



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
BG23PTB00002_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

Optimarin AS

地址/Address

Sjoeveien 34, 4315 Sandnes, Norway

产品名称/Product

压载水管理系统
Ballast Water Management System

认可标准/Approval Standard

- 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
- 中国船级社《钢质海船入级规范》(2022)及变更通告第4篇第1、2、3章
Chapter 1,2,3 Part Four of CCS Rules for the Classification of Sea-going Steel Ships 2022 and its Change Notices
- 中国船级社《钢质海船入级规范》(2022)及变更通告第3篇第1、2章
Chapter 1,2 Part Three of CCS Rules for the Classification of Sea-going Steel Ships 2022 and its Change Notices
- 中国船级社《钢质海船入级规范》(2022)及变更通告第8篇第26章
Chapter 26 Part Eight of CCS Rules for the Classification of Sea-going Steel Ships 2022 and its Change Notices
- 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》
IMO Resolution MEPC.300(72) - Code for Approval of Ballast Water Management Systems (BWMS Code)

用于/Intended for

船舶与海上设施/Ships and Offshore Installations

证书有效期至/This Certificate is valid until 2026年03月21日/Mar. 21,2026

发证机构/Issued by 中国船级社卑尔根办事处
CCS Bergen Office

签发日期/Date 2023年03月03日
Mar. 03,2023

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，可以向本社检验机构咨询。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.



Form No: T01.

联系方式/Contact Us, 见本社官方网站/See official web site of the Society (<http://www.ccs.org.cn>)

UTN:P023-36342948

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	Optimarin Ballast System 167/72BK3 - 3000/3100BK3 Optimarin Ballast System 167/65BK4 - 3000/2600BK4 Optimarin Ballast System 167/87FX2 - 3000/3000FX2 See "Additional pages" for full list of models.	
商标/Trademark	OBS and OBS Ex	
额定处理能力/Treatment Rated Capacity	Intake: 65 - 3000 Discharge: 10 - 3000	m3/h
滤器过滤精度/Filter Filtration Grade	FX2: 20 BK3: 25 BK4: 25	um
系统组成/System Component	Filter model, UV model, manifold, control and monitoring equipment, power unit	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No. : NP20PPP03883, NP20PPP03883_1

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No. : 见附页/See Additional Pages

试验报告日期/ Test Report Date :

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. IMO格式的压载水处理装置认可证书（证书号BG23PTB00002_02）与此证书一同签发。

Type Approval Certificate of Ballast Water Management System (IMO Format: CP384.2) is issued together with this certificate, certificate No. BG23PTB00002_02.

2. IMO格式的认可证书应始终保存在船上。

A copy of Type Approval Certificate in IMO Format, should be carried on board a vessel fitted with this ballast water management system at all times.

3. 每台压载水处理装置应按照IMO的决议、通函以及船级社的要求进行安装和调试检验。

Installation survey and commissioning is to be conducted for each installation on board a ship in accordance with IMO Resolutions, circulars, and specific survey requirements of the Society.

4. 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.

5. 本证书由原型式认可证书（No. BG22PTB00003_01）变更并替代原证书。

This Certificate is modified from and supersedes the previous Type Approval Certificate No. No. BG22PTB00003_01.

中国船级社卑尔根办事处

CCS Bergen Office

注：本证书含有附页，共4页

Note: The certificate is attached with additional 4 page(s)

Product Description

Optimarin Ballast System (OBS), Optimarin Ballast System Ex (OBS Ex)

Type and model designations

OBS BWMS model designation: xxxx/yyyyBK3, xxxx/yyyyBK4 or xxxx/yyyyFX2

where xxxx designates the below listed UV model and yyyy the below listed filter model of either the filter series manufactured by Boll & Kirch (BK3 or BK4) or the filter series manufactured by Filtrex (FX2).

UV models: 167, 334, 500, 667, 834, 1000, 1167, 1334, 1500, 1667, 1834, 2000, 2167, 2334, 2500, 2667, 2834 and 3000

BK3 filter models: 72, 94, 204, 378, 518, 614, 1274, 1384, 2040 and 3100

BK4 filter models: 65, 125, 220, 430, 770, 1000, 1350, 1900 and 2600

FX2 filter models: 87, 135, 190, 255, 340, 515, 770, 1040, 1500, 2100 and 3000

A OBS BWMS model suitable for installation in hazardous area are designated with the suffix EX (e.g., xxxx/yyyyBK3EX).

