

# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

## This is to certify:

### That the Sewage systems

with type designation(s)

**DELTA STPN 250, 420, 630, 800, 945, 1260, 1680, 2100, 2590, 3200, 4050, 4305, 4830, 5400, 5985, 6615, 7245, 7875 and 8400**

Issued to

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

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2019/1397,**

**item No. MED/2.6. Marpol 73/78 as amended, Annex IV Regulation 9, IMO Res. MEPC.227(64)**  
**with the exception of Section 4.2.**

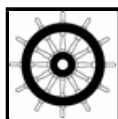
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2025-06-10.**

Issued at **Høvik** on **2020-06-11**

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

Approval Engineer:  
**Thomas Grafton**



Notified Body  
No.: **0575**

for **DNV GL AS**

**Roald Vårheim**  
**Head of Notified Body**



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.



## Product description

The STPN Series of Sewage Treatment Plants are intended for installation onboard ships and offshore units for sewage treatment meeting the requirements specified in IMO Res. MEPC.227(64).

The STPN Series uses a biological process to treat the sewage. The sewage enters a Collecting and Aeration Tank which is supplied with air to stimulate bacteria growth and treat the sewage through an aerobic process. The process liquid is transferred through a screen to the Settling Tank where suspended solids and particles are separated. Sewage Sludge from the Settling Tank can be returned to the Collecting and Aeration Tank to feed the biological process. The process liquid is then transferred to a Disinfection Tank where sodium chlorine is used for disinfection. Before discharge, sodium bisulphite is added to remove residual chlorine from the effluent. The treated liquid is then discharged using the discharge pump.

Sewage Sludge is collected in each tank and is removed periodically using the discharge pump.

## Application/Limitation

Application: -

| <i>Model</i> | <i>Hydraulic Loading (litres/day)</i> | <i>Organic Loading, BOD<sub>5</sub> without nitrification (kg/day)</i> |
|--------------|---------------------------------------|------------------------------------------------------------------------|
| 250          | 2500                                  | 0.71                                                                   |
| 420          | 4200                                  | 1.20                                                                   |
| 630          | 6300                                  | 1.80                                                                   |
| 800          | 8000                                  | 2.29                                                                   |
| 945          | 9450                                  | 2.70                                                                   |
| 1260         | 12600                                 | 3.60                                                                   |
| 1680         | 16800                                 | 4.80                                                                   |
| 2100         | 21000                                 | 6.00                                                                   |
| 2590         | 25900                                 | 7.40                                                                   |
| 3200         | 32000                                 | 9.14                                                                   |
| 4050         | 40500                                 | 10.80                                                                  |
| 4305         | 43050                                 | 12.30                                                                  |
| 4830         | 48300                                 | 13.80                                                                  |
| 5400         | 54000                                 | 15.43                                                                  |
| 5985         | 59850                                 | 17.10                                                                  |
| 6615         | 66150                                 | 18.90                                                                  |
| 7245         | 72450                                 | 20.70                                                                  |
| 7875         | 78750                                 | 22.50                                                                  |
| 8400         | 84000                                 | 24.00                                                                  |

Limitations: -

The STPN Series is not certified for use on Passenger Ships in Special areas (ref. IMO Res.MEPC.227(64) Section 4.2).

Sewage Sludge shall be discharged according to the procedures described in the Operation and Maintenance Manual.

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

The ship should have on board at all times a copy of the Operation and Maintenance Manual listed in 'Type Examination documentation'.

Job Id: **344.1-010040-1**  
 Certificate No: **MEDB000064W**

A copy of this certificate should be carried on board any ship equipped with the sewage treatment plants described above.

## Type Examination documentation

|                                             |                     |             |
|---------------------------------------------|---------------------|-------------|
| "DELTA-BIO" STPN-250/2590 "A" Flow Diagram  | STPN-250/2590A-F01  | 0 (07.2019) |
| "DELTA-BIO" STPN-3200/8400 "A" Flow Diagram | STPN-3200-8400A-F01 | 0 (07.2019) |

