



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
GB23PTB00040_03

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

Green Instruments A/S

地址/Address

Erhvervsparken 29, DK-9700 Brønderslev, Denmark

产品名称/Product

废气连续监测系统
Exhaust Gas Continuous Monitoring System

认可标准/Approval Standard

- IMO决议MEPC. 340(77)《2021年废气清洗系统指南》
IMO Resolution MEPC.340(77) 2021 Guidelines for Exhaust Gas Cleaning Systems
- 中国船级社《钢质海船入级规范》(2023)及其变更通告 第7篇第2章
Chapter 2, Part Seven of China Classification Society "Rules for Classification of Sea-Going Steel Ships" 2023 and its Change Notices

用于/Intended for

船舶/Ships



证书有效期至/This Certificate is valid until 2027年08月14日/Aug. 14,2027

发证机构/Issued by 中国船级社哥本哈根办事处
CCS Copenhagen Office

签发日期/Date 2024年01月09日
Jan. 09,2024

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:P023-60809918

产品明细/Product Description**废气连续监测系统/Exhaust Gas Continuous Monitoring System (M0001)**

名称/Name	属性(值)/Value	单位/Unit
型号/Type	G7200 Multigas Monitoring System	
电源/Power Source	230VAC 50/60 Hz	
防护等级/Degree of Protection	IP54	
系统组成/System Composition	See Additional Page(s)	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No. : NP23PPP03435

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No. : P23-0082-1
 试验报告日期/ Test Report Date : 2023-08-09
 试验单位/ Laboratory: EKTOS Testing & Reliability Services A/S
 试验单位地址/ Test Address: Hammerholmen 45A, 2650 Hvidovre, Denmark

试验报告编号/ Test Report No. : G7200 Performance Test rapport
 试验报告日期/ Test Report Date : 2023-05-22
 试验单位/ Laboratory: Green Instruments A/S
 试验单位地址/ Test Address: Erhvervsparken 29, DK-9700 Brønderslev, Denmark

试验报告编号/ Test Report No. : G7200 IP rating assessment
 试验报告日期/ Test Report Date : 2023-07-12
 试验单位/ Laboratory: Green Instruments A/S
 试验单位地址/ Test Address: Erhvervsparken 29, DK-9700 Brønderslev, Denmark

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

按规范只认可不进行产品检验的产品/The product approved only in term of the rules:

认可后的产品检验由制造厂按本社批准的产品检验计划进行检验，经检验合格后由制造厂签发合格证明，并连同该产品的本社认可证书复印件一并交付用户，制造厂对产品符合公约、法规、本社规范和本社认可的标准规定负责。After approval, product inspection should be carried out by the Manufacturer in accordance with the product inspection scheme approved by the Society. Upon satisfactory inspection, and the Quality Certificate issued by the Manufacturer should be provided to the purchaser together with the copy of the approval certificate issued by the Society. The manufacturer should take responsibility for the product being in compliance with the convention, statutory regulation, the Society rules and the standard accepted by the Society.

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. 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.

2. 本证书认可产品满足UR E10 Rev 8。
The approved products comply with UR E10 Rev 8.

中国船级社哥德堡办事处

CCS Gothenburg Office

注：本证书含有附页，共2页

Note: The certificate is attached with additional 2 page(s)

Product Description and Application/Limitation

1.Product Description:

This system is a continuous gas monitoring system. The modular design of the system makes it possible to monitor different gases according to customer specification. It can monitor the SO₂ and CO₂ concentrations in exhaust gases. It provides an accurate measurement of SO₂ in ppm, CO₂ in percent as well as presents the SO₂/CO₂ ratio. The gas analyzer is based on both non-dispersive infrared (NDIR) principle and non-dispersive Ultraviolet (NDUV) principle. These principles makes it possible to detect a wide range of gasses among others SO₂, CO₂, NO₂, NO, CH₄, CO, HC, N₂O and H₂O. The system includes heated probe(s) and heated hose(s) to maintain the extractive exhaust gas sample at a sufficient temperature to avoid condensed water and loss of SO₂ as required in section 6 of the MEPC. 340(77).

