

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 the Kingdom of Norway.

This is to certify:

That the Sewage systems

with type designation(s)

G&O Bioreactor, Models; BR 1850BG, BR 3700BG, BR 5550BG, BR 7400BG, BR 9250BG, BR 11100BG

Issued to

Gertsen & Olufsen AS
Allerød, Denmark

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

Regulation **(EU) 2017/306,**

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.

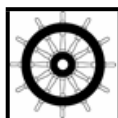
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2020-05-29**.

Issued at **Høvik** on **2017-08-03**

DNV GL local station:
Copenhagen

Approval Engineer:
Pål Evang Nundal



Notified Body
No.: **0575**

for **DNV GL AS**

Vidar Dolonen
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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 equipment is intended for installation onboard ships to provide sewage treatment for the protection of the marine environment. The process of the sewage treatment plants are based upon a biological process of degrading.

Application/Limitation

Sewage Treatment Plants;

Model:	Designed Capacity (m ³ /day):	Designed Organic Load, (Kg BOD ₅ / day):
BR 001850	1.85	0.75
BR 003700	3.70	1.50
BR 005550	5.55	2.25
BR 007400	7.40	3.0
BR 009250	9.25	3.75
BR 011100	11.10	4.50

The inlet mixing tank is not part of the type-examination. Sizing of this tank should be according to recommendations from Gertsen & Olufsen AS.

The sewage treatment plants are not certified for nitrogen and phosphorus removal (MEPC.227(64) Sec. 4.2).

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

Type Examination documentation

Mechanical/ System;

<i>Drwg.No.;</i>	<i>Date/ Rev.;</i>	<i>Title</i>
Test_1850_01	Rev.0	GA – G&O Sewage Treatment Plant – Complete Test Setup
Test_1850_02	Rev.0	P&I Diagram – Test Plant
Test_1850_03	Rev.0	Front View – Test Plant
Test_1850_04	Rev.0	Top View – Test Plant
Test_1850_05	Rev.0	Left Side View – Test Plant
Test_1850_06	Rev.0	Back Side View – Test Plant
Test_1850_07	Rev.0	Inside Front View – Test Plant
Test_1850_08	Rev.0	Inside Top View – Test Plant
Test_1850_09	Rev.0	Inside Left Side View – Test Plant
Test_1850_10	Rev.0	Inside Back Side View – Test Plant
Test_1850_11	Rev.0	Component List (3 sheets)
STP 1850	Rev.2	G&O Sewage Treatment Plant STP 1850
STP 3700	Rev.2	G&O Sewage Treatment Plant STP 3700
STP 5550	Rev.3	G&O Sewage Treatment Plant STP 5550
STP 7400	Rev.2	G&O Sewage Treatment Plant STP 7400
STP 9250	Rev.2	G&O Sewage Treatment Plant STP 9250
STP 11100	Rev.2	G&O Sewage Treatment Plant STP 11100

Electrical (Schmidt's Marine EI)

<i>Drwg.No.;</i>	<i>Date/ Rev.;</i>	<i>Title;</i>
Test_1850_20, Sh. 1 of 9	09-04-27	Control Cabinet – Layout

Job Id: **344.1-001728-9**
Certificate No: **MEDB00002ZC**

Test_1850_20. Sh. 2 of 9	09-04-27	Control Cabinet – Layout inside
Test_1850_20, Sh. 3 of 9	09-04-27	Line Diagram – Main Voltage
Test_1850_20, Sh. 4 of 9	09-04-27	Line Diagram – Control Voltage
Test_1850_20, Sh. 5 of 9	09-04-27	Line Diagram – Control Voltage
Test_1850_20, Sh. 6 of 9	09-04-27	Terminal Row
Test_1850_20, Sh. 7 of 9	09-04-27	Line Diagram – Main Voltage Pump
Test_1850_20, Sh. 8 of 9	09-04-27	Item List – Electrical Components
Test_1850_20, Sh. 9 of 9	09-04-27	Item List – Electrical Components

Typical similar drawings representing other models.

Specifications;

Specifications & datasheets for main components
Specifications & datasheets for main electrical and instrument components
Typical piping specifications incl. materials, wallthicknesses, pressure ratings of valves, flanges and fittings

General Documents;

- G&O Bioreactor sewage treatment plant, Technical description & test set-up.
- G&O MBR Bioreactor, Material Description, Rev.0, incl. specifications from vendors.
- Users Manual - G&O Bioreactor Sewage Treatment Plant
- Asbestos free declaration, dated 2015-05-21

Operations Control;

The equipment will be controlled through relay based system.

Tests carried out

- Danish Technological Institute; Test procedure and test results from testing of sewage treatment plant model STP 1850, during February 12th to 23rd, 2009, Rev.3, 2009-04-22/MHA
- Results of analyses of samples from testing by AnalyTech Environmental Laboratory, Denmark
- Report No. DANAK-196719, DELTA, Danish Electronics, Light & Acoustics, Vibration and temperature tests of Sewage Treatment Control Cabinet, performed for Gertsen & Olufsen AS, dated 2003-02-06.
- Report No. DANAK-198167, DELTA, Danish Electronics, Light & Acoustics, Shock tests of Sewage Treatment Control, performed for Gertsen & Olufsen AS, dated 2005-11-25.

Marking of product

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

- Manufacturer's name or trade mark
- Type designation
- Serial No.
- Mark of Conformity

This certificate is replacing previous EC Type-Examination Certificate No. MED-B-9957.