|                                                              |                |             |
|--------------------------------------------------------------|----------------|-------------|
| "DELTA-BIO" STPN-250 "A" General Arrangement and Interfaces  | STPN-250A-G01  | 0 (06.2019) |
| "DELTA-BIO" STPN-420 "A" General Arrangement and Interfaces  | STPN-420A-G01  | 0 (06.2019) |
| "DELTA-BIO" STPN-630 "A" General Arrangement and Interfaces  | STPN-630A-G01  | 0 (06.2019) |
| "DELTA-BIO" STPN-800 "A" General Arrangement and Interfaces  | STPN-800A-G01  | 0 (06.2019) |
| "DELTA-BIO" STPN-945 "A" General Arrangement and Interfaces  | STPN-945A-G01  | 0 (06.2019) |
| "DELTA-BIO" STPN-1260 "A" General Arrangement and Interfaces | STPN-1260A-G01 | 0 (06.2019) |
| "DELTA-BIO" STPN-1680 "A" General Arrangement and Interfaces | STPN-1680A-G01 | 0 (06.2019) |
| "DELTA-BIO" STPN-2100 General Arrangement and Interfaces     | STPN-2100-G01  | 0 (04.2018) |
| "DELTA-BIO" STPN-2590 "A" General Arrangement and Interfaces | STPN-2590A-G01 | 0 (06.2019) |
| "DELTA-BIO" STPN-3200 "A" General Arrangement and Interfaces | STPN-3200A-G01 | 0 (06.2019) |
| "DELTA-BIO" STPN-4050 "A" General Arrangement and Interfaces | STPN-4050A-G01 | 0 (06.2019) |
| "DELTA-BIO" STPN-4305 General Arrangement and Interfaces     | STPN-4305-G01  | 0 (09.2018) |
| "DELTA-BIO" STPN-4830 General Arrangement and Interfaces     | STPN-4830-G01  | 0 (09.2018) |
| "DELTA-BIO" STPN-5400 General Arrangement and Interfaces     | STPN-5400-G01  | 0 (09.2018) |
| "DELTA-BIO" STPN-5895 General Arrangement and Interfaces     | STPN-5895-G01  | 0 (09.2018) |
| "DELTA-BIO" STPN-6615 General Arrangement and Interfaces     | STPN-6615-G01  | 0 (10.2018) |
| "DELTA-BIO" STPN-7245 General Arrangement and Interfaces     | STPN-7245-G01  | 0 (09.2018) |
| "DELTA-BIO" STPN-7875 General Arrangement and Interfaces     | STPN-7875-G01  | 0 (10.2018) |
| "DELTA-BIO" STPN-8400 General Arrangement and Interfaces     | STPN-8400-G01  | 0 (10.2018) |

### Electrical Drawings:

|                                                                                                      |                     |             |
|------------------------------------------------------------------------------------------------------|---------------------|-------------|
| "DELTA-BIO" STPN "A" Power Diagram                                                                   | STPN-000A-E01       | 0 (06.2019) |
| "DELTA-BIO" STPN-250 "A" Control Diagram                                                             | STPN-250A-E02       | 0 (06.2019) |
| "DELTA-BIO" STPN-420/2590 "A" Control Diagram                                                        | STPN-420/2590A-E02  | 0 (06.2019) |
| "DELTA-BIO" STPN-3200/8400 "A" Control Diagram                                                       | STPN-3200/8400A-E02 | 0 (06.2019) |
| "DELTA-BIO" STPN "A" Wiring Diagram                                                                  | STPN-000A-E03       | 0 (06.2019) |
| "DELTA-BIO" PRBN/STPN "A" Control Panel and Components List (applicable for models STPN 250 to 2590) | PRBN/STPN-000A-E04  | 0 (04.2019) |
| "DELTA-BIO" STPN-3200/8400 Control Panel and Components List                                         | STPN-3200/8400-E04  | 0 (06.2019) |

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Certificate No: **MEDB000064W**

|                                                 |             |              |
|-------------------------------------------------|-------------|--------------|
| Instruction Manual STPN Sewage Treatment Plants | STPN-000-02 | 10 (01.2020) |
|-------------------------------------------------|-------------|--------------|

|                                                                                                                                    |                                              |                                                       |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------|
| Programmable Logic Controller (PLC) <ul style="list-style-type: none"><li>• STPN 250 to 2590</li><li>• STPN 3200 to 8400</li></ul> | OMRON / CP1E-N40DR-A<br>OMRON / CP1E-N40DR-A | STPN250-2590PLCSFT_VA_R0<br>STPN3200-8400PLCSFT_VA_R0 |
| Human Machine Interface (HMI) <ul style="list-style-type: none"><li>• STPN 250 to 2590</li><li>• STPN 3200 to 8400</li></ul>       | OMRON / NB5Q-TWOO-B<br>OMRON / NB5Q-TWOO-B   | STPN250-2590TSSFT_VA_R0<br>STPN3200-8400TSSFT_VA_R0   |

