, noise, vibration and Electromagnetic Compatibility (EMC).

Application/Limitation

Application

Model	Max Flowrate (m³/h)	Supply Pump Capacity (*) (m³/h)
DELTA OWSAN-0.5	0.5	0.5
DELTA OWSAN-1 DELTA OWSAN-1/15749	1.0	1.0
DELTA OWSAN-2.5	2.5	2.5
DELTA OWSAN-5	5.0	5.0
DELTA OWSAN-7.5	7.5	7.5
DELTA OWSAN-10	10.0	10.0
DELTA OWSAN-12.5	12.5	12.5

Applicable to all Models	
Operating Pressure:	2 Bar
Operating Temperature of Bilge Water:	5 to 45 degrees
Power Supply:	380 V 50 Hz / 440 V 60 Hz
Inclination Range:	0 to 22.5 degrees

(*) The OWSAN Series are fitted with an integral positive displacement supply pump. The pumping capacity is set by adjusting the control values during commissioning.

Limitations

The OWSAN series are fitted with a 5ppm Oil Content Monitor required by the DNV GL optional Class Notation **Clean(Design)**. The 5ppm Oil Content Monitor shall be provided with separate Type Approval Certificates (to standard DNVGL-CP-0485).

The equipment is not permitted to be installed in spaces subject to explosion hazards.

A copy of the Operation, installation and maintenance manual shall be on board vessel at all times.

A copy of this certificate should be carried aboard a vessel fitted with this separator at all times.

Job Id: **262.1-014718-4**
Certificate No: **TAP00001XF**

Installation:

The following shall be verified after installation: -

1. An alarm in the 5ppm Oil Content Monitor is always activated whenever clean water is used for cleaning or zeroing purposes.
2. An alarm in the 5ppm Oil Content Monitor is always activated whenever no flow of sample through the oil content monitor is detected by the flow sensor
3. Any alarm in the 5ppm Oil Content Monitor will activate the automatic stopping device preventing overboard discharge and lead to recirculation
4. The overall response time (including the response time of the 5 ppm Bilge Monitor) between an effluent discharge from the 5 ppm Bilge Separator exceeding 5 ppm, and the operation of the Automatic Stopping Device preventing overboard discharge, shall be not more than 20 seconds.
5. Every access of the alarm (beyond check on instrument drift, repeatability of the instrument reading, and the ability to re-zero the instrument) requires breaking of a seal.

Type Approval documentation

"DELTA" OWSAN Flow Diagram	OWSAN-000-F01	1 (04.2015)
"DELTA" OWSAN-1/15749 Flow Diagram	OWSAN-15749-FO1I	0 (07.2017)
	OWSAN-010-G01	2 (04.02.2015)
	OWSAN-15749-G01I	2 (07.2017)
General arrangement & interfaces, OWSAN-10	OWSAN-100-G01	3 (04.02.2015)
	OSWAN-000-E02	0 (01.2015)
Control Panel	OWSAN-000-E04	0 (01.2015)
Wiring diagram	OWSAN-000-E03	0 (01.2015)
Power diagram	OSWAN-000-E01	0 (01.2015)
	-	0 (21.01.2015)
Instruction manual, Delta OWSAN	-	2 (02.2015)
OWSAN000PLCSFT		

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Tests carried out

Performance Tests:

Environmental Tests:

Marking of product

The final product shall be provided with visible marking, which completely identifies the product and its components according to drawings/equipment specifications.

The marking shall give at least the following information:

- Identification of manufacturer.
- Equipment type designation or model identification.
- Maximum throughput and maximum influent pressure at which the separator is designed to operate.
- Serial number.
- Revision information, as applicable, for all firmware or software modules installed per hardware unit, necessary to identify the equipment.

Periodical assessment

Retention survey to be performed according to Type approval program DNVGL-CP-0338:

- This certificate is valid for five years and periodical assessments will be required after 2 years (+/- 90 days) and 3.5 years (+/- 90 days).

