中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
GB21PTB00013_01

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

DESMI Ocean Guard A/S

地址/Address

Tagholm 1, 9400 Nørresundby, Denmark

产品名称/Product

压载水管理系统
Ballast Water Management System

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 2004年国际船舶压载水及沉积物控制和管理公约
International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004
2. 中国船级社《钢质海船入级规范》（2021）及修改通报第3篇第1、2章
Chapter 1,2 Part 3 of CCS Rules for the Classification of Sea-going Steel Ships 2021 and its Amendment
3. 中国船级社《钢质海船入级规范》（2021）及修改通报第4篇第1、2、3章
Chapter 1,2,3 Part 4 of CCS Rules for the Classification of Sea-going Steel Ships 2021 and its Amendment
4. 中国船级社《钢质海船入级规范》（2021）及修改通报第8篇第26章
Chapter 26 Part 8 of CCS Rules for the Classification of Sea-going Steel Ships 2021 and its Amendment
5. 国际海事组织环保会决议 MEPC.300(72)《压载水管理系统认可规则》(BWMS Code)
IMO Resolution MEPC.300(72) Code for Approval of Ballast Water Management Systems(BWMS Code)

用于/Intended for

国际航行海船/International sea-going ship, 国内航行海船/Domestic sea-going ship

产品使用限定条件/Limitation of Product:
详见附页/See Additional Page

证书有效期至/This Certificate is valid until **2026年02月25日/ Feb. 25,2026**

发证机构 中国船级社哥德堡办事处
Issued by CCS Gothenburg Office

签发日期 2022年02月25日
Date Feb. 25,2022

本证书根据中国船级社规范和相关规定签发。所有证书页为一个整体，必须同时使用。纸质证书每页均须由本社盖章方为有效，电子证书含数字签名方为有效，本证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。有关方对所持证书的真实性有疑问时，可以向我社检验机构咨询。
This Certificate is issued pursuant to the Rules of the Society and related regulation. All pages of the certificate are taken as a whole and are used simultaneously. No paper certificate page is valid without bearing the stamp of the Society, no electronic certificates is valid without the digital signature, and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. Related parties who are doubted about the authenticity of the certificate may inquire of the Society or its offices.

产品明细/Product Description

压载水管理系统/Ballast Water Management System(M0001)

名称/Name	属性（值）/Value	单位/Unit
型号/Type	CompactClean BWMS Type and model designations see Additional Page	
额定容量/Rated Capacity	35～2500	m^3/h
系统组成/System Component	See Additional Page	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No.: NP20PPP03404, NP20PPP03404_1

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No.： 11821290 Biological efficacy performance evaluation of CompactClean Ballast Water Management System in landbased test
试验报告日期/ Test Report Date： 2018-09-20
试验单位/ Laboratory: DHI A/S
试验单位地址/ Test Address: Agern Alle 5, DK-2970 Horsholm, Denmark

试验报告编号/ Test Report No.： 11821290 Biological efficacy performance evaluation of CompactClean Ballast Water Management System in shipboard test
试验报告日期/ Test Report Date： 2018-09-21
试验单位/ Laboratory: DHI A/S
试验单位地址/ Test Address: Agern Alle 5, DK-2970 Horsholm, Denmark

试验报告编号/ Test Report No.： 117-36341-1 Revision 1
试验报告日期/ Test Report Date： 2019-02-28
试验单位/ Laboratory: FORCE Technology
试验单位地址/ Test Address: Park Allé 345 2605 Brøndby, Denmark

试验报告编号/ Test Report No.： 121-28825-1
试验报告日期/ Test Report Date： 2021-11-01
试验单位/ Laboratory: FORCE Technology
试验单位地址/ Test Address: Park Allé 345 2605 Brøndby, Denmark

试验报告编号/ Test Report No.： 11824997 Biological efficacy performance evaluation of CompactClean Ballast Water Management System in landbased test
试验报告日期/ Test Report Date： 2020-12-07
试验单位/ Laboratory: DHI A/S
试验单位地址/ Test Address: Agern Alle 5, DK-2970 Horsholm, Denmark

试验报告编号/ Test Report No.： 11825920 Biological efficacy performance evaluation of CompactClean Ballast Water Management System in landbased test Final report
试验报告日期/ Test Report Date： 2021-07-02
试验单位/ Laboratory: DHI A/S
试验单位地址/ Test Address: Agern Alle 5, DK-2970 Horsholm, Denmark

