LNG METROLOGY

EMRP
European Metrology Research Programme
Programme of EURAMET

The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union

Impact Summery
EMRP Metrology for LNG II

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Teddington, NPL - 16th June 2016

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Impact activity:

- To maximize the JRP impact by concentrating the efforts that lead to effective cooperation with the industrial stakeholders and dissemination of the results and reports created in the technical workpackages.

Impact tasks:

- Knowledge transfer
- Training

Projected impact:

Direct Impact

- More reliable measurements of LNG and the use of LNG as transport fuel
- By building on the primary standard in the preceding JRP a new flow standard will be developed
- The density standard created in the preceding JRP will be used to improve EoS
- All this work should lead to reduced LNG custody transfer measurement uncertainties

Projected impact:

Impact will be created by:

1. Providing test and calibration facility to the industry
2. Create written standards and guidelines

Dissemination of results:

- Network of stakeholders
- Organisation of workshops and conferences
- Exchange information with standardisation committees and stakeholder groups like GERG and GIIGNL
- Presentations at external conferences
- Publication of research papers
- Project webpage “lngmetrology.info”
- Training sessions for industrial end users

Projected impact:

Indirect Impact

Financial/Economic impact:

- The project aims to reduce the total measurement uncertainty of transferred energy (currently estimated at 1 % or more) by a factor two.

- The equivalent economic value (average price level of LNG of $5/MMBTU) of an uncertainty reduction of 0.5 % is:

  - 75 M€/year on the total amount of imported LNG in Europe
  - 250 M€/year for global LNG trade

Projected impact:

Social Impact:

Reduced uncertainty should lead to smaller balancing errors with respect to received LNG and sent out liquid and gas, increased transparency for buyers and thus supporting fair trade.

The use of flow meter systems as an alternative to ship based tank measurement is considered essential for:

- Partial shipments
- Off shore LNG production

This will promote open and fair trade and a better functioning internal market resulting in better and more stable prices for industries.

Projected impact:

Environmental Impact:

Natural gas is the cleanest of all fossil fuels. By improving and strengthening the basis for LNG and bio-LNG trade the JRP will have a positive effect on the popularity of this fuel and contribute to the policy of reduced CO2 emissions.

The use of LNG for trucks should lead to significantly reduced noise levels which can be considered as an environmental and social benefit.

Projected impact:

Relevant standards:

The results of the JRP will be shared and input will be provided to various ISO and CEN committees.

- **ISO 6578** Refrigerated hydrocarbon liquids – Static measurement – Calculation procedure
- **ISO 20765** Natural gas – Calculation of thermodynamic properties
- **ISO 6976** Natural gas – Calculation of calorific values, density, relative density and Wobbe index from composition
- **ISO 10976** Refrigerated light hydrocarbon fluids – Measurement of cargoes on board marine LNG carriers
- **ISO 8943** Refrigerated light hydrocarbon fluids – Sampling of liquefied natural gas – Continuous and intermittent methods
- **EN 12838** Installation and equipment for LNG – Suitability of LNG Sampling System
- **OIML R81** Dynamic measuring devices and systems for cryogenic liquids
- **OIML R117** Dynamic measuring systems for liquids other than water
- **GIIGNL** Custody Transfer Handbook

Impact tasks:

Knowledge Transfer

Organisation of workshops:
The JRP consortium have organized a workshop held in Denmark (19th of May 2015). Forthcoming workshops planned for in UK (June 2016), and the Netherlands (May 2017)

Presentation at conferences:
Results from the technical work packages will be disseminated to the public by JRP member presentations at highly acknowledged and reputed conferences worldwide

Publications:
In addition to oral and written presentation at conferences several papers and articles will be submitted to peer-reviewed scientific journals to further enhance the impact of the project

Impact tasks:

Knowledge Transfer

Standardization and technical committees:
ISO/TC 28 WG20 «Dynamic measurement of Liquefied Natural Gas» was established during the 28th meeting of ISO/TC 28 held in Brazil, October 2014. First WG meeting was held in Delft March 2015. Convenor is Mr Mijndert van der Beek (VSL, NL)

Advisory Group:
An Advisory Group is established to link stakeholder representatives from various relevant backgrounds to this JRP

Impact tasks:

Knowledge Transfer

JRP website:

A project website "lngmetrology.info" has been set up. The website is used to broadcast relevant news items as well as upcoming JRP events.

Training

A 1-day training course was organised on the basics of metrology, traceability and the LNG custody transfer measurements methods as part of the JRP on the day preceding the second JRP workshop

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Thank you for your attention !