LUX Assure

OMMICA™

Onsite Analysis of Methanol and MEG in Produced Fluids
LUX Assure Background

- Novel chemical monitoring technologies for produced fluids
- ISO 9001/14001 accredited Service provider for the oil and gas industry
- Headquartered in UK with office in Edinburgh

Effective assurance technologies for the oil and gas industry
LUX Assure Technologies

Determination of optimum Corrosion Inhibitor concentration

Analysis of methanol and monoethylene glycol (MEG)

Other technologies in R&D phase

Effective assurance technologies for the oil and gas industry
Global Presence

LUX Assure Offices and agents
World Wide Sales

Effective assurance technologies for the oil and gas industry
Why test for MEG & methanol in produced fluids?

- Management of export condensate
- Methanol Slug Identification
- Optimise Sales Revenue – MeOH levels in the Crude
- Efficacy of regeneration unit
- Managing offshore OIW by correlation of IR result to actual result

Effective assurance technologies for the oil and gas industry
Traditional method – Gas Chromatography

- Delays to testing
- Skilled personnel required
- Complex extraction process (condensate sample)
- Equipment not suited to offshore use

Effective assurance technologies for the oil and gas industry
Onsite Hydrate Inhibitor Analysis
Detecting methanol with OMMICA™

- **Fiscal Purposes**: Allows accurate invoicing/reduced waivers
- **Commercial**: Real time results can gain increased product revenue
- **Start up procedures**: Improved deferment accuracy of methanol contaminated product
- **Cargo Crude**: Onsite results for vessels can reduce demurrage costs.

Effective assurance technologies for the oil and gas industry
Analysis of oil samples

1: Add aqueous reagents to tube
2: Add oil or condensate sample
3: Rotate and heat tubes
4: Centrifuge
5: Record absorbance

No extraction step
Avoids use of toxic chemicals

Effective assurance technologies for the oil and gas industry
Methanol Analysis
Comparison to Gas Chromatography

- Analysed by OMMICA™ and GC
- Results compared well over 0 – 500 ppm range

Effective assurance technologies for the oil and gas industry
Cost comparison GC vs OMMICA™

Methanol in oil

- **CAPEX**
  - OMMICA: £5,000
  - GC: £40,000

Effective assurance technologies for the oil and gas industry
Reproducibility of OMMICA™

Reproducibility of Methanol test curves

RSD of gradient < 1%

Effective assurance technologies for the oil and gas industry
Accuracy and Precision of OMMICA™

20 x 50ppm samples tested by 2 people

Measured concentration **49.8ppm +/- 0.4ppm**

Effective assurance technologies for the oil and gas industry
Accuracy of OMMICA™ at High Concentrations

50% Methanol diluted 4 fold i.e. 500,000 > 50,000 > 5,000, > 500 > 50ppm

Measured concentration 51.8ppm +/- 0.8 %

Therefore we can assume accuracy +/-3% (samples diluted as above)
## Comparing OMMICA™ to GC

<table>
<thead>
<tr>
<th></th>
<th>OMMICA™</th>
<th>Gas Chromatography</th>
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</thead>
<tbody>
<tr>
<td>Ideal for onsite / offshore use</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Quick results (1 hour)</td>
<td>✔</td>
<td>✗</td>
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<tr>
<td>Cheap, robust equipment</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Can be used by non-expert</td>
<td>✔</td>
<td>✗</td>
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<tr>
<td>Avoids extraction of oil samples</td>
<td>✔</td>
<td>✗</td>
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<tr>
<td>Low detection limit</td>
<td>✔ (2 ppm)</td>
<td>✔ (5–20 ppm)</td>
</tr>
<tr>
<td>*Cost Analysis (MEG in water)</td>
<td>20K</td>
<td>58K</td>
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*Based on daily tests

**Potential maintenance issues with GCs installed in the field**

Effective assurance technologies for the oil and gas industry
Case History OMMICA™ (MEG)
Norwegian Offshore MEG Regeneration Facility

Task: Analysis of water samples

Outcome: Offshore, immediate data comparable with GC

The OMMICA™ MEG in Water kit was used by an oil and gas operator with a MEG regeneration facility. Samples were also analysed by GC for comparison. Correlation was excellent, with OMMICA™ delivering immediate results from a quick and simple process

Result: The OMMICA™ MEG in Water kit delivered accurate analysis onsite, offshore, in a very short time frame, whereas the traditional GC analysis took significantly longer to deliver similar results.

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Case History OMMICA™ (Methanol)

North Sea Pipeline

Analysis of water and oil samples

The concentration of methanol in a water slug produced from pigging is uncertain, analysis was required to inform the terminal of the levels it was likely to receive.

During the pigging programme, oil and water samples were tested offshore using OMMICA™ kits, and by GC in an onshore lab. Both sets of analysis were carried out by the operator or their service company.

Data gathered offshore using OMMICA™ was in line with expectations and previous GC analysis, for both oil and water samples.

Data was reported daily from the offshore location throughout dewatering, so the operator could inform the terminal of the methanol concentrations present in the fluid it would receive. Using only the GC method, results would not have been available until days later.

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OMMICA™ Testimonials

“I think the methods would be an excellent replacement for GC as GC has associated maintenance issues and user experience issues.”
Offshore Chemist

“To evaluate the new colorimetric method, both methods (the GC and the LUX method) were used to analyse a series of blind samples. The results show that the LUX method is as accurate as the GC method while using equipment that is less expensive and much easier to operate and maintain”
Large Oil & Gas Operator, USA

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