

OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.11 revision 0
Project number 3500185
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Issuing authority NMi Certin B.V.
Person responsible: M.Ph.D. Schmidt

Applicant and Manufacturer Endress + Hauser Flowtec AG
Kägenstrasse 7
4153 Reinach
Switzerland

Identification of the certified type A non-interruptible **measuring system** for Liquefied Natural Gas (LNG)
Type: LNG Bunker Metering System

Characteristics See following page(s)

This OIML Certificate is issued under scheme A.

This Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML Type Evaluation Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

R 117-1: 2019 "Dynamic measuring systems for liquids other than water"

Accuracy class 1,5

This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation identified above. This Certificate does not bestow any form of legal international approval.

This certificate and supporting reports comply with the requirements of OIML-CS-PD-07 clause 6.2.

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate was issued, partial quotation of the Certificate and of the associated OIML Type Evaluation Report(s) is not permitted, although either may be reproduced in full.

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
19 January 2023

Certification Board

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The conformity was established by the results of tests and examinations provided in the associated report(s):

- No. NMI-3500185-01 dated 19 January 2023 that includes 61 pages.

Characteristics of the measuring instrument

In Table 1 the general characteristics of the measuring instrument are presented.

Each measuring system consists of at least a combination of all the essential parts as mentioned in table 2.

An optional measurement sensor, transducer and electronic calculating device (as stated in table 2) may be present for the boil-off gas (BOG) measurement as a vapour correction device.

The construction of the measuring instrument is recorded in the technical file belonging to T11948.

Table 1 General characteristics

Flow rate	Depending on the measurement sensor used; See applicable OIML certificate for approved range
Maximum pressure	
Environmental classes	M1 / E2
Ambient temperature range	-25 °C to +55 °C;
Product temperature range	-200 to -120 °C
Intended for the measurement of	Liquefied Natural Gas (LNG)
Software identification	See OIML certificate of the applicable parts of table 3
Approved variable(s)	Mass

Table 2 Overview parts of the measuring instrument

Part	Producer	Type	OIML certificate	Remarks
Measurement sensor	Endress + Hauser Flowtec AG	Promass F or Promass Q	R117/2019-A- NL1-22.10	
Measurement transducer	Endress + Hauser Flowtec AG	Promass 300 or Promass500	R117/2019-A- NL1-22.10	
Electronic calculating device	Newflow Ltd	NANOflow	R117/2019-A- NL1-22.09	With dedicated software revisions as detailed in table 3

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Part	Producer	Type	OIML certificate	Remarks
Electronic calculating and indicating device	Endress + Hauser Flowtec AG	LNG metering Computer	R117/2019-A-NL1-22.08	

Table 3 software revisions for NANOflow electronic calculating device

Part	Version	Checksum	Remark
System	4v7r8310-R	5956577C409BCBF2	Metrology Block Checksum
ISO6578_2017	-	FDA59B33E2994E8A42A6817D9A473F26	Density calculation
ISO6976_2016	-	C2E97F8644997F84DA5B18320EAE9C4D	Calorific value calculation
Totaliser	-	281EE714633B1E8D5D6623BB61936774	

Certificate history:

Revision	Date	Description of the modification
0	19 January 2023	Initial release