



CERTIFICATE NUMBER
15-HS1354724-PDA-DUP

DATE
19 Jun 2015

ABS TECHNICAL OFFICE
Washington DC - SED

CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of

F-R TECNOLOGIAS DE FLUJO, S.A. DE C.V.

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Viscosity and Density Controls and Measurement Systems**

Model: **HFVM**

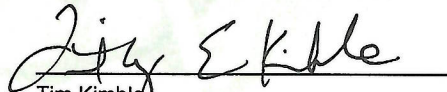
This Product Design Assessment (PDA) Certificate 15-HS1354724-PDA-DUP, dated 19/Jun/2015 remains valid until 18/Jun/2020 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING


Tim Kimble
Engineer

NOTE: 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. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

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Tier: 3 - Type Approved, unit certification not required

Product: Viscosity and Density Controls and Measurement Systems

Model: HFVM

Intended Service:

Electronic viscosity and density transmitters for heavy fuel oil measurements on- board and offshore applications.

Description:

Heavy Fuel Viscosity Meter (Micro Motion Fork Viscosity Meters) are accurate multi-variable devices that measure liquid viscosity, density and temperature under demanding conditions. These meters use vibrating fork technology to provide reliable direct insertion measurement. Use these viscosity meters in applications as diverse as product detection, fuel blending and heater combustion control.

Rating:

Power supply Characteristics: 24 VDC +/- 10% , 0.45 W typical, 0,7 W maximum, 35 mA Max
Enclosure rating: IP 66/67, NEMA4;
Operating temperatures: -50 to 200 °C (Fluid - Short Stem); -40 to 150 °C (Fluid - Long Stem); -40 to 65 °C (Electronics);
Maximum operating pressure (Short Stem): 207 Bar; Maximum operating pressure (Long Stem): 207 Bar;
Dynamic viscosity range: 0.5 to 10 cP, 10 to 100 cP, 100 to 1000 cP;
Density range: 0.6 to 1.25 g/cc;
Safety certification: ATEX II 2G Ex "d" IIC T4 Gb; CSA Class 1, Division 1, Groups C & D, T4

Service Restriction:

Unit Certification is not required for this product. ATEX certified equipment is not to be installed in hazardous areas on U.S. vessels unless it can be proven to have been tested to the applicable IEC 60079 series standards by an independent laboratory accepted by the U.S Coast Guard. USCG MI Notice 01-12 (February 7, 2012). If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels. MODUs or facilities which are in existence or under contract for construction on the date of the ABS rules used to evaluate the Product.

(3) Duplicate PDAs resides with F-R Technologies de Flujo, S.A. De C.V. - CHIHUANHUA, MX, Emerson Process Management - NETHERLANDS, and Emerson Process Management - NANJING, CHINA

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Each Application configuration and external connection is to be specifically approved.

Notes/Drawing/Documentation:

Documentation: CSA Certificate of Compliance Number 2570840 Date Issued April 4, 2013.
Documentation: Sira Certification EC TYPE-Examination Certificate No. Sira 13ATEX2257X
Drawing No. ER-20023280_AE, Assembly, Fork, Transmitter, Revision: AE,
Drawing No. HFVM_PS-001487, Product Data Sheet(DRAFT), Revision: A,

Terms of Validity:

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STANDARDS

ABS Rules:

2015 Rules for Conditions of Classification, Part 1 2015 Steel Vessels Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

Steel Vessels(2015 : 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-8-3/Table 2 & 4-8-3/13.1

Steel Vessels <90 M Rules(2015: 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-6-3/11.3 & 4-6-3/Table 1;

Aluminum Vessels (1975) 1-1-4/7.7, 1-1-A3&A4

Offshore Support Vessels(2015 : 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-8-3/Table 2 & 4-8-3/13.1;

Steel Vessels for Service on Rivers and Intracoastal Waterways (2015) 1-1-4/7.7, 1-1-A3&A4

Bulk Carriers for Service on the Great Lakes (1978, Up-dated April 2008) 1-1-4/7.7, 1-1-A3&A4

High Speed Craft (2015) 1-1-4/11.9, 1-1-A2&A3

2015 ABS Rules for Conditions of Classification, Part 1 – 2015 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

Facilities on Offshore Installations (2015): 1-1-4/9.7, 1-1-A2&A3

Mobile Offshore Drilling Units (2015): 1-1-4/9.7, 1-1-A2&A3, 4-3-3/9.1, 4-3-3/Table 1, 6-1-1/9, 6-1-1/13;

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

NA