

# EC Type Examination Certificate

## Notified Body 0729

This is to certify that ABS Europe Ltd., as a Notified Body under the authorization of UK MCA by Merchant Shipping Equipment Regulation, SI 1999, Number 1957 and M Notice Number 1734, as amended, did undertake the relevant type examination procedure of the product listed and same was found to be in compliance with the provisions of these Regulations and EU Directive 96/98/EC of 20 December 1996 as amended by EU Directive 2009/26/EC

ANNEX A.1 ITEM NUMBER: A.1/2.8 – On-board NOx monitoring and recording devices

CERTIFICATE NUMBER: 10-HS627914-EC

APPLICANT: W R Systems, Ltd

PLANT LOCATION: Norfolk, Virginia

PORT OFFICE: Newport News, Virginia, United States

PRODUCT DESIGNATION: Monitoring Systems, Emission

Model: "Emsys"

STANDARDS AND REGULATIONS: European Union Marine Equipment Directive 96/98/EC as Amended by Directive 2009/26/EC

Annex VI Reg. 13, NOx Technical Code

IMO Res. MEPC.103(49)

THIS CERTIFICATE IS ISSUED IN COMPLIANCE WITH CONFORMITY ASSESSMENT **MODULE B** OF THE REGULATIONS AND

ISSUE DATE: 1 September 2010

EXPIRATION DATE: 31 August 2015

SIGNATURE:  S.C. Sexstone

Should the specified regulations or standards be amended during the validity of this certificate, the products are to be re-approved prior to being placed on board vessels to which the amended regulations or standards apply.

This "Mark of Conformity" may only be affixed to the above equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase Module (D, E or F) of Annex B of the Directive is fully complied with and controlled by a written agreement with a Notified Body

The attached document list forms part of this Certificate

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. ABS Europe Ltd. is a Notified Body under the authorization of UK MCA by Merchant Shipping Equipment Regulation, SI 1999 No 1957 and M Notice No. 1734 as amended. Compliance with the provisions laid down in EU Directive 96/98/EC of 20 December 1996 as amended, will be determined as governed by the terms and conditions as contained in ABS Rules 1-1-A/3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

ECTEC (rev 3 01/10)

**Certificate No.:** 10-HS627914-EC  
**Entry Date:** 1 September 2010  
**Name of Equipment/  
Component Manufacturer:** WR SYSTEMS  
2500 ALMEDA AVENUE, SUITE 214  
NORFOLK  
23513  
United States  
  
Tel: +757-858-600  
Fax: +757-858-6058  
Email: [rwestmont@wrsystems.com](mailto:rwestmont@wrsystems.com)  
Website: <http://wrsystems.com>

**Equipment/Component:** Monitoring System, Emissions

**Model:** Emsys

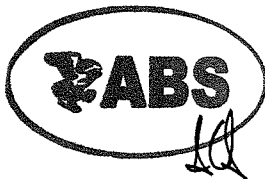
**Description:** The Emsys(TM) Continuous Emissions Monitoring System is a laser-driven single enclosure device that can continuously monitor emissions and provide automated analysis and data recordings from multiple smokestacks and boilers for marine applications. Emsys(TM) allows operators of marine-fueled engines to continuously monitor, analyze, and record emissions from all installed engines and boilers. It analyzes and records Nitrogen Oxides (NO), Nitrogen Dioxides (NO<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), and Carbon Dioxide (CO<sub>2</sub>), as well as particulate matter (PM).

**Intended Service:** Marine and Offshore Applications - Emsys(TM) is a continuous emission monitoring system for the application of monitoring exhaust emissions from maritime vessels and Mobile Offshore Drilling Units (MODU). The system will verify compliance with the Revised MARPOL Annex VI Regulation 13 (NO<sub>x</sub>), in line with the requirements of the NO<sub>x</sub> Technical Code (2008).

**Ratings:** Power Supply: 230VAC 50/60 Hz 14 A  
Maximum Enclosure Rating: IP 52

**Components:**

Emsys(TM) Unit Enclosure, P/N: CEMS-UEA-01  
Particulate Matter (PM) Sensor, P/N: CEMS-SCA-01-03A/04A -  
PM Range: 0-1000 mg/m<sup>3</sup>  
Quantum Cascade Laser (QCL) Gas Sensor, P/N: CEMS-EV1-010-20  
NO Range 0-2000 ppm  
NO<sub>2</sub> Range 0-300 ppm  
CO<sub>2</sub> Range 0-10%  
SO<sub>2</sub> Range 0-1750 ppm



**Ratings:**

Emsys(TM) Heated Line Control Unit (HLCU), P/N: CEMS-HUA-01  
Emsys(TM) Sensor Control Unit (SCU), P/N: CEMS-SCU-01  
Generator Power Sensor VER A, P/N: CEMS-SCU-01-EXT-01  
Generator Power Sensor VER B, P/N: CEMS-SCU-01-EXT-02  
Generator Power Signal VER A, P/N: CEMS-SCU-01-EXT-03  
Generator Power Signal VER B, P/N: CEMS-SCU-01-EXT-04  
Charge Air Pressure Sensor VER A, P/N: CEMS-SCU-01-EXT-05  
Charge Air Pressure Sensor VER B, P/N: CEMS-SCU-01-EXT-06  
Charge Air Temperature Sensor VER A, P/N: CEMS-SCU-01-EXT-08  
Charge Air Temperature Sensor VER B, P/N: CEMS-SCU-01-EXT-07  
E3 Cycle Flywheel Speed Sensor VER A, P/N: CEMS-SCU-01-EXT-09  
E3 Cycle Flywheel Speed Sensor VER B, P/N: CEMS-SCU-01-EXT-10  
Emsys(TM) Server, P/N: CEMS-SVR-01  
Emsys(TM) Auxiliary Unit (EAU), P/N: CEMS-SRV-01-EAU-01.

**Standards:**

EC Marine Equipment Directive Annex 1, Item No. A.1/2.8  
Tested in accordance with Annex VI, Reg. 13, NOx Technical Code  
IMO Resolution MEPC.103 (49)

**Comments:**

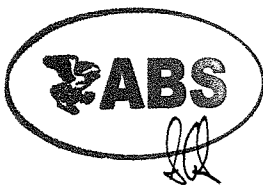
1. The following items are to be incorporated in the Supplement to the new or existing EIAPP for all monitored engines onboard:

- 1) Arrangements, data or information required by the specific engine (as given by the corresponding Approved Engine Technical File) which is necessary to apply the Direct Measurement and Monitoring method.
- 2) Emission species to be measured and ranges
- 3) Analyzer type
- 4) Emission data analysis method
- 5) Information on calibration gases
- 6) Data capture and retention method
- 7) Verification procedures for the attending Surveyor

2. For each installation, an Onboard Monitoring Manual (OMM) is to be submitted to the Administration for approval as per Chapter 6.4.17 of the Revised MARPOL Annex VI and NOx Technical Code (2008) and Section 8 of MEPC.184 (59).

3. For installation, the span gases are to be provided in order to comply with the requirements of Chapter 6 of the Revised MARPOL Annex VI and NOx Technical Code (2008).

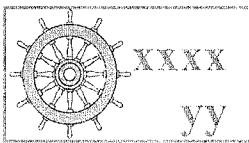
Approved in accordance with the requirements for On-board NOx monitoring and recording devices, item A.1/2.8 of the European Union Marine Equipment Directive 96/98/EC as Amended by Directive 2009/26/EC.



This certificate will not be valid if the manufacturer makes any changes or modifications to the approved equipment, which have not been notified to, and agreed with the Notified Body named on this certificate.

The "Mark of Conformity" may only be affixed to the above equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase module (D, E or F) of Annex B of the Directive is fully complied with and controlled by a written agreement with a Notified Body.

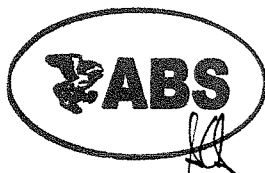
**Example for the application of the "Mark of Conformity":**



0729 Number of the Notified Body responsible for the quality surveillance module  
 10 Last two digits of the year in which the mark is affixed

**Drawing Schedule:**

10-HS620212-PDA	Certificate of Desing Assesment
NN1829315	Survey Test Report
NN1868158	Survey Test Report
NN1872197	Survey Test Report
-	Emsys Compliance Test Plan
-	Emsys Onboard Monitoring Manual (OMM)
-	Emsys Operations and Maintaince Manual
-	Emsys Factory Acceptance Test
-	Emsys CEMS Brochure
-	Emsys High Level System Diagrams
-	Emsys ABS Compliance Test Plan
-	Emsys Compliance Test Data
-	Emsys General Shipboard Arrangement and Interfaces
-	Emsys Power Isolator - Automation Direct
-	Emsys Power Isolator - Brodersen
-	Emsys Speed Sensor - Cherry
-	Emsys Compliance Test Functional Flow Diagram
-	Emsys Ambient Temp_Humidity Sensor - Elektronik
-	Emsys Presure Sensor - Honeywell



- Emsys Presure Sensor - Honeywell
- Emsys Speed Sensor - Honeywell
- Emsys Temperature Transmitter - Noshok
- Emsys Pressure Sensor - Omega
- Emsys Temperature Probe - Omega
- Emsys Temperature Transmitter - Omega
- Emsys Watt Transducer - Omega
- Emsys Watt Transducer - PC5
- WRS CMMI III Certification
- WRS Electrical Design Description (EDD)
- Emsys Software Design Description
- Emsys Electrical Panel Assembly & Fabrication
- Emsys Wiring Diagram – Panel Assembly & Fabrication
- Emsys Gas Sensor Foundation
- Emsys Heated Line Control Unit Assembly Drawing
- Emsys Mechanical Drawer Assembly & Fabrication
- Emsys Sampling Chamber Assembly & Fabrication
- Emsys Sensor Control Unit (SCA) Assembly Drawing

