

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Gas Detectors for Exhaust Gas Emissions**with type designation(s)  
**G4100 NOX/O2 Analyzing System,  
G4130 NOX/O2 Analyzing System**

Issued to

**Green Instruments A/S  
Brønderslev, Nordjylland, Denmark**

is found to comply with

**DNV GL rules for classification – Ships, offshore units, and high speed and light craft****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:**

<b>Temperature</b>	<b>A</b>
<b>Humidity</b>	<b>B</b>
<b>Vibration</b>	<b>A</b>
<b>EMC</b>	<b>B</b>
<b>Enclosure</b>	<b>C</b>

Issued at **Høvik** on **2018-07-12**for **DNV GL**This Certificate is valid until **2023-07-11**.DNV GL local station: **Aalborg**Approval Engineer: **Geir Bjørn Alnes****Odd Magne Nesvåg  
Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-015594-2**  
Certificate No: **TAA00001JJ**

## Product description

- G4100 NOX/O2 analyzing system with ejector probe
- G4130 NOX/O2 analyzing system with diffusion probe

## Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

## Type Approval documentation

Drawings : 01248EC dated 15-10-2012; 01269 dated 22-03-2011; 01392 dated 12-10-2012; 34100 dated 05-07-2012; 34100PI dated 15-10-2012; 02133 dated 14-08-2013; 02133-PI dated 16-12-2016  
Manual G41 NOx Software v2.04 April 2012  
Manual G4100 Analyzing System February 2013  
Manual G4130 Analyzing System doc. 02156 ver.1 dated jan. 2015  
EMC Test Report 2008-08-22-G1  
Environmental Test Report 2008-2631 dated 2008-09-10  
Performance Test Report witnessed 2009-01-19  
Type approval periodical assessment report, DNVGL Aalborg dated 2018-02-14

## Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.  
Functional testing according to Resolution MEPC.177(58) (NOx Technical Code) Section 1.6.2 to 1.10 of appendix 3.

## Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE