

TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MERB0001N21
Revision no.:
0

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

that the **Sewage systems (for use by ships, other than passenger ships, in all areas and by passenger ships outside MARPOL Annex IV special areas)**

with type designation(s)

DELTA PRM with models PRM-5, PRM-11, PRM-16, PRM-21, PRM-32, PRM-42, PRM-50, PRM-63, PRM-74, PRM-84, PRM-95, PRM-105, PRM-116, PRM-126

issued to

DESARROLLO TECNICAS INDUSTRIALES DE GALICIA, S.A
Narón, A Coruña, Spain

is found to comply with the Regulation (UK) **MSN 1874 Amendment 10** for
Item no. **UK/2.6b (Row 1 of 1)**

according to the following requirements:

MARPOL 73/78 Annex IV, Reg. 9., IMO Res. MEPC.227(64) not including section 4.2

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

Date of issue: **2025-11-20**

Expiry date: **2030-11-19**

DNV local unit:
NB/CMC Team West



for **DNV UK Ltd.**

Approval Engineer:
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Approved Body No.: **0097**

Christine Mydlak-Röder
MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved 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-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

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 USD 300 000.

Product description

The DELTA PRM series is a fully membrane biological reactor (MBR) type sewage treatment plant, where the MBR process combines biological oxidation of wastewater with membrane-based separation.

The sewage treatment plant is delivered fully assembled on a common skid and includes the following components:

- main tanks (collecting, aerobic and membrane tank)
- membrane chemical product tank
- permeate tank
- process pump
- sludge recirculation pump
- effluent discharge pump
- sludge pump
- air blower
- membrane cleaning dosing pump
- membrane module
- control panel

Application/Limitation

The full application details are listed in the Appendix to this certificate.

The DELTA PRM sewage treatment plant is designed and tested to be used by all type of ships or offshore units for the treatment of produced wastewater, excluding for the use by passenger ships when operating in special areas as defined by the MARPOL Annex IV (ref. IMO Resolution MEPC.227(64) Section 4.2).

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

Sewage sludge shall be discharged according to the procedures described in the operation and maintenance manual. The ship shall have on board at all times a copy of the operation and maintenance manual listed under Type Examination documentation.

Please see Appendix: Application/Limitation

Type Examination documentation

Tests carried out

Performance Tests:

- Performance test ashore, equipment tested DELTA PRM-21 (2012-09-17 – 2012-09-26), test report dated 2012-10-08
- Performance test ashore, equipment tested DELTA PRM-50 (2017-06-21 – 2017-06-30), test report dated 2017-07-14

Environmental Tests:

- Testing laboratory AT4 Wireless (DEKRA), test report no.: NIE: 49718RSE.001, dated 2017-03-14
- Testing laboratory CTAG, test report no.: IN162045-01, dated 2017-01-23

Please see Appendix: Tests carried out



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Marking of product

The marking shall give the following information:

- Manufacturer's name or trademark
- Type and model
- Serial number
- Hydraulic loading
- UK Mark of Conformity for marine equipment

A copy of this certificate should be carried on board any UK flagged ship equipped with the system described above.
The revisions history is listed in the appendix to this certificate.

Please see Appendix: Marking of product

APPENDIX

Application/Limitation

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Application

Applicable models covered in this certificate are listed below:

DELTA models	Designed hydraulic loading (m ³ /day)	Designed organic loading BOD ₅ (kg/day)
PRM-5	5	1.5
PRM-11	11	3.0
PRM-16	16	4.5
PRM-21	21	6.0
PRM-32	32	9.0
PRM-42	42	12.0
PRM-50	50	14.4
PRM-63	63	18.0
PRM-74	74	21.0
PRM-84	84	24.0
PRM-95	95	27.0
PRM-105	105	30.0
PRM-116	116	33.0
PRM-126	126	36.0

Limitation

Ambient temperature	0 – 55°C
Relative humidity	≤ 90%
Inclination range	0 – 22.5°
Power supply	440 V 60 Hz



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Marking of product

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Revision history

Revision	Date of issuance	Description
0	2025-11-20	Initial certificate

APPENDIX

Tests carried out

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APPENDIX A – SUMMARY OF TEST RESULTS FOR PRM-21

Test results and details of tests conducted on samples from the sewage treatment plant in accordance with IMO Resolution MEPC.227(64), not including section 4.2 for passenger ships in special areas:

