DNV·GL

Certificate No:
TAA0000235

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Metal Particle Detectors

with type designation(s)
MCS 1000 Series Metallic Contamination Sensor

Issued to
HYDAC Filter Systems GmbH
Industriegebiet,
66280 Sulzbach/Saar, Germany

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.

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**C**

Issued at **Hamburg** on **2018-11-16**
This Certificate is valid until **2023-11-15**.
DNV GL local station: **Essen**

for **DNV GL**

Approval Engineer: **Marco Rinkel**

Joannis Papanuskas
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-029380-1**
Certificate No: **TAA0000235**

Product description

The Metallic Contamination Sensor MCS 1000 monitors metallic particle contamination in lubrication fluid.

Model code

MCS x x x x - x - x / xxx

Type MCS = MetallicContamination Sensor
- Series
  - 1 = 1000 Series
    - Contamination / Sensor cross section
      - 3 = particles > 70 µm / ¼"
      - 4 = particles > 100 µm / ½"
      - 5 = particles > 200 µm / 1"
        - Signal technology
          - 1 = 2x switch outputs/RS485 (HSI protocol)
          - 2 = 2x switch outputs/RS485 (Modbus RTU)
          - 7 = 2x switch outputs/RS485 (HSI protocol) ethernet (HSI TCP/IP/Modbus TCP)
            - Media
              - 0 = mineral and synthetic oils
                - Hydraulic connection
                - 1 = flange connection, SAE ½" to ISO 6162-1
                - 2 = flange connection, SAE ¾" to ISO 6162-1
                - 5 = flange connection, SAE 4" to ISO 6162-1
                  - Electrical connection
                  - 0 = M12x1, 8-pole
                  - 1 = M12x1, 8-pole and ethernet M12x1, 4-pole, coding D to IEC61076-2-101
                    - Modification number
                    - 000 = standard
                    - TTV = external O-rings in low temperature FPM (Viton®)

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.
Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to DNV GL Rules and Ex-Certification / Special Condition for Safe Use listed in valid Excertificate issued by a notified/recognized Certification Body.

Type Approval documentation

Tests carried out
Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product
The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

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