Other equipment manufactured by

The OBS BWMS applies one of the following self-cleaning screen filters:

- aquaBoll 6.18.3 filter series with 25 µm mesh manufactured by Boll & Kirch (BK3 or BK3 EX)
- aquaBoll BWT filter series with 25 µm mesh manufactured by Boll & Kirch (BK4)
- ACB filter series with 20 µm mesh manufactured by Filtrex (FX2 or FX2 EX)

Treatment Rated Capacity

65 – 3000 m³/h

Product description

Treatment sequence:

Ballast water uptake: Filtration and UV treatment

Ballast water discharge: UV treatment

Dosing

The BWMS has demonstrated performance to the performance standard when the UV intensity (UVI) and flow rate is measured above the below parameters.

Operation mode	TRC [m ³ /h]	UVI lower limit at 24% of full flow [W/m ²]	UVI lower limit at full flow (TRC) [W/m ²]
IMO	167 per chamber	150 (1)	400 (2)

(1) UVI below lower limit implies that the ballast water is not treated in accordance with this certificate. When targeting this UVI limit in land-based testing, the measured UVT was 45-46%. UVT may vary depending on the water quality parameters, i.e. particles and dissolved organic carbon.

(2) When targeting this UVI limit in land-based testing, the measured UVT was 54-56%.

The system also includes UV-lamp power optimization control based on measured UV-intensity. Lamp power can be reduced when UVI measures above 800 W/m².

The system has a USCG mode of operation which applies a higher UV dose than the described IMO mode above. This type approval therefore also applies to operation in the USCG mode.

Treatment Rated Capacity of the BWMS

The Treatment Rated Capacities (TRC) of the designated OBS BWMS models during ballasting is limited to either the maximum flow rate (TRC) of the UV system or the maximum flow rate (TRC) of the selected filter model, whichever is lowest. During de-ballasting, the TRC is limited to the maximum flow rate of the UV system only.

The UV system is formed by several UV chambers installed in parallel configuration, using specific manifolds, with the TRC as listed below. The TRC of the filter models, BK MK3 (EX), BK MK4 and FX MK2 (EX) are also listed in tables below. The minimum flow rate at which designated OBS BWMS model can be operated is the minimum flow rate of the selected filter model + (10m³/h x number of UV chambers).

The OBS BWMS controls the flow rate in the ballast water line by using a flow control valve to ensure that flow rates are kept within the TRC.

Manifold model	Number of UV chambers	TRC [m ³ /h]
Type 1, DN150	1	167
Type 1, DN200	2	334
Type 1, DN250	3	500
Type 1, DN300	4	667
Type 1, DN300	5	834
Type 1, DN350	6	1000
Type 1, DN400	7	1167
Type 1, DN400	8	1334
Type 1, DN400	9	1500
Type 1, DN500	10	1667
Type 1, DN500	11	1834
Type 1, DN500	12	2000
Type 1, DN500	13	2167
Type 1, DN500	14	2334
Type 1, DN500	15	2500

Manifold model	Number of UV chambers	TRC [m ³ /h]
Type 2, DN200	2	334
Type 2, DN250	3	500
Type 2, DN300	4	667
Type 2, DN300	5	834
Type 2, DN350	6	1000
Type 2, DN400	7	1167
Type 2, DN400	8	1334
Type 2, DN400	9	1500
Type 2, DN500	10	1667
Type 2, DN500	11	1834
Type 2, DN500	12	2000
Type 2, DN500	13	2167
Type 2, DN500	14	2334
Type 2, DN500	15	2500
Type 2, DN500	16	2667
Type 2, DN600	17	2834
Type 2, DN600	18	3000

Boll & Kirch aquaBoll 6.18.3	Model designation	Flow range [m ³ /h]
aquaBoll 273	72BK MK3 (EX)	19 - 72
aquaBoll 324	94BK MK3 (EX)	19 - 94
aquaBoll 356	204BK MK3 (EX)	24 - 204
aquaBoll 419	378BK MK3 (EX)	33 - 378
aquaBoll 521	518BK MK3 (EX)	33 - 518
aquaBoll 600	614BK MK3 (EX)	34 - 614
aquaBoll 750	1274BK MK3 (EX)	50 - 1274
aquaBoll 900	1384BK MK3 (EX)	47 - 1384