Sewage treatment plant type:	PRM-21
Manufactured by:	Desarrollo Técnicas Industriales de Galicia S.A. (DETEGASA)
Organization conducting the test:	DETEGASA, witnessed by ABS
Organization handling the samples:	LABAQUA S.A. Santiago de Compostela, A Coruña, Spain
Test location:	Wastewater treatment station, municipality of Betanzos, A Coruña, Spain
Designed hydraulic loading:	21 m ³ /day
Designed organic loading:	6 kg/day BOD ₅
No. of effluent samples tested:	40
No. of influent samples tested:	40
Total suspended solids influent quality:	827 mg/l
Total nitrogen influent quality:	
- geometric mean	N/A
- maximum	N/A
- minimum	N/A
Total phosphorus influent quality:	
- geometric mean	N/A
- maximum	N/A
- minimum	N/A
BOD ₅ without nitrification influent quality:	N/A
Maximum hydraulic loading:	53 m ³ /day
Minimum hydraulic loading:	7 m ³ /day
Average hydraulic loading (Q _i):	21 m ³ /day
Effluent flow (Q _e):	21 m ³ /day
Dilution compensation factor (Q _i /Q _e):	1.0
Geometric mean of total suspended solids:	6.7 mg/l
Geometric mean of the thermotolerant coliform count:	1 coliforms/100 ml

Geometric mean of BOD ₅ without nitrification:	6 mg/l
Geometric mean of COD:	20 mg/l
Geometric mean of total nitrogen:	
Percentage reduction of total nitrogen:	N/A
Geometric mean of total phosphorus:	
Percentage reduction of total phosphorus:	N/A
Maximum pH:	7.8
Minimum pH:	6.1
Type of disinfectant used:	N/A
If chlorine - residual chlorine:	
Maximum:	N/A
Minimum:	N/A
Geometric mean:	N/A
Was the sewage treatment plant tested with:	
Fresh water flushing?	☒ Yes ☐ No
Salt water flushing?	☐ Yes ☒ No
Fresh and salt water flushing?	☐ Yes ☒ No
Grey water added?	Yes (mixing with primary sewage)
Was the sewage treatment plant tested against the environmental conditions specified in section 5.9 of IMO Resolution MEPC.227(64):	
Temperature:	☒ Yes ☐ No
Humidity:	☒ Yes ☐ No
Inclination:	☒ Yes ☐ No
Vibration:	☒ Yes ☐ No
Reliability of electrical and electronic equipment:	☒ Yes ☐ No
Limitations and the conditions of operation are imposed:	
Salinity:	3 g/l
Temperature:	55°C
Humidity:	90%
Inclination:	22.5°
Vibration:	2 - 80 Hz

APPENDIX B – SUMMARY OF TEST RESULTS FOR PRM-50

Test results and details of tests conducted on samples from the sewage treatment plant in accordance with IMO Resolution MEPC.227(64), not including section 4.2 for passenger ships in special areas:

Sewage treatment plant type:	PRM-50
Manufactured by:	Desarrollo Técnicas Industriales de Galicia S.A. (DETEGASA)
Organization conducting the test:	DETEGASA, witnessed by ABS
Organization handling the samples:	LABAQUA S.A. Santiago de Compostela, A Coruña, Spain
Test location:	Wastewater treatment station, municipality of Betanzos, A Coruña, Spain
Designed hydraulic loading:	50 m ³ /day
Designed organic loading:	14.4 kg/day BOD ₅
No. of effluent samples tested:	40
No. of influent samples tested:	40
Total suspended solids influent quality:	966 mg/l
Total nitrogen influent quality:	
- geometric mean	N/A
- maximum	N/A
- minimum	N/A
Total phosphorus influent quality:	
- geometric mean	N/A
- maximum	N/A
- minimum	N/A
BOD ₅ without nitrification influent quality:	N/A
Maximum hydraulic loading:	125 m ³ /day
Minimum hydraulic loading:	16.6 m ³ /day
Average hydraulic loading (Q _i):	50 m ³ /day
Effluent flow (Q _e):	50 m ³ /day
Dilution compensation factor (Q _i /Q _e):	1.0
Geometric mean of total suspended solids:	2.5 mg/l
Geometric mean of the thermotolerant coliform count:	1 coliforms/100 ml

Geometric mean of BOD ₅ without nitrification:	2.5 mg/l
Geometric mean of COD:	14 mg/l
Geometric mean of total nitrogen:	N/A
Percentage reduction of total nitrogen:	N/A
Geometric mean of total phosphorus:	N/A
Percentage reduction of total phosphorus:	N/A
Maximum pH:	8.1
Minimum pH:	7.1
Type of disinfectant used:	N/A
If chlorine - residual chlorine:	
Maximum:	N/A
Minimum:	N/A
Geometric mean:	N/A
Was the sewage treatment plant tested with:	
Fresh water flushing?	☒ Yes ☐ No
Salt water flushing?	☐ Yes ☒ No
Fresh and salt water flushing?	☐ Yes ☒ No
Grey water added?	Yes (mixing with primary sewage)
Was the sewage treatment plant tested against the environmental conditions specified in section 5.9 of IMO Resolution MEPC.227(64):	
Temperature:	☒ Yes ☐ No
Humidity:	☒ Yes ☐ No
Inclination:	☒ Yes ☐ No
Vibration:	☒ Yes ☐ No
Reliability of electrical and electronic equipment:	☒ Yes ☐ No
Limitations and the conditions of operation are imposed:	
Salinity:	3 g/l
Temperature:	55°C
Humidity:	90%
Inclination:	22.5°
Vibration:	2 - 80 Hz