2.Major parts and specifications:

G7200 Multigas Monitoring System	
Type	G7200
Equipment including	Analyzer modules, gas cooler, gas pump (s), condensate pump(s), gas filtration system, flow transmitter, solenoid valves, air filter regulator and oil/particle separator, air dryer, HMI, PLC.
Display	7" TFT LCD color display with touch screen
Number of Gas Analyzer Modules	1-3 depending on configuration
Power Supply	230 VAC – 50/60 Hz
External Communication	Modbus TCP/IP (RJ45) Optional Modbus RTU
Sample flow	0.33 – 1.67 l/min. Default 0.5L/min.
Max ambient temperature	Class A From 5°C to 45 °C
Humidity	RH up to 96% at all relevant temperatures
Vibration	Class A
Material/Enclosure Class	Painted mild steel RAL 7035 IP54
Optional Modules	
IoT module	Establish a remote connection link between system and user
Communication Converter Module	Converts bus communication to other standard bus communication protocols
Ethernet Switch	Used to connect optional modules
Gas Analyzer	
Type G7010	
Gas Analyzer Measuring principle	NDIR
Measuring Gasses and typical Ranges	CO ₂ : 0 – 10 % SO ₂ : 0 – 200 ppm Other ranges upon request
Accuracy/Linearity	≤ ±2 % of reading or ≤ 0.3 % of full scale whichever is larger (except zero)
Precision/Repeatability	≤ ±1 % of full scale above 100 ppm or ≤ ±2 % of full scale below 100 ppm
Noise	≤ ±2 % of full scale
Zero drift	≤ ±2 % of full scale
Span drift	≤ ±2 % of full scale
Calibration	Zero Calibration: Automatic using compressed air Span Calibration: Automatic using inbuilt cuvette which hold span gas and also possibility to connect mixed test gases for verification

Type G7210			
Gas Analyzer Measuring Principle	NDIR		
Measuring Gasses and typical Ranges	Gas Component	Full range	Default range
	NO	0 – 5000 ppm	0 – 1000 ppm
	CH4	0 – 100 %	0 – 5000 ppm
	H2O	0 – 5%	0 – 20000 ppm
	CO2	0 – 100 %	0 – 20 %
	CO	0 – 100 %	0 – 5000 ppm
	N2O	0 – 100 %	0 – 2000 ppm
	HC	0 – 100 %	0 – 5000 ppm
	Note: Combination of gasses and ranges are hardware dependent. Each module can be configured for maximum 4 individual gasses.		
Accuracy/Linearity	≤ ±2 % of reading or ≤ 0.3 % of full scale whichever is larger (except zero)		
Precision/Repeatability	≤ ±1 % of full scale above 100 ppm or ≤ ±2 % of full scale below 100 ppm		
Noise	≤ ±2 % of full scale		
Zero drift	≤ ±2 % of full scale		
Span drift	≤ ±2 % of full scale		
Calibration	Zero Calibration: Automatic using compressed air Span Calibration: Manually by connecting mixed test gases for verification		
Compensations	Fully temperature and pressure compensated		
Type G7230			
Gas Analyzer Measuring Principle	NDUV + NDIR		
Measuring Gasses and typical Ranges	Gas Component	Full range	Default range
	NO	0 – 5000 ppm	0 – 1000 ppm
	CH4	0 – 100 %	0 – 5000 ppm
	H2O	0 – 5%	0 – 20000 ppm
	CO2	0 – 100 %	0 – 20 %
	CO	0 – 100 %	0 – 5000 ppm
	N2O	0 – 100 %	0 – 2000 ppm
	HC	0 – 100 %	0 – 5000 ppm
	SO2	0 – 10 %	0 – 300 ppm
	NO2	0 – 5000 ppm	0 – 100 ppm
Accuracy/Linearity	≤ ±2 % of reading or ≤ 0.3 % of full scale whichever is larger (except zero)		
Precision/Repeatability	≤ ±1 % of full scale above 100 ppm or ≤ ±2 % of full scale below 100 ppm		
Noise	≤ ±2 % of full scale		
Zero drift	≤ ±2 % of full scale		
Span drift	≤ ±2 % of full scale		
Calibration	Zero Calibration: Automatic using compressed air Span Calibration: Manually by connecting mixed test gases for verification		
Compensations	Fully temperature and pressure compensated		

3.Application/Limitation:

- 1).The heated hoses for the system should be flame retardant tested type according to IEC 60092-101/UL94 5VA, 5VB, V0 or V1.
- 2).The Gas analyzer must be operated and calibrated in accordance with the manufacturer's recommendations.

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