Filtrex ACB	Model designation	Flow range [m ³ /h]
ACB-906-100	87FX MK2 (EX)	15 - 87
ACB-910-150	135FX MK2 (EX)	25 - 135
ACB-915-150	190FX MK2 (EX)	35 - 190
ACB-935-200	255FX MK2 (EX)	35 - 255
ACB-945-200	340FX MK2 (EX)	45 - 340
ACB-955-250	515FX MK2 (EX)	50 - 515
ACB-985-300	770FX MK2 (EX)	65 - 770
ACB-999-350	1040FX MK2 (EX)	95 - 1040
ACB-9100-400	1500FX MK2 (EX)	126 - 1500

Boll & Kirch aquaBoll BWT	Model designation	Flow range [m ³ /h]
aquaBoll BWT 240x230 DN80	65BK MK4	8 - 65
aquaBoll BWT 330x300 DN100	125BK MK4	15 - 125
aquaBoll BWT 400x410 DN150	220BK MK4	23 - 220
aquaBoll BWT 430x730 DN200	430BK MK4	51 - 430
aquaBoll BWT 540x840 DN250	770BK MK4	59 - 770

Boll & Kirch aquaBoll BWT	Model designation	Flow range [m ³ /h]
aquaBoll BWT 580x1150 DN300	1000BK MK4	88 - 1000
aquaBoll BWT 700x1250 DN350	1350BK MK4	109 - 1350
aquaBoll BWT 800x1235 DN400	1900BK MK4	136 - 1900
aquaBoll BWT 1000x1535 DN500	2600BK MK4	152 - 2600

Pressure

The minimum and maximum system operating pressure and the differential pressure triggering backflushing are listed below.

Filter type	Minimum inlet pressure (back-pressure)	Differential pressure triggering backflushing	Maximum operating pressure
Filtrex ACB, FX2	1.5 bar	≥0.3 bar	10 bar
aquaBoll 6.18.3, BK3 aquaBoll BWT, BK4	1.5 bar	≥0.38 bar	10 bar

Control and monitoring equipment**Software version**

The OBS BWMS is type approved with system control software version: 2.2x

Any change to the software is to be recorded as long as the system is in use on board. Major changes in the software, testing of the application functions of a revised software may be required.

For the following electrical and electronic components, the models specified in the table below shall be used:

Tag ID	Description	Item	Manufacturer
+CP	CONTROL PANEL MK3	150876	Optimarin AS
+SCP	SUB-CONTROL PANEL MK3	152052	Optimarin AS
+FC	FILTER CONTROL MK3	150737	Optimarin AS
	FILTER CONTROL EX MK3	151199	Optimarin AS
	FILTER CONTROL EX MK3 MTL	152706	Optimarin AS
+SBx	SENSOR BOX 0VA MK3	151128	Optimarin AS
	SENSOR BOX 250VA MK3	151114	Optimarin AS
	SENSOR BOX 700VA MK3	151058	Optimarin AS
	SENSOR BOX MK3	151135	Optimarin AS
	SENSOR BOX 0VA EX MK3	151215	Optimarin AS
	SENSOR BOX 250VA EX MK3	151231	Optimarin AS
	SENSOR BOX 700VA EX MK3	151763	Optimarin AS
	SENSOR BOX EX MK3	151207	Optimarin AS
	SENSOR BOX 0VA EX MK3 MTL	152695	Optimarin AS
	SENSOR BOX 250VA EX MK3 MTL	152700	Optimarin AS
	SENSOR BOX 700VA EX MK3 MTL	152702	Optimarin AS
	SENSOR BOX EX MK3 MTL	152704	Optimarin AS
+EXIP	EX INTERFACE PANEL MK3	151142	Optimarin AS
+IP	INTERLOCK PANEL MK3	151859	Optimarin AS
	FLOW INTERLOCK PANEL MK3	155943	Optimarin AS
+FWP	FRESH WATER PANEL MK3	151779	Optimarin AS
+ACP	ACTUATOR CONTROL PANEL 700VA MK3	151822	Optimarin AS
	ACTUATOR CONTROL PANEL 1600VA MK3	151813	Optimarin AS
	ACTUATOR CONTROL PANEL 3600VA MK3	151804	Optimarin AS
+PDP	POWER DISTRIBUTION PANEL SMALL MK3	152053	Optimarin AS
+GPS	GPS JUNCTION BOX MK3	152057	Optimarin AS
	GPS JUNCTION BOX 230VAC MK3	152058	Optimarin AS
+UVPxx	UV POWER CABINET TYPE NED MK3	145923	Nedap N.V.
	UV POWER CABINET TYPE ETA	145128	Eta plus electronic GmbH
	UV POWER CABINET TYPE UVA	150431	Uvantech AS
	UV POWER CABINET TINY TYPE ETA VER	157849	Eta plus electronic GmbH
	UV POWER CABINET TINY TYPE ETA HOR	157850	Eta plus electronic GmbH
+TBxx	TERMINAL BOX MK3	148644	Optimarin AS
	TERMINAL BOX MK2 TYPE TRA	148540	R. Stahl Tranberg AS
	TERMINAL BOX MK2 EX TYPE TRA	145956	R. Stahl Tranberg AS
+EXJBxx	JUNCTION BOX EX TYPE TRA	148640	R. Stahl Tranberg AS
	JUNCTION BOX EX TYPE BAR	145466	Bartec Technor AS