试验报告编号/ Test Report No.： 11825920 Biological efficacy performance evaluation of CompactClean Ballast Water Management System in landbased test Additional test cycles with Bollfilter
试验报告日期/ Test Report Date： 2021-10-08
试验单位/ Laboratory: DHI A/S
试验单位地址/ Test Address: Agern Alle 5, DK-2970 Horsholm, Denmark

认可后的产品检验方式/ Method of Product Inspection after Approval

按规范认可后应进行产品检验的产品/The product should be inspected in term of the rules:
认可后的产品检验应由本社验船师根据本社规范规定按批准的产品检验计划进行检验，经检验合格后由本社颁发船用产品证书。
After approval, product inspection should be carried out by the Surveyor of the Society in accordance with the approved product inspection scheme, and the Marine Product Certificate will be

issued by the Society upon satisfactory inspection.

认可保持条件/ Maintenance Requirements of Approval

1.型式认可后，如果产品及其重要零部件的设计、所用材料或制造方法有所改变，且影响到产品的主要特性、特征；或产品的性能指标有所更改，且超过认可的范围，则有关图纸和文件应经检验机构审批。并在检验机构认为必要时，经本社检验人员见证有关试验和进行检查，其结果应能证实仍符合认可条件。
After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.
2.工厂的质量管理体系应保持有效运行，并且与认可时一致。如果质量管理体系发生改变，应经原体系认证机构审核并报本社批准。
The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.
3.认可证书有效期内，如果出现可能导致本社取消认可的情况，工厂应及时采取有效的纠正措施。
Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.
4.在认可证书有效期内，本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核，以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。
Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.
5.如果属于获得型式认可B 模式证书，且无需颁发船用产品证书/等效证明文件的情况，证书获得者应接受本社每年一次的定期审核，定期审核日为认可证书期满之日对应的每一周年日，检查工作应在周年日的前后三个月内进行。
If belong to the situation of the product has type approval mode B certificate, and marine product certificate/equivalent document is not necessary, those who have obtained the certificate should be subject to periodical audit every year. The date of periodical audit shall be each anniversary date which corresponds to the date of expiry of the relevant certificate and the periodical audit shall be done within a time span of three months before and after the annual surveillance date.

备注/Remarks

1. DESMI Ocean Guard A/S位于丹麦Nørresundby，本证书产品由DESMI中国工厂和丹麦工厂生产制造。
DESMI Ocean Guard A/S is located in Nørresundby, Denmark, above products are manufactured by DESMI China and Denmark factories.
制造厂及地址/Manufacturer and Address：
1.1 DESMI Pumping Technology A/S
Address: Tagholm 1, 9400 Nørresundby, Denmark
1.2 DESMI Pumping Technology (Suzhou) Co., Ltd.
Address: 108 Houdai Street, Suzhou Industrial Park, Suzhou, Jiangsu Province, China

2.本社已审核了产品厂无石棉声明，但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。
The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society. However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.

3. 本认可产品有防爆型和非防爆型，防爆等级如下。
The approved product has explosion-proof and non-explosion-proof types, explosion-proof grades as below.
防爆等级/EX Classification: IECEx EX II 2G Ex IIB T4 Gb, IECEx EX II 2G Ex IIC T4 Gb and IECEx EX II 2G Ex IIB + H2 T4 Gb.

4.本认可产品的电气部件防爆性能参数详见图纸，认可产品的防爆性能参数基于制造厂提交的防爆合格证，非中国船级社认可。
The Ex-Proof parameters of the electrical components of approved products refer to the approved drawings,The Ex Proof parameters of the approved products originate from Ex Certificate received from manufacturer, not approved by CCS.

5.本认可产品CompactClean IEX的电气部件应持有有效的防爆合格证，否则本证书将自动失效。
This Type Approval Certification will be invalid if the electrical components of approved products

CompactClean IEX do not hold valid Ex-Certificate.

6.本证书产品认可后，适用于具体船舶的安装图、管路和仪表图等应经本社批准。
After the type approval of the products, the installation drawings, piping and instrumentation drawings and so on applicable to specific ships are to be approved by CCS.

7.安装了本压载水管理系统的船舶必须始终备有一份型式认可证书(No. GB21PTB00013)的副本。
A copy of this Type Approval Certificate(No. GB21PTB00013), should be carried on board a ship fitted with this Ballast Water Management System.

