

EU-TYPE EXAMINATION CERTIFICATE

- [2] EQUIPMENT OR PROTECTIVE SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 2014/34/EU
- [3] EU-Type Examination Certificate Number: **Presafe 16 ATEX 8281X** **Issue 3**
- [4] Product: **Ballast Water UV-System UV-WT-Ex**
- [5] Manufacturer: **Optimarin AS**
- [6] Address: **Sjøveien 34
4315 Sandnes
Norway**
- [7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] DNV GL Presafe AS, notified body number 2460, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential reports listed in section 16.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0: 2012+A11:2013, EN 60079-2: 2014 EN 60079-7 : 2015, EN 60079-11: 2012, EN 60079-18: 2015
- [10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.
- [11] This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- [12] The marking of the product shall include the following:

 **II 2 G Ex eb ia ib mb pxb IIC T4 Gb 0°C ≤ Ta ≤ 55°C**

Date of issue:
2020-07-15



Bjørn Spongsveen
For DNV GL Presafe AS
The Certificate has been digitally signed.
See www.dnvgl.com/digitalsignatures for info



This certificate may only be reproduced in its entirety and without any change, schedule included.

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[13] **Schedule**

[14] **EU-Type Examination Certificate No:** **Presafe 16 ATEX 8281X** Issue 3

[15] **Description of Product**

UV-WT-Ex, UV Ballast Water Treatment System. The UV system is designed with UV chambers installed in parallel on inlet and outlet manifold. Number of installed UV chambers in one assembly is from one to three.

An UV lamp, with permanently connected cables, is installed in a quartz tube in the center of each UV chamber. At each end, an end cap containing gland for electric cable and connection for purge and pressurization tubing. The quartz tube and the end cap area is purged with inert gas, Nitrogen (N₂). The up to three UV Chambers are connected in series with tubing for protective gas.

The purging is controlled and monitored by an Ex px controller and regulated with a proportional valve. Separately certified parts with the system are Purge and pressurizing controller, solenoid valve, cable glands, protective tubing for high voltage electrical supply cables to the tubes.

	Maximum Ratings.
Operation voltage:	2200 VAC
Start-up peak voltage:	4000 VAC
Operation current:	30 A/UV Lamp
Frequency:	170 kHz
Power consumption:	35 kW/ UV Lamp, max 3 UV Lamps

Ambient temperature: 0°C ≤ Ta ≤ 55°C

Water temperature: -2°C ≥ Tw ≥ 37°C

Minimum water flow: 20 m³/h each chamber.

Intrinsically safe sensors.

The intrinsically safe sensors for UV and temperature have to be connected to intrinsically safe circuits with data according to the certificates and manufacturer's instructions.

Purging and Pressurization

Protective gas:	Nitrogen, N ₂
Minimum quantity of protective gas purge volume:	60 dm ³
Minimum purge flow:	24 dm ³ /min
Maximum purge flow:	120 dm ³ /min
Minimum purge time@ 24 dm ³ /min	150 sec
Minimum purge time@ 120 dm ³ /min	30 sec
Minimum pressure:	2 mbar
Normal operation pressure.	10 mbar
Maximum operation pressure:	27 mbar
Supply pressure:	2 -4 bar

Maximum allowed leakage rate of gas according to specified test procedure.

Type designation

UV-WT-Ex, UV Ballast Water Treatment System

Routine tests

Functional test and leakage test according to EN 60079-2:2015 are required.
For leakage test, maximum allowed leakage of enclosure comparable with a test of the maximum allowed pressure drop from 10 mbar to 1mbar during minimum 5 minutes.

[16] **Report No.:** D0001764

[17] **Specific Conditions of Use**

1. The internal temperature of the UV-tube exceeds the temperature class T4 (135°C) and a delay cooling period of a minimum 15 minutes is required before an opening operation of the unit is commenced, unless the atmosphere is known to be non-explosive.
2. Replacements of gaskets according to the manufacturer’s instructions at lamp replacement.
3. Maximum allowed leakage of enclosure comparable with a test of the maximum allowed pressure drop from 10mbar to 1mbar during minimum 5 minutes.
4. The ballast water surrounding the energized UV-tubes shall be free from air pockets.

[18] **Essential Health and Safety Requirements**

Essential Health and Safety Requirements (EHSRs) are covered by the standards listed at item 9

[19] **Drawings and documents**

Number	Title	Rev.	Date
900000	Technical Description Ex p system for UV lamps, UV-WT-Ex. Optimarin ballast system, Ex version for hazardous area zone 1	12	28-02-2020
146604	Cable protection hose kit Ex	2	25-05-2020
145130	UV LAMP 35KW 2150V 3M CABLE TYPE ETA	4	22-05-2018
142158	CABLE PROTECTION HOSE KIT EX TYPE TRA	1	09-08-2016
142145	UV LAMP 35KW 1260V 3M CABLE TYPE UL	4	22-05-2018
142003	UV CHAMBER WITH SIGNS	10	30-06-2020
138318	UV-WT-EX EX P SYSTEM SIGN	10	28-01-2020
132616	UV-UNIT 3 CHAMBER DN250 SYSTEM1 EX	12	03-03-2020
117019	QUARTZ GLAS OD40 L1600 TYPE UVT	6	21-05-2015

[20] **Certificate History**

Issue	Description	Issue date	Report no.
0	Nemko 12ATEX1138X Primary Certificate	2013-07-23	156996
1	Nemko 12ATEX1138X Issue 1	2014-03-06	156996 01
0	Presafe 16ATEX8281X. Change to group IIC and class T4. Update to EN 60079-0:2012/A11 2013	2016-06-07	D0001764
1	Update to EN 60079-2: 2015, optional UV tubes, docs. Editorial corrections Editorial corrections of certificate dated 2017-07-28	2017-05-03	D0001764-01
2	Assessment to new O-ring for the Ex p enclosure & new purging criteria	2020-04-03	D0001764-02
3	Corrected type error	2020-07-15	D0001764-03

END OF CERTIFICATE