UVxx	UV SENSOR 2300W_m2 TYPE ILM	117079	IL Metronic Sensortechnik GmbH
	UV SENSOR 2300W_m2 EX2C EX TYPE ILM	149352	IL Metronic Sensortechnik GmbH
	LAMP CONNENTION BOX KIT	155639	Ex-Tech
	LAMP CONNENTION BOX KIT EX	155637	Ex-Tech

Hazardous area / Ex-proof

For the OBS Ex BWMS, the filter, UV chambers, valves, backflush pump, and flowmeters have Ex-certification and can be installed in hazardous area zone 1, gas group IIB and temperature class T4. The cabinets are to be located in safe zone. Ex-certification is not covered by this certificate. Installation in a hazardous area is to be approved in each case according to CCS "Rules for The Classification of Sea-going Steel Ships" and its explosion group and temperature class shall be complied with Ex special requirement for safe use.

Documents approval

The following documents shall be submitted for approval in each case after type approval:

the piping and instrumentation diagram of the ballast system

Sampling Facilities

The control system

Power supply arrangement

List of controlled and monitored points

Description of interface towards ships existing systems.

Type Approval documentation

NIVA, Land-based testing of OBS 334 Ballast Water Management system of Optimarin AS – Final Report, Report SNO 6921-2015, Final report v2.1, June 2016

NIVA, Shipboard testing of the Ballast Water Management System OBS1000 of Optimarin AS, Report SNO 7063-2016, Final report v2.0, June 2016

NIVA, Land-based testing of OBS 334 Ballast Water Management system of Optimarin AS – Final Report, Report SNO 7523-2020, Final report, August 2020

DHI, Biological comparison tests of three filters manufactured by BollFilter in land-based test - Land-based test report, project 11824919, Final test report, 11 January 2021

Applica EMC and Environmental testing of Gönheimer Elektronik GmbH Control unit F850S and power supply for Optimarin AS, Report 20226, Rev. 1

Applica Technical Report, Optimarin AS Environmental testing of Temperatures Switches, Report No. 21250 Rev. 1

Applica Technical Report, Optimarin AS Environmental testing of Sensor Box +EXSB01 and temperature transmitter TR-34, Report No. 21356 Rev. 0

Applica Technical Report, Optimarin AS Environmental testing, Report No. 20597 Rev. 0

Applica Technical Report, Optimarin AS Environmental testing of Environmental testing of TB (Terminal Boxes) Report No. 20984 Rev. 0

Applica Technical Report, Optimarin AS EMC and Environmental testing of new components to Optimarin BWMS, Report No. 30486 Rev. 0

Applica Technical Report, Optimarin AS EMC and Environmental testing of Optilink Panel 4G, Report No. 30732 Rev. 0

Applica Technical Report, Optimarin AS Environmental testing of Lamp connection box, Report No. 30906 Rev. 1

Applica Technical Report, Optimarin AS EMC and Environmental testing of Flow interlock panel, Report No. 30972 Rev. 0

Phoenix Technical Report, Optimarin AS EMC and Environmental testing of Flow interlock panel, Report No. U211234E1, Rev. 0 Report No E211234E1 Rev. 0

Treco Laboratory Test Report – Inclination test of X36B Tiny Cabinet, 22-04-26/Rev. 1.



