Certificate No:
TAA0000372

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Viscosity Transmitter

with type designation(s)
SMART VISCO

Issued to
Rivertrace Limited
Redhill, **United Kingdom**

is found to comply with
DNV 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.

Location classes:

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

Issued at **Høvik** on **2022-11-03**
This Certificate is valid until **2027-11-02**.
DNV local station: **UK & Ireland CMC & VMC**

Approval Engineer: **Martin Skårerverket**

for **DNV**

Frederik Tore Elter
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.

Product description

The SMART VISCO monitor is designed to measure the viscosity and temperature of fuel oil on board large ships prior to entering the main engines. The monitor will be installed int the fuel line prior injection and will report temperature and viscosity data over analogue/digital outputs and volt free relay contacts.

Specifications listed in table below:

Viscosity range	0 to 999cSt
Viscosity accuracy	4% full span
Temperature range	155°C max
Temperature accuracy	1°C
Ambient temperature	85°C max
Pressure	40 bar max
Outputs	2 x 4-20mA analogue outputs for temperature and viscosity. 3 x voltage free alarm relay contacts for temperature, viscosity and faults. Modbus RS485 for all parameters.
Communication	Modbus RTU/ASCII
Supply voltage	24V DC
Material	316L stainless steel wetted parts. Aluminium electronics enclosure.
Size	136 x 136 x 452 mm
Weight	1.9 kg
Data storage	All parameters stored in the system memory
Data retrieval	Via LCD display, RS485 or USB stick
Display (Optional)	1.54 inch LCD

Tested software rev. v1.1

Place of manufacture

Rivertrace Limited
Unit P Kingfield Business Centre,
Redhill, Surrey, UK RH1 4DP

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Tests carried out
Applicable tests according to class guideline DNV-CG-0339, August 2021.

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