**World’s first LNG test & calibration facility**

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Reliable measurement methods are a first requirement for the trade of goods. For the large scale LNG distribution chain there is a commonly agreed measurement practice as described in various ISO standards and the GIIGNL “Custody transfer handbook”. However, in comparison with other commodities like natural gas or gasoline, the total uncertainty in the measured energy is high and has been estimated to be 1%.

In the area of small and mid scale LNG applications, LNG as a transport fuel is becoming popular. At least in Europe many LNG fuelling stations have opened, which is very much welcomed by the EU as LNG as a transport fuel is one of the pillars of the clean fuel strategy. Similarly as for large scale LNG, there are various measurement challenges:

* There are currently no traceable LNG calibration facilities available. Further, the typical onsite conditions give rise to additional uncertainty sources. Aspects that have an unknown impact on the metering accuracy are amongst others flow meter insulation and inclination, flow disturbances and two phase flow.
* The uncertainty in the composition measurement further increases the uncertainty in the total energy transferred. It is therefore important to have reliable composition measurements, especially because the LNG composition changes over time (aging) and can differ significantly per liquefaction plant.

Therefore, VSL and partners are working on a small and mid scale calibration and research facility. The initial flow range is 200 m3/h (1600 kg/min), but will be extendable to 400-1000 m3/h. The uncertainty target for mass flow is 0.15%. A standard for composition measurements, based on ISO EN 12838, will be realized for calibration of sampling systems.

In 2014 the project has started and currently the detailed design is almost ready. It is scheduled to have the facility constructed by July/ August. Thereafter there will be the commissioning, functionality tests and finally various LNG flow meters and sampling systems will be tested. An important aspect of this study is to investigate whether water calibrations can be an alternative to LNG calibrations. Also the impact of installation of the flow meter performance will be investigated.