格式/Form: CP384.2

中国船级社
CHINA CLASSIFICATION SOCIETY

编号/No. BG23PTB00002_02

压载水管理系统型式认可证书
TYPE APPROVAL CERTIFICATE OF BALLAST WATER MANAGEMENT SYSTEM

兹证明, 已按压载水管理系统认可规则 (MEPC. 300 (72) 决议) 要求和规定, 对下列压载水管理系统进行了检查和试验。本证书仅对下列压载水管理系统有效。

This is to certify that the ballast water management system listed below has been examined and tested in accordance with the requirements of the specifications contained in the Code for Approval of Ballast Water Management Systems(resolution MEPC.300(72)). This certificate is valid only for the Ballast Water Management System referred to below.

压载水管理系统名称: Optimarin BWMS (OBS), Optimarin BWMS Ex (OBS Ex)

Name of Ballast Water Management System:

Optimarin Ballast Water Management System (OBS), Optimarin Ballast Water Management System Ex (OBS Ex)

压载水管理系统制造商: Optimarin AS

Ballast Water Management System manufactured by:

Optimarin AS

指定类型和型号: Optimarin Ballast System 167/72BK3-3000/3100BK3, 167/65BK4-3000/2600BK4 and 167/87FX2-3000/3000FX2

Under type and model designation(s) _____

并包括: Optimarin Ballast System 167/72BK3-3000/3100BK3, Optimarin Ballast System 167/65BK4-3000/2600BK4, Optimarin Ballast System 167/87FX2-3000/3000FX2.

and incorporating: See Type approval certificate "BG22PTB00003_01 for full list of models.

设备/组件图号

Refer to NP20PPP03883 and NP20PPP03883_01

日期

2022-11-06

To equipment/assembly drawing No.: _____

date: _____

其他设备制造商:

AquaBoll filter 6.18.3 series manufactured by Boll & Kirch (BK3/BK4); ACB filter series manufactured by Filtrex (FX2)

Other equipment manufactured by: _____

设备/组件图号:

Refer to NP20PPP03883 and NP20PPP03883_01

日期

2022-11-06

To equipment/assembly drawing No.: _____

date: _____

额定处理能力:

Treatment Rated Capacity (m3/h): Intake:65-3000;Discharge:10-3000

安装了压载水管理系统的船上应备有一份型式认可证书的副本供船上检查。如果型式认可证书的签发是基于另一国主管机关的认可，则应参照该型式认可证书。

A copy of this Type Approval Certificate shall be carried on board a ship fitted with this ballast water management system, for inspection on board the ship. If the Type Approval Certificate is issued based on approval by another Administration, reference to that Type Approval Certificate shall be made.

规定的操作限制条件:

Limiting Operating Conditions imposed are described in this document.

1. UV Reactor – Minimum lower limit of UV intensity at IMO operation mode:

-- at 24% of full flow: 150 W/m²

-- at full flow: 400 W/m².

2. The TRCs of the designated OBS BWMS models during ballasting is limited to either on the TRC of the UV system or the TRC of the selected filter model, whichever is lowest. During deballasting, the TRC is limited to the TRC of the UV system only.

3. The minimum flow rate at which designated OBS BWMS model can be operated is the minimum flow rate of the selected filter model + (10m/h x number of UV chambers).

4. The OBS BWMS controls the flow rate in the ballast water line by using a flow control valve to ensure that flow rates are kept within the TRC.

其他的限制包括:

Other restrictions imposed include the following:

For the OBS Ex BWMS, the filter, UV chambers, valves, backflush pump, and flowmeters have Excertification and can be installed in hazardous area zone 1, gas group IIB and temperature class T4. The cabinets are to be located in safe zone. Ex-certification is not covered by this certificate. Installation in a hazardous area are to be approved in each case according to CCS "Rules for The Classification of Sea-going Steel Ships" and its explosion group and temperature class shall be complied with Ex special requirement for safe use.

本设备的设计满足下列运行条件的要求：

This equipment has been designed for operation in the following conditions:

-- Ambient temperature: 0 to 55 ° C;

-- Ballast water temperature range: -2 to 37 ° C;

-- Salinity of water to be treated: all salinities;

-- Holding time: no limitation

发证日期
Date of issue

2023年03月03日

有效期
valid until

2026年03月21日



(Tang Weiwei)

中国船级社
China Classification Society