8.本认可产品电气控制系统满足IACS UR E10 Rev.8。
The electrical control system of the approved product complies with IACS UR E10 Rev.8.

9.因制造厂不具备压载水管理系统功能试验条件，产品安装上船后应进行功能试验验证。
The functional test of the ballast water management system can not be carried out at plants due to the capacity of the manufacturers, the functional test verification shall be carried out after the installation onboard ship.

中国船级社哥德堡办事处
CCS Gothenburg Office

注：本证书含有附页，共3页
Note: The certificate is attached with additional 3 page(s)

Product Description

CompactClean Ballast Water Management System

Name of product:
CompactClean BWMS

Treatment Sequence:
Ballast water uptake: Filter and UV disinfection
Ballast water discharge: UV disinfection

Treatment Rated Capacity (TRC) of the BWMS
35 – 2500 m^3/h
For ballast water uptake, the Treatment Rated Capacity (TRC) of a specific CompactClean BWMS model is limited by the maximum flow rate of either the selected UV unit model or the selected filter model, whichever is lower. The TRC for ballast water discharge is limited by the maximum flow rate of the selected UV unit model.
The treatment flow rate is monitored by a flowmeter at the BWMS inlet (before filter).

Type and model designations
The CompactClean BWMS has the model designation Vxxxxx Fyyyy N S 00 for models suitable for non-hazardous areas and Vxxxxx Fyyyy E S 00 for models suitable for installation in hazardous areas, where:
Vxxxxx is the applicable UV unit model, refer to Additional page 3 of this certificate.
Fyyyy is the applicable Filtrex filter model or Byyyy is the applicable BOLLFILTER filter model, refer to Additional page 2 of this certificate.
S is the skid mounted delivery type, L is the loose component delivery type, D is the deckhouse delivery type and M is the low version of the skid mounted delivery type.
00 is the standard type while B0 or BC is used for BWMS installations with a booster pump and 0C or BC is used for a custom made type (in terms of selected pipe materials).

The CompactClean BWMS is available in two versions:
1) CompactClean (CC): The BWMS can only be operated in US mode.
2) CompactClean OptIMO (OptIMO): The BWMS may be operated either in IMO or US mode.

System Design Limitations
1.UV-Intensity (UVI)
The CompactClean system will operate at full flow with a UV Intensity higher or equal to the TRC. At lower UVI values the flow reduction is applied, Min UV-I compliance level alarm is triggered, when UVI is less than the approved ranged.

The applied UV dosage is a calculated function of the UV intensity (UVI) and the exposure time. These parameters are directly affected by flowrate and the UV transmission (UVT) of the water.

The CompactClean BWMS has two compliance modes: IMO mode and US mode.
In IMO mode:
1).The system will be able to operate at full flow from UV-T 1.0 down to UV-T approx. 0.62, where after flow is reduced to cope with even lower UV-T. The flow control is based on the UV-Intensity (UVI) measurement inside the UV unit, and flow reduction is active below UVI 800 W/m2 (Max. TRC UVI).
2).The lowest UVI the system is approved for: UVI 170 W/m2.
3).Dimming of UV lamp power starts when UVI measured exceeds 900 W/m2, where after lamps will be dimmed to maintain a UVI of 900W/m2 ±50. The maximum dimming is 20% of maximum rated power.
In US mode:
1) The system will be able to operate at full flow from UV-T 1.0 down to UV-T approx. 0.65, where after flow is reduced to cope with even lower UV-T. The flow control is based on the UV-Intensity (UVI) measurement inside the UV unit, and flow reduction is active below UVI 880 W/m2 (Max. TRC UVI).
2) The lowest UVI the system is approved for : UVI 227 W/m2.

3) Dimming of UV lamp power starts when UVI measured exceeds 1000 W/m2, where after lamps will be dimmed to maintain a UVI of 1000W/m2 ±50. The maximum dimming is 20% of maximum rated power.

2. Flow Rate (Treatment rated capacity TRC)
The flow rate is measured in m3/hour by the flow meter placed on the inlet side of the filter. The limit is controlled by the outlet modulating valve. The flow rate shall not be outside the approved range of TRC.

3.Pressure
The maximum pressure rating for BWMS is 10 bar.
Ballast operation:
Minimum pressure at inlet of filter should be 1.3 Bar. However, it's recommended to have an operational pressure at 2 bar for heavy sediment areas with extreme filter load.
Inlet pressure to the filter inlet below 1.3 bar gauge will reduce the effectiveness of the backflush process and subsequently result in filter malfunction and reduced flow.
De-ballast operation:
Minimum pressure at inlet of UV-unit should be 0.5 Bar.