## Tests carried out

### Performance Tests: -

- Type Approval of Pollution Prevention Equipment according to IMO MEPC.227(64), Testing of the Operational Performance, Equipment Tested: STPN-420. Dated 16.12.2015.
- Type Approval of Pollution Prevention Equipment according to IMO MEPC.159(55), Testing of the Operational Performance, Equipment Tested: STPN-4050. Dated 23.04.2014.
- IMO Res.MEPC.227(64) compliance: STPN-4050, dated 26.01.2015.

### Environmental Test: -

- Test Report Sewage Treatment Plant DELTA PRM-21, Electric Panel (E04I), Reference Standard MEPC 49/22/Add.2 Annex 13, Part 3 Specification for Environmental Testing for Type Approval of Pollution Prevention Equipment. AT4 Wireless S.A., Report 37023REA.001, dated 09.10.2012.
- Environmental Test of STPN-4050 control panel. Justification of compliance with IMO MEPC 159(55). Dated 18.12.2014.
- Test Report Control Electrical Panel, Control No. 64789/01, Specification IMO Resolution MEPC.107(49) Part 3 Environmental Testing. Dekra Testing and Certification S.A.U, Report NIE: 62890RSE.001, dated 01.06.2020.

## Marking of product

For traceability to this type approval, each unit is to be marked with: -

- Manufacturer's name or trade mark
- Type and Model
- Serial No. and date of manufacture
- Hydraulic Loading
- Any operational or installation limits considered necessary by the manufacturer or the Administration

## APPENDIX TO CERTIFICATE OF TYPE APPROVAL FOR SEWAGE TREATMENT PLANTS

Test results and details of tests conducted on samples from the sewage treatment plant in accordance with resolution MEPC.227(64) excluding Section 4.2 for Passenger Ships in Special Areas:

|                                                      |       |
|------------------------------------------------------|-------|
| Sewage treatment plant type:                         | ..... |
| Manufactured by:                                     | ..... |
| Organization conducting the test:                    | ..... |
| Organization handling the samples:                   | ..... |
| Test Location:                                       | ..... |
| Designed hydraulic loading:                          | ..... |
| Designed organic loading:                            | ..... |
| No. of effluent samples tested:                      | ..... |
| No. of influent samples tested:                      | ..... |
| Total suspended solids influent quality:             | ..... |
| Total nitrogen influent quality:                     | ..... |
| - Geometric mean:                                    | ..... |
| - Maximum                                            | ..... |
| - Minimum                                            | ..... |
| Total phosphorus influent quality:                   | ..... |
| - - Geometric Mean:                                  | ..... |
| - - Maximum:                                         | ..... |
| - - Minimum:                                         | ..... |
| BOD5 without nitrification influent quality:         | ..... |
| Maximum hydraulic loading:                           | ..... |
| Minimum hydraulic loading:                           | ..... |
| Average hydraulic loading (Qi):                      | ..... |
| Effluent flow (Qe):                                  | ..... |
| Dilution compensation factor (Qi/Qe):                | ..... |
| Geometric mean of total suspended solids:            | ..... |
| Geometric mean of the thermotolerant coliform count: | ..... |
| Geometric mean of BOD5 without nitrification:        | ..... |
| Geometric mean of COD:                               | ..... |

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Geometric mean of total nitrogen: \_\_\_\_\_  
Percentage reduction of total nitrogen: \_\_\_\_\_  
Geometric mean of total phosphorus: \_\_\_\_\_  
Percentage reduction of total phosphorus: \_\_\_\_\_  
Maximum pH: \_\_\_\_\_  
Minimum pH: \_\_\_\_\_  
Type of disinfectant used: \_\_\_\_\_  
If Chlorine - residual Chlorine: \_\_\_\_\_  
Maximum: \_\_\_\_\_  
Minimum: \_\_\_\_\_  
Geometric mean: \_\_\_\_\_

