CERTIFICATE

ISSUING AUTHORITY

Name: National Quality Infrastructure System /Hellenic Institute of Metrology (EIM)

Address: Industrial Area of Thessaloniki

Block 45, 57 022 SINDOS

GREECE

Person responsible: Dr Zoe Metaxiotou

Head of Flow & Volume Laboratory

APPLICANT

Name: START ITALIANA s.r.l.

Address: Via Pola 6

20813 BOVISIO MASCIAGO (MB)

ITALY

IDENTIFICATION OF THE METHOD

3D LASER METHOD FOR THE CALIBRATION OF STORAGE TANKS

IDENTIFICATION OF THE MEASURING DEVICE

Manufacturer: START ITALIANA s.r.l.

Type: LSR-3D

V_{max} 48Vdc 100VA   Year 14

T_{amb} -20ᵒC ÷ +60ᵒC   S.N.: 100

CEC 13 ATEX 074

II 2G Ex px IIC T6 Gb

Brief description of the evaluation procedure

The 3D laser method developed by START Italiana s.r.l. was comparatively evaluated with respect to the volumetric reference method using a volume capacity measure, traceable to the national mass and temperature standards of EIM/Greece. Evaluation was carried out against the following parameters.

1. Degree of metrological equivalence, E_n, with respect to the volumetric method in the calibration of storage tanks

2. Accuracy of the method

3. Uncertainty of the measured volume in the calibration table of the storage tank

4. Compliance with the requirements of **OIML R71, edition 2008** regarding the maximum permissible uncertainty (MPU) of measurement of the volume of liquid contained when the storage tank is used for fiscal / custody transfer applications

The evaluation was based on the calibration results of a 7 m^3 storage tank (shape: horizontal cylindrical with parabolic side walls).

The detailed technical evaluation of the 3D laser method is provided in the associated report issued by EIM

Results

1.	Degree of Equivalence, E_n*([1])	Average E_n = 0.3 *The result is considered equivalent if $E_n \leq 1.0$ ([1]) Cox M. G., 2002, Metrologia 39, pp 587-8
2.	Accuracy of the method (% of the indicated volume)	± 0.2 % (over the complete calibration table of the storage tank) Accuracy is calculated with respect to the "true" value corresponding to the volume obtained by the reference volumetric method
3.	Expanded uncertainty of measurement (% of the indicated volume)	0.26 % - 0.1% This uncertainty is entirely due to the measuring method/ instrument used. No allowances are made for contributions due to interpolation uncertainty or height uncertainty in the storage tank
4.	Compliance with OIML R71 with respect to the MPU (paragraph 7) (% of the indicated volume in the calibration table)	≤0.5% The method, as applied to calculate the volume of a storage tank and produce a calibration table (by interpolation), complies with the MPU requirement over the complete table. The uncertainty in volume takes into account the uncertainty of the method and the uncertainty due to interpolation.

Date: 31 January 2014

For the Issuing Authority

For the Technical Evaluation

Dr Alexandros Lefkopoulos

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