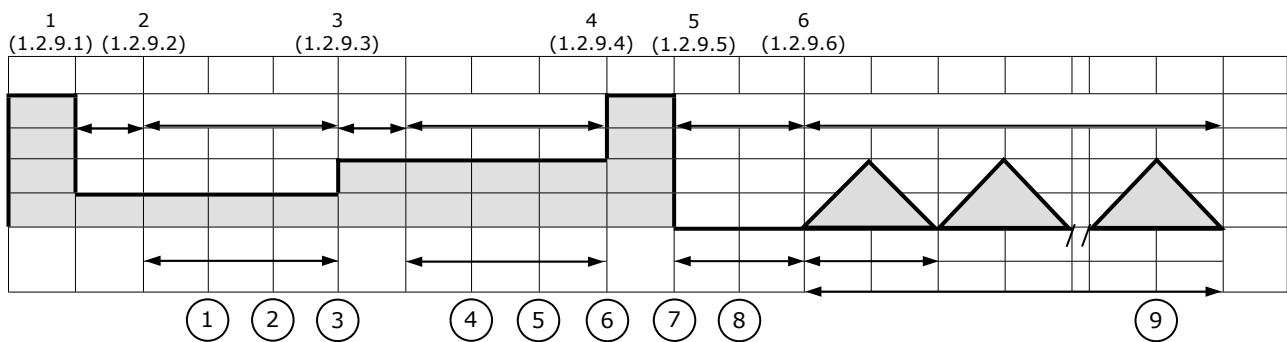
-----*This certificate replaces previous certificate P-15203*-----

APPENDIX – OWSAN-1

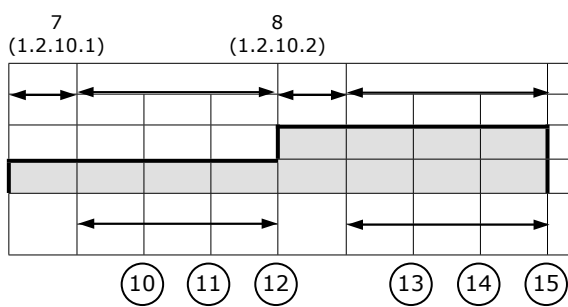
Test data and results of tests conducted on a 5 ppm Bilge Separator in accordance with DNVGL-CP-0208.

TEST RESULTS AND TEST PROCEDURES

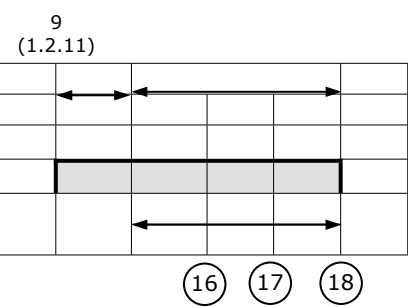
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TEST FLUID "B"



TEST FLUID "C"

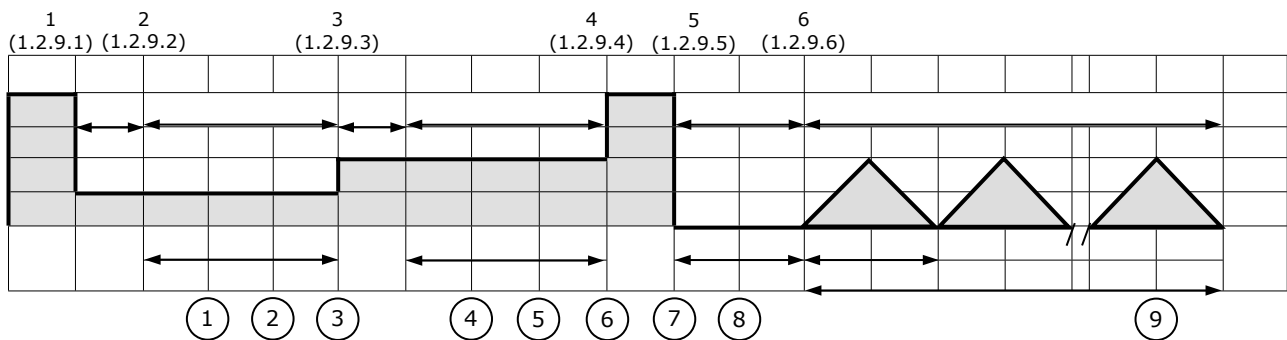


APPENDIX – OWSAN-10

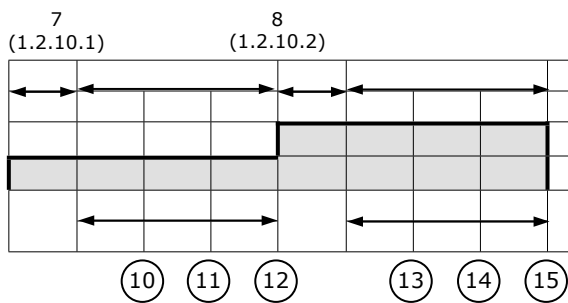
Test data and results of tests conducted on a 5 ppm Bilge Separator in accordance with DNVGL-CP-0208.

TEST RESULTS AND TEST PROCEDURES

TEST FLUID "A"



TEST FLUID "B"



TEST FLUID "C"

