

**TYPE APPROVAL CERTIFICATE**

**This is to certify:**

**That the Gas Detector**

with type designation(s)  
**M1040/42 Compact NOx Gas Analyser, M800 Gas Analyser System**

Issued to  
**OPSIS AB**  
**FURULUND, Sweden**

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:**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
<b>M1040/42 Compact NOx Gas Analyser</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>A</b>	<b>C (probe), B (cabinet)</b>
<b>M800 Gas Analyser System</b>	<b>A</b>	<b>B</b>	<b>A, B (ER060M)</b>	<b>A</b>	<b>B</b>

Issued at **Høvik** on **2017-08-24**

for **DNV GL**

This Certificate is valid until **2019-06-30**.

DNV GL local station: **Malmö**

Approval Engineer: **Knut Omberg**

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**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: **262.1-000146-8**  
Certificate No: **TAA000000X**  
Revision No: **1**

## Product description

The M1040/42 is a compact NO<sub>x</sub> monitoring system designed for continuous emissions monitoring applications with clean gas systems and process control of DeNO<sub>x</sub> systems. The type approval includes gas dilution probe models:

- DP7900 STD. For standard applications with max stack gas temperature 600°C
- DP7900 HT-1800. For high-temperature applications with max stack gas temperature 1800°C
- DP7900 PTFE. For sampling of exotic gases such as NH<sub>3</sub>, TRS and H<sub>2</sub>S with max stack gas temperature 250°C

The M800 is a gas analyser system designed to identify and measure concentrations of different gases based on the differential optical absorption spectroscopy (DOAS) principle. The M800 gas analyser system comprises the following parts:

- AR600M UV analyser
- AR650M IR analyser
- ER060M Emitter/receiver
- PS150M Power supply
- OF060M Optical fibre cable
- AC181M Analyser cabinet

## Application/Limitation

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.

The Type Approval covers only DNV GL rules for environmental conditions. Compliance with MARPOL Annex VI and/or NO<sub>x</sub> Technical Code 2008 has not been considered. Fiber optic cable between receiver and analyser shall follow specification as provided by Opsis AB.

## Type Approval documentation

### M1040/42 including probe DP7900

User manuals M1040, Edition April 2006 Release 3  
DP7900, Edition November 2004 Release 2

Application note Edition 98 Release 1

Sales brochure A20 dated 2001/10

Test reports: EMC test; Jyske EMC Lab A/SRAP-95 dated April 1997  
Environmental test; KEMA RAP-96 dated September 1997  
Vibration test; DNV 2000-1166 dated 00-01-28

### M800

User manuals Opsis Analyser Reference Manual, April 2006, Rel.2  
Installation and User's Guide, February 2006, Rel.1

Application notes M800, P72 2012 11  
AR600 series, P2 2012 09  
ER060 series, P3 2012 09  
PS150, P8 2012 09  
OF060/OF100, P9 2012 09  
AC180/AC181, P20 2012 09

Test reports EMC test; Serco no. 0048/11  
Vibration; Bertrand no. 10146028  
Environmental tests; TUV no. 936/21216959/Y  
Insulation test; TUV no. 21216959

Other documents Declaration of conformity Q7.0.1.1 (IP-55 for cabinet AC181)  
Declaration of conformity 0850174402/01 (IP-66 for emitter/receiver ER060)  
Data sheet for fiber optic cable, Fiberguide Industries

DNV GL type approval renewal assessment report dated 2017-06-22.

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### **Tests carried out**

Applicable tests according to DNV Standard for Certification No. 2.4, April 2006.

### **Marking of product**

The products are labelled with model numbers as listed in section "Product description" above.

### **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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE