

Oil & Gas measuring systems certification

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Agenda

- A. Oil measuring systems and Gas measuring systems: differences and analogies under certification point of view
- B. Certification of Oil measuring systems
- C. Certification of Gas measuring systems
- D. Certification of Level measuring systems
- E. OIML certification in short

A. Oil measuring systems and Gas measuring systems: differences and analogies

Oil measuring systems

- They are really “systems”!
So defined in MID 2014/32/EU Annex VII (MI-005) and OIML R-117
- They are composed of certified parties
*flow meter, measurement transducer, flow computer,
flow transmitter, sensors / transmitters, air separator*
- Certificate of “part” is Evaluation or Parts or Test certificate (old)

A. Oil measuring systems and Gas measuring systems: differences and analogies

Gas measuring systems



- Improperly called “systems”!
- They are single meters for MID 2014/32/EU Annex IV MI-002 (*Gas meters and Volume conversion devices*) and OIML recommendation
- They are connected with other certified devices
sensors / transmitter, gas chromatograph, gas analyzer / CVDD, ecc.
- Also the meters can be composed of certified parts
(mechanical part, electronical part)
- Certificate of “part” is Evaluation or Parts or Test certificate (old)

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B. Certification of Oil measuring systems

EUROPE

- MID 2014/32/EU Annex VII [MI-005](#)
 - Modules B+D or
 - Modules B+F or
 - Module H1 (Conformity based on full quality assurance plus design examination) or
 - Module G (Conformity based on unit verification)
- Welmec Guide 8.8 – Modular approach:
 - Evaluation certificate  authorization by certificate owner
 - Parts certificate  free use

B. Certification of Oil measuring systems

OUTSIDE EUROPE

- OIML Recommendations → country driven, function oriented, a lot of SW / EMC
- API standards → safety, user requirements, equipment oriented
- ISO standards → International Standards
- National regulations

B. Certification of Oil measuring systems

OIML Recommendations

- R117 Dynamic measuring systems for liquids other than water
- LNG will be included -
- R81 Dynamic measuring devices and systems for cryogenic Liquids
- R139 Compressed Gas for Vehicles (CNG and Hydrogen)

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C. Certification of Gas measuring systems

EUROPE

- MID 2014/32/EU Annex IV [MI-002](#)
Gas meters and Electronic volume conversion devices
 - Modules B+D or
 - Modules B+F or
 - Module H1 (Conformity based on full quality assurance plus design examination)
- Welmec Guide 8.8 – Modular approach:
 - Evaluation certificate → authorization by certificate owner
 - Parts certificate → free use

C. Certification of Gas measuring systems

OUTSIDE EUROPE

- OIML Recommendations → country driven, function oriented, a lot of SW / EMC
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C. Certification of Gas measuring systems

OIML Recommendations

R137 Gas Meters

R140 Measuring Systems for Gas

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D. Certification of Level measuring systems

EUROPE and **OUTSIDE EUROPE**

**OIML
Recommendations**

National legislation

**NO
European Directive**

D. Certification of Level measuring systems

OIML Recommendations

- R71 Fixed Storage Tanks
- R80 Road & Rail Tankers with Level Gauging
- R85 Automatic Level Gauges
- R95 Ships' Tanks
- R125 Measuring Systems for Mass of Liquids in Tanks (HTG)

D. Certification of Level measuring systems

Legally complicated

- Regulation on "Tank Calibration"
- Regulation on "Level Measurement"
- Regulation on "Conversions"

D. Certification of Level measuring systems

Legal Metrology

Regulations / Laws / Procedures on:

- Pre-market testing & certification
- Taking into use
- Maintenance / re-calibration
- Control / inspection in-use -> possibility to do so

Agenda

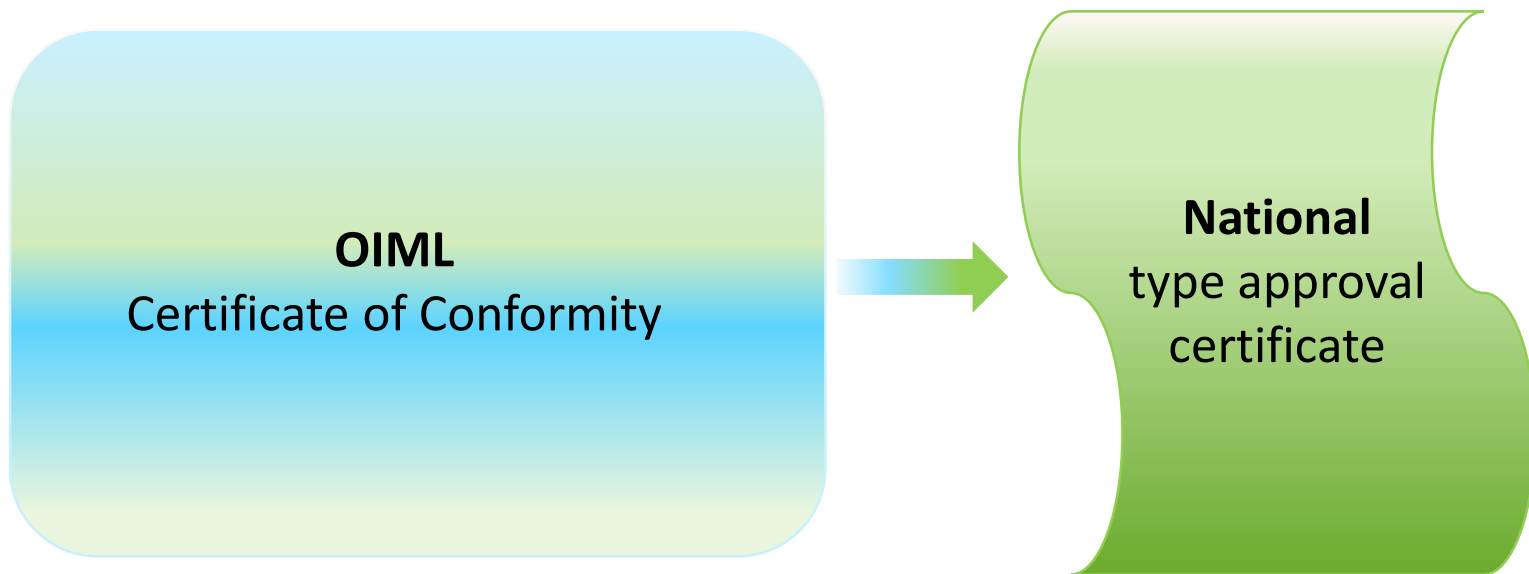
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E. OIML certification in short

- **OIML** *Organisation Internationale de Métrologie Légale*
- Recommendations (“**voluntary**”)
- **Three parts** for every recommendation:
 1. Metrological and technical requirements
 2. Test methods / procedures
 3. Test report format
- OIML Certification is **necessary** to enter in extra EU Countries
- **How it works?**
 1. High quality level of Issuing Authorities
 2. International acceptance of test reports
 3. Conversion in national type approval
- Website: www.oiml.org

E. OIML certification in short

Example:



Questions



Thank you for your attention

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