4.Salinity
No limitations on Salinity.
The CompactClean BWMS is intended to be used for treatment of all 3 water salinities: fresh water with a PSU of 0, brackish water and high saline salt water with a PSU of 40 or more.

5.Temperature
No limitation on Temperature.
The CompactClean BWMS can treat all normal seawater temperatures from artic temperatures below 0 °C, as long as the water remains in fluid form, to equatorial temperatures up to 50 °C.

6.Holding Time
There is no minimum required holding time for all salinities and temperatures in IMO areas.

Main components

1. Filter:

Filtrex Filter

Designation	Type	Max Flow m^3/h	Working pressure /pressure drop	Mesh size	Cleaning capacity
F0035	ACB-903-65	35	10bar/0.5bar	20um	backflush
F0055	ACB-904-80	55	10bar/0.5bar	20um	backflush
F0087	ACB-906-100	87	10bar/0.5bar	20um	backflush
F0135	ACB-910-150	135	10bar/0.5bar	20um	backflush
F0190	ACB-915-150	190	10bar/0.5bar	20um	backflush
F0255	ACB-935-200	255	10bar/0.5bar	20um	backflush
F0340	ACB-945-200	340	10bar/0.5bar	20um	backflush
F0515	ACB-955-250	515	10bar/0.5bar	20um	backflush
F0770	ACB-985-300	770	10bar/0.5bar	20um	backflush
F1040	ACB-999-350	1040	10bar/0.5bar	20um	backflush
F1500	ACB-9100-400	1500	10bar/0.5bar	20um	backflush
F2100	ACB-9120-500	2100	10bar/0.5bar	20um	backflush
F3000	ACB-9200-600	3000	10bar/0.5bar	20um	backflush

Boll Filter

Designation	Type	Max Flow m^3/h	Working pressure /pressure drop	Mesh size	Cleaning capacity
B0050	aquaBoll BWT BB 240x230 DN80	50	10bar/0.3bar	25um	backflush
B0100	aquaBoll BWT BB 330x300 DN100	100	10bar/0.3bar	25um	backflush
B0170	aquaBoll BWT BB 400x410 DN150	170	10bar/0.3bar	25um	backflush

B0340	aquaBoll BWT BB 430X730 DN200	340	10bar/0.3bar	25um	backflush
B0515	aquaBoll BWT BB 540x840 DN250	515	10bar/0.3bar	25um	backflush
B0770	aquaBoll BWT BB 580x1150 DN300	770	10bar/0.3bar	25um	backflush
B1040	aquaBoll BWT BB 700x1250 DN350	1040	10bar/0.3bar	25um	backflush
B1500	aquaBoll BWT BB 800X1535 DN400	1500	10bar/0.3bar	25um	backflush
B2000	aquaBoll BWT BB 1000x1535 DN500	2000	10bar/0.3bar	25um	backflush
B2500	aquaBoll BWT BB 1200x1535 DN600	2500	10bar/0.3bar	25um	backflush
B3000	aquaBoll BWT BB 1400x1535 DN600	3000	10bar/0.3bar	25um	backflush

2. UV Unit:

UV unit model	Maximum flow rate [m3/h]		Lamp data	Number of Lamps
	IMO mode	US mode		
V10024	60	40	DESMI 4KW SQ L=367mm	2
V15044	135	85	DESMI 4KW SQ L=367mm	4
V15064	240	160	DESMI 4KW SQ L=367mm	6
V20066	370	250	DESMI 6KW SQ L=530mm	6
V20086	510	340	DESMI 6KW SQ L=530mm	8
V25126	750	500	DESMI 6KW SQ L=530mm	12
V30186	1200	870	DESMI 6KW SQ L=540mm	18
V35246	1650	1180	DESMI 6KW SQ L=540mm	24
V40366	2500	1740	DESMI 6KW SQ L=550mm	36

3.Electrical and electronic components

Main Panel
Junction box
External Control box
UV sensor

4.Others

Mechanical filter, Sensors, Flowmeters, Butterfly Valves, Ball Valves, BWMS Pump, Skid Frame (SKM and Cxx), Piping (SKM and Cxx)

----------End of Certificate----------