

OIML Member State
The Netherlands

Number R 137/2012-A-NL1-21.06
Project number 2644552
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Issuing authority NMi Certin B.V.
Person responsible: M.Ph.D. Schmidt

Applicant and Manufacturer Tancy Instrument Group Co., Ltd.
No. 198, Hualian Road, Cangnan Industrial Zone
Wenzhou City, Zhejiang Province
P.R. China

Identification of the certified type **Turbine gas meter**
Type: TBQM

Characteristics See page 2 and further
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 137-1 (2012) "Gas meters"

Accuracy class 1.0

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.

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Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
28 September 2021

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-12200520-02 dated 22 September 2014 that includes 39 pages;
- No. NMI-2514194-02 dated 5 January 2021 that includes 10 pages.

Characteristics of the measuring instrument

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

Table 2 up to and including table 5 give an overview of the general characteristics of the family of instruments (measuring part, bearings and essential characteristics).

Table 1 General characteristics

| | |
|---|--|
| Destined for the measurement of | Gas volume |
| Environmental classes | M1 |
| Accuracy class | 1,0 |
| Maximum pressure | See tables 2 and 4 |
| Ambient temperature range | -10 ... +55 °C |
| Gas temperature range | -10 ... +55 °C |
| Designed for | Condensing humidity |
| Orientation | Horizontal / vertical up / vertical down All orientations |
| Lubrication, oil to be applied <ul style="list-style-type: none"> - Pour point - Kinematic viscosity - Density | Mineral base oil, type "XZbase 100 A" -80 °C 2,5 mm ² /s at 40 °C and 58,48 mm ² /s at -40 °C 0,818 kg/m ³ |

Table 2 General characteristics of the family of instruments - Measuring part

| Diameter [mm] | G-value | Impeller diameter [mm] | Blade height [mm] | Vane thickness [mm] | Blade angle [degrees] | Number of blades |
|------------------|----------------------|------------------------------|-------------------------|---------------------------|-----------------------------|---------------------|
| 50 | 65 | 51 | 5 | 15,5 | 45 | 12 |
| 80 | 100 160 250 | 83 | 12 | 22 | 45 | 14 |
| 100 | 160 250 400 | 103 | 15 | 28 | 45 | 14 |
| 150 | 400 650 1000 | 154 | 22 | 27 | 45 | 16 |
| 200 | 650 1000 1600 | 198 | 40 | 27 | 45 | 18 |
| 250 | 1000 1600 2500 | 246 | 32 | 30 | 45 | 20 |
| 300 | 1600 2500 4000 | 296 | 35,5 | 30 | 45 | 22 |

Table 3 General characteristics of the family of instruments - Bearings

| Diameter [mm] | Bearing characteristics | | | | | | | |
|------------------|-------------------------|--------|---------------------------|--------|-----------------------------|--------|--|--|
| | Main shaft | | Dynamic load rating C_r | | Static load rating C_{or} | | Maximum operating pressure | |
| | [mm] | [mm] | [N] | | [N] | | 16 bar(g) | 100 bar(g) |
| | inlet | outlet | inlet | outlet | inlet | outlet | | |
| 50 | 2 | 2 | 286 | 286 | 90 | 90 | permanently lubricated bearings, double shielded | external oil pump lubricated bearings, single or double shielded |
| 80 | 3 | 3 | 644 | 644 | 215 | 215 | | |
| 100 | 4 | 4 | 1339 | 644 | 488 | 215 | | |
| 150 | 5 | 5 | 1646 | 1339 | 663 | 488 | | |
| 200 | 6 | 6 | 2522 | 2522 | 1057 | 1057 | | |
| 250 | 8 | 8 | 3369 | 3369 | 1363 | 1363 | - | |
| 300 | 10 | 10 | 6100 | 6100 | 2600 | 2600 | | |

Table 4 General characteristics of the family of instruments - Essential characteristics

| Diameter [mm] | G-value | Maximum Q_{max} [m ³ /h] | Maximum Q_t [m ³ /h] | Minimum Q_{min} [m ³ /h] for the specified pressure range | | | |
|------------------|--------------|---|---|---|---------------------|---------------------|----------------------|
| | | | | MR 1:20 | | MR 1:30 | |
| | | | | 0 ... 100 bar(g) | 8 ... 100 bar(g) | 8 ... 100 bar(g) | 16 ... 100 bar(g) |
| 50 | 65 | 100 | 20 | 5 | - | 3,3 | - |
| 80 | 100 | 160 | 32 | - | 8 | - | 5,3 |
| | 160 250 | 250 400 | 50 80 | 12,5 20 | - | 8,3 13,3 | - |
| 100 | 160 | 250 | 50 | - | 12,5 | - | 8,3 |
| | 250 400 | 400 650 | 80 130 | 20 32,5 | - | 13,3 21,7 | - |
| 150 | 400 | 650 | 130 | - | 32,5 | - | 21,7 |
| | 650 1000 | 1000 1600 | 200 320 | 50 80 | - | 33,3 53,3 | - |
| 200 | 650 | 1000 | 200 | - | 50 | - | 33,3 |
| | 1000 1600 | 1600 2500 | 320 500 | 80 125 | - | 53,3 83,3 | - |
| 250 | 1000 | 1600 | 320 | - | 80 | - | 53,3 |
| | 1600 2500 | 2500 4000 | 500 800 | 125 200 | - | 83,3 133,3 | - |
| 300 | 1600 | 2500 | 500 | - | 125 | - | 83,3 |
| | 2500 4000 | 4000 6500 | 800 1300 | 200 325 | - | 133,3 216,7 | - |

Remarks regarding table 4:

- The application of permanently lubricated bearings, limits the maximum operating pressure to 16 bar(g), see also table 3.
- MR = measuring range ($Q_{max} / Q_{min} = 1:20$ or $1:30$).

Table 5 Verification scale interval

| Type | Number of drums | | Control element |
|---------------|------------------|------------------|-------------------|
| | Before the comma | Behind the comma | [m ³] |
| G65 | 6 | 2 | 0,002 |
| G100 – G1600 | 7 | 1 | 0,02 |
| G2000 – G4000 | 8 | 0 | 0,2 |

Installation conditions:

The meter can operate in the following positions: horizontal flow, vertical flow up and vertical flow down.

Any components, which cause severe flow disturbances and could affect the gas flow, must be avoided within the prescribed inlet pipe length, which is 2 DN. The inlet pipe must be designed as a straight pipe section of the same nominal diameter as the gas meter. For mild flow disturbances, there is no prescribed inlet pipe length. The necessary straight pipe length is stated on the name plate of the meter.