Was the sewage treatment plant tested with:

Fresh water flushing? ☒ ☐ \_\_\_\_\_  
Salt water flushing? ☐ ☒ \_\_\_\_\_  
Fresh and salt water flushing? ☐ ☒ \_\_\_\_\_  
Grey water added? \_\_\_\_\_

Was the sewage treatment plant tested against the environmental conditions specified in section 5.9 of resolution MEPC.227(64):

Temperature: ☒ ☐ \_\_\_\_\_  
Humidity: ☒ ☐ \_\_\_\_\_  
Inclination: ☒ ☐ \_\_\_\_\_  
Vibration: ☒ ☐ \_\_\_\_\_  
Reliability of Electrical and Electronic Equipment: ☒ ☐ \_\_\_\_\_

Limitations and the conditions of operation are imposed:

Salinity: \_\_\_\_\_  
Temperature: \_\_\_\_\_  
Humidity: \_\_\_\_\_  
Inclination: \_\_\_\_\_  
Vibration: \_\_\_\_\_

Results of other parameters tested: \_\_\_\_\_

## APPENDIX TO CERTIFICATE OF TYPE APPROVAL FOR SEWAGE TREATMENT PLANTS

Test results and details of tests conducted on samples from the sewage treatment plant in accordance with resolution MEPC.227(64) excluding Section 4.2 for Passenger Ships in Special Areas:

|                                                      |       |
|------------------------------------------------------|-------|
| Sewage treatment plant type:                         | ..... |
| Manufactured by:                                     | ..... |
| Organization conducting the test:                    | ..... |
| Organization handling the samples:                   | ..... |
| Test Location:                                       | ..... |
| Designed hydraulic loading:                          | ..... |
| Designed organic loading:                            | ..... |
| No. of effluent samples tested:                      | ..... |
| No. of influent samples tested:                      | ..... |
| Total suspended solids influent quality:             | ..... |
| Total nitrogen influent quality:                     | ..... |
| - Geometric mean:                                    | ..... |
| - Maximum                                            | ..... |
| - Minimum                                            | ..... |
| Total phosphorus influent quality:                   | ..... |
| - - Geometric Mean:                                  | ..... |
| - - Maximum:                                         | ..... |
| - - Minimum:                                         | ..... |
| BOD5 without nitrification influent quality:         | ..... |
| Maximum hydraulic loading:                           | ..... |
| Minimum hydraulic loading:                           | ..... |
| Average hydraulic loading (Qi):                      | ..... |
| Effluent flow (Qe):                                  | ..... |
| Dilution compensation factor (Qi/Qe):                | ..... |
| Geometric mean of total suspended solids:            | ..... |
| Geometric mean of the thermotolerant coliform count: | ..... |
| Geometric mean of BOD5 without nitrification:        | ..... |
| Geometric mean of COD:                               | ..... |

Geometric mean of total nitrogen: \_\_\_\_\_  
Percentage reduction of total nitrogen: \_\_\_\_\_  
Geometric mean of total phosphorus: \_\_\_\_\_  
Percentage reduction of total phosphorus: \_\_\_\_\_  
Maximum pH: \_\_\_\_\_  
Minimum pH: \_\_\_\_\_  
Type of disinfectant used: \_\_\_\_\_  
If Chlorine - residual Chlorine: \_\_\_\_\_  
Maximum: \_\_\_\_\_  
Minimum: \_\_\_\_\_  
Geometric mean: \_\_\_\_\_  
Was the sewage treatment plant tested with:  
Fresh water flushing? ☒ ☐  
Salt water flushing? ☐ ☒  
Fresh and salt water flushing? ☐ ☒  
Grey water added? \_\_\_\_\_  
Was the sewage treatment plant tested against the environmental conditions specified in section 5.9 of resolution MEPC.227(64):  
Temperature: ☒ ☐  
Humidity: ☒ ☐  
Inclination: ☒ ☐  
Vibration: ☒ ☐  
Reliability of Electrical and Electronic Equipment: ☒ ☐  
Limitations and the conditions of operation are imposed:  
Salinity: \_\_\_\_\_  
Temperature: \_\_\_\_\_  
Humidity: \_\_\_\_\_  
Inclination: \_\_\_\_\_  
Vibration: \_\_\_\_\_  
Results of other parameters tested: \_\_\_\_\_