

Accurate LNG metering vital

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At the petrol pump, the fuels are accurately metered to ensure that you get the amount of fuel that you pay for.

Thinking on behalf of the oil company, they deliver the right amount of fuel for the money they receive.

Precise measurement makes sense for both parties, and the same can be said for LNG metering when we export our natural reserves from Australia.

The monthly value of Asia's LNG imports is regularly more than US\$10b.

With such vast sums of money changing hands, the importance of accurate metering of the LNG is clear.

The gas analysers used are usually process gas chromatographs (GCs) which measure the heating value of the LNG as it is transferred from the production stations to LNG tankers.

But these are not delicate laboratory instruments: they are rugged and robust devices capable of withstanding harsh environmental conditions.

Steve Lakey, global product manager for GC Products at ABB in the US, puts the problem into context: "This is not the highly controlled laboratory environment of bench-mounted GC's, it's the high seas."

"Our NGC 8200 series of process gas chromatographs can withstand ambient temperatures from -18°C to +55°C," he said.

"That's certainly compatible with the intensity of the Australian climate, where LNG is produced for export to Asian markets. "Furthermore, with Class 1, Division 1 explosion-proof rating, they are suitable for LNG tanker and FLNG applications.

"When it comes to accuracy, modern process GC's can match many of their laboratory-based cousins.

"The requirement for a Class A device is an accuracy of plus or minus 0.5pc.

"The accuracy of the NGC 8200 is 0.1p and therefore surpasses these requirements by a factor of 5.

"Measurement accuracy is a big deal – every penny counts when trading these precious natural resources".

LNG production rising

A major boost to the trade of LNG between Australia and Asia took place recently when the Prelude floating liquefied natural gas (FLNG) facility came on stream.

With LNG demand growth in China projected to continue at 20pc for the next year, this additional capacity will quickly be absorbed.

Prelude processes gas from the Browse Basin.

When natural gas rises from the ocean bed, the desirable methane is laden with heavier hydrocarbons, carbon dioxide, moisture and hydrogen sulphide.

A primary function of the FLNG facility is to separate and liquefy the hydrocarbons into LNG, natural gas liquids (NGL) and condensate. However, before this can take place, the 'sour' gas stream must be made 'sweet' by the removal of acid gases.

The gas must also be dried, since moisture would freeze in the gas liquefaction equipment and cause blockages.

Process GC's are also used on the FLNG vessel for process control applications



Gas chromatography carried out at Coregas, laboratories.

related to gas drying and sweetening.

To maintain their accuracy, these offshore process GC's must be calibrated in the same way that land based devices are.

However, the transportation of calibration gas cylinders to these offshore applications is an expensive logistical challenge.

So, the longer the shelf-life that is associated with the calibration gas mixture, the greater its utility and value.

One of the advantages of the recently introduced ISO17034:2016 accreditation for reference materials is that it guarantees the stability and homogeneity of certified calibration gas mixtures over their defined shelf-life.

The full instrumentation and calibration gases portfolio



Operators in a metering control room for LNG.

To achieve the ISO17034:2016 accreditation, the reference material producer must demonstrate that their products and manufacturing processes comply to the most stringent requirements.

Coregas, at its specialty gases production facility in Yennora, close to Sydney, jumped this hurdle in 2018.

Executive general manager Alan Watkins said the company had been one of Australia's leading producers of accredited specialty gas mixtures in recent decades.

"Our laboratory has been ISO Guide 34 accredited for many years by the National Association of Testing Authorities, Australia (NATA)," he said.

"The successful transition from the Guide 34 to ISO17034:2016 means that we can continue to occupy our position at the top of the metrological pyramid in the Asia-Pacific region, and ensure that the companies

trading LNG can do so knowing that their billing will be fair and internationally harmonised".

In addition to calibration gas mixtures, gas chromatographs need a carrier gas and, if the instrument is fitted with an FID detector, they also need specialty gas grades of high purity hydrogen and air.

"Whether it's a bench-top GC for the laboratory or an in-situ unit for metering applications, we offer instrumentation engineers and scientists the full range of specialty gases that they need," Mr Watkins said.

"They can rely on us whether they are on the high seas, at an LNG terminal dock or in sophisticated laboratory on dry land".

Stephen B Harrison is the principal of Nexant Energy and Chemicals Advisory, Germany.



The Prelude FLNG facility.