



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

24-0170173-PDA
05-Feb-2025
04-Feb-2030
Houston ESD - Electrical

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

PROTEA LTD

located at

**10 PROSPERITY COURT, , MIDDLEWICH, CHESHIRE, United
Kingdom, CW10 0GD**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Monitoring System, Emissions**
Model: **P2000 (1-0002 and variants) and atmosFlo (1-0355)**
Endorsements:
Tier: **2 - PDA Issued**

This Product Design Assessment (PDA) Certificate remains valid until 04/Feb/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Mohamed C Boukamcha

Mohamed C Boukamcha,Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

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Product: Monitoring System, Emissions
Model: P2000 (1-0002 and variants) and atmosFlo (1-0355)
Endorsements:

Intended Service:

Marine and Offshore Application - continuously monitors the concentration of exhaust gas emissions from ships, Mobile Offshore Units (MOU) and other sources of maritime air pollution including Nitric Oxide (NO), Nitrogen Dioxide (NO₂), Nitrous Oxide (N₂O), Sulphur Dioxide (SO₂) and Carbon Dioxide (CO₂) as called for under the NO_x Technical Code 2008 and MEPC.340(77) 2021 Guidelines for Exhaust Gas Cleaning Systems

Description:

The P2000 Emissions Analyzer is an infra-red (IR), duct or stack-mounted analyzer, designed for In-Situ analysis of up to six gas phase emission components. A typical system comprises a stack mounted Analyzer, an integral Calibration Module and a Control unit with options which include an In-Situ / By-pass Heater and a standalone Analysis Software package (S-PC Pro).

The atmosFlo is an averaging pitot flowmeter, duct or stack-mounted analyser, designed for In-Situ velocity /flow measurement. A system comprises of a averaging pitot probe, differential pressure sensor, absolute pressure transducer, RTD temperature sensor and a 5-way manifold for isolation and venting.

Rating:

Power supply: 115V/230V 240 W; 50/60 Hz

Operating Temperature: -20C to +60C (-4F to +140F)

Sampling Temperature: Up to 350C (662F);

Enclosure: Aluminum Alloy casting, IP65 (NEMA 4X)

Hazardous Area: Option ATEX II 2 G Ex d IIB T6 Flame Proof, IEC Ex d IIB T6 Flame Proof

Primary Gases: NO_x, SO_x, CO₂

NO 0 - 240 ppm

NO₂ 0 - 200 ppm

N₂O 0 - 300 ppm

CO₂ 0 - 15 %

SO₂ 0 - 150 ppm.

H₂O 0 - 20 %

Service Restriction:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. The P2000 Analyzer has the capability to report a SO₂/CO₂ ratio and gas concentrations on both a wet and dry basis
3. Based on Flag Administration Authorization to ABS, the analyzer may be subject to the approval by the Administration.
4. When the monitoring of SO₂ and CO₂ is used to measure the performance of an exhaust gas cleaning system, corrections to a dry concentration are required as the Procal 2000 is an in-situ system.
5. The P2000 comprises emissions analyser(s) and control unit with ACWn software and does not provide monitoring of engine parameters as required by the NO_x Technical Code 2008. If integrated into another system for compliance with the Code, details of the complete compliance system and appropriate documentation as required by regulations are to be submitted to ABS for our review for each installation on ABS classed vessels.
6. The P2000 system does not monitor hours underway or distance travelled as required by MEPC.346(78) and EU Reg 2015/757. If integrated into another system for compliance with these Codes, details of the complete compliance

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system and appropriate documentation as required by regulations are to be submitted to ABS for our review for each installation on ABS classed vessels.

Notes/Drawing/Documentation:

Drawing No.: 1-0009E, R Source Assembly, Flat Element, Revision: 2

Drawing No.: 102153 1st LAB, MCERTs Laboratory Test Report First Pair June 2013, Revision: 1

Drawing No.: 102153 1st Field, Field Test Report First Pair Feb 2013, Revision: 1

Drawing No.: 102153 2nd Field, Field Test Report Second Pair June 2013, Revision: 1

Drawing No.: 102153 2nd LAB, Laboratory Test Report Second Pair August 2013, Revision: 1

Drawing No.: 18-0001, P2000 Installation Dwgs, Revision: 8

Drawing No.: 18-0003, Manual - Protea P-PC, Revision: 4

Drawing No.: 18-0004, Manual - Protea 2000, Revision: 11

Drawing No.: 18-0006, Manual - ACWn Software, Revision: 3

Drawing No.: 18-0023, atmosFlo Manual, Revision: 2

Drawing No.: 18-0040X, IECEx Conformity Certs Complete Set, Revision: 1

Drawing No.: 18ATEX0060X, Baseefa ATEX Certs Complete Set, Revision: 1

Drawing No.: 19-6AD046, App Sheet_atmosFlo, Revision: 1

Drawing No.: 19-6PD082, Data Sheet_Marine, Revision: 2

Drawing No.: 20250127, Test Report for Assessment of direct CO2 emission measurement, Revision: 1

Drawing No.: PDA Application, Review of Emissions Monitoring System Model P2000 (add flowmeter), Revision: -

Drawing No.: PDA Document, Original ABS Type Approval Cert P2000, Revision: -

Drawing No.: POMM, Protea Onboard Monitoring Manual, Revision: 1

Terms of Validity:

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STANDARDS**ABS Rules:**

2025 Marine Vessel Rules 1-1-4/7.7, 1-1-Appendix 3, 4-8-4/27.5.1, 4-9-3/7, 4-9-3/8, 2025 Offshore Rules 4-3-3/9.3.1.

National:

MCERTS Performance Standards for Continuous Emission Monitoring Systems, Cert. No. Sira MC 050060

International:

IEC 60945:2002, IEC 60079-0:2017 Edition:7.0, IEC 60079-1:2014 Edition:7.0, UNE-EN 60079-0:2007, UNE-EN 60079-1:2008

MARPOL 73/78 Annex VI Regulation 13 - Nitrogen Oxides (NOx) and the NOx Technical Code 2008, Chapter 6.4, Resolution MEPC. 340(77) 2021 Guidelines for Exhaust Gas Cleaning Systems, MEPC.346(78) "2022 Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP)"

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Government:

MRV Regulation (EU) 2015/757, Method D

EUMED:

NA

OTHERS:

IACS E10 Test Specification for Type Approval (except Test Nos. 12 & 21)