

# LNG Sampling Systems



*“360°KAS serves the LNG Value Chain from production through liquefaction, shipping and storage/regasification with high-end analysing and sampling solutions”*



**360<sup>®</sup>  
KAS**



# LNG Sampling Systems

*360°KAS serves the LNG Value Chain with accurate, reliable and durable solutions to sample LNG from a cryogenic flow.*

LNG Sampling Systems are used for collecting samples during the custody transfer of LNG cargo. By offline (lab) analysis of these retained samples, principal proof of the transferred LNG quality can be obtained. Together with the density and the quantity transferred, the commercial value of the cargo can be determined.

360°KAS is serving the LNG value chain with a number of solutions to sample LNG from a cryogenic flow:

- A sample take-off assembly.
- A LNG probe & vaporiser system.
- Sample transport lines.
- LNG Sampling System:
  - Intermittent (CP/FP) Sampling System.
  - Continuous Waterless (Membrane) Sampling System.
  - Continuous Water Seal (Dome) Sampling System.
- An online Process Gas Chromatograph in combination with an Intelligent Quality Reporting Module (iQRM).

## Sample Take-Off Assembly

LNG Probe & Vaporiser Systems are the critical elements in obtaining representative samples from the cryogenic flow in the main LNG transfer pipeline.

Typically the Sample Take-off Probe of the LNG Probe & Vaporiser System is inserted in the cryogenic sample take-off assembly, also called bypass loop. In this way the LNG Sampling System can be isolated from the process. This ensures safe working and easy maintenance as there is no need to drain and warm up the complete LNG transfer line.



## Probe & Vaporiser System > 0.7 barg

The CryoSamp is a high innovative LNG Probe & Vaporiser system able to take verifiably accurate and representative LNG samples from a cryogenic flow at pipeline pressures from 0.7 barg.



## Probe & Vaporiser System > 2.5 barg

In order to meet the ISO 8943 requirement 360°KAS developed a standalone operating LNG probe and vaporiser system combination. By use of integrated controls and premium materials this solution has proven to be one of the most reliable in the market.



The LNG probe and vaporiser system consists of three main elements:

### 1 SS316 vacuum insulated sampling probe

Preferably inserted in the bypass loop to assure that easy maintenance can be performed without having to drain and warm up the complete LNG transfer pipeline.

### 2 Electrical vaporiser system with ISO 8943 sample conditioning system

As per ISO 8943 an accumulator and sample conditioning system shall be positioned after the LNG vaporiser, also temperature and pressure transmitters are included to monitor the performance of the vaporiser.

### 3 Integrated controller for client connections

The vaporiser heater is controlled by a dedicated temperature controller that is installed inside the local EEx d control box. As standard the EEx d control box is mounted on the side of the vaporiser cabinet as integrated part of the stand-alone solution.

The GIIGNL advises to install the vaporiser system and/or custody transfer point as close as possible to the sampling point.

## Sample Transport Lines

For the transport of the vaporised LNG from the vaporiser and accumulator to the LNG sampling system, it is recommended to use heat traced tubing as sample transport line. 360°KAS is able to supply these sample transport lines as per client requirements and specifications.

## LNG Sampling System

360°KAS has a long track record in the development and design of Continuous and Intermittent LNG Sampling Systems since 1994. All systems are in compliance with the ISO 8943, the ISO 10715 and the guidelines stipulated in the GIIGNL.

We can offer the following sampling Systems:

### 1 Continuous Water Seal (Dome) Sampler

The continuous water seal (dome) LNG sampler system stores the sample in a water sealed tank eliminating sample contamination from ambient air. After completion of the sample sequence, the sample is collected in transportable cylinders in accordance with the ISO 8943 paragraph 4.2 Continuous sampling.



### 2 Continuous Waterless (Membrane) Sampler

The key feature of our continuous waterless (membrane) LNG sampling system is the collection of a high integrity sample with extremely low traces of contamination. This outstanding performance is ensured by the unique design of the waterless sample holder and its internal elastomer membrane. The sample is collected in transportable cylinders in accordance with the ISO 8943 paragraph 4.2 Continuous sampling.



### 3 Intermittent (CP/FP) Sampler

The Intermittent (CP/FP) LNG Sampling System does this by collecting a sample in transportable Constant Pressure, Floating Piston (CP/FP) cylinders in accordance with the ISO 8943 paragraph 4.3 Intermittent sampling.



## Other solutions for the LNG market

### Analyser & Sampling Solutions

All necessary equipment to measure specified process variables in pipelines and process units within the LNG plant can be offered, such as:

- Total analyser package solutions for composition, H<sub>2</sub>S, hydrocarbons and Water Dew point analysis during LNG production.
- Total analyser package solutions for composition and H<sub>2</sub>S analysis on transferred LNG.
- Sampling System for Mercury Analysis on produced or transferred LNG.

### Lifecycle Service Management

360°KAS offers spares, services and maintenance as part of its Life Cycle Service Management program. This program covers all the services necessary to maintain and operate your systems safely and accurate from initial start-up till controlled end of life cycle. It enables clients to realise maximum availability of their systems with minimum downtime at the most economical operational costs.

As part of this program the following services can be coordinated by our dedicated in-house Customer Service department:

- Remote Services.
- Site Construction & Supervision.
- (Pre-) Commissioning & Start up.
- Site Acceptance Test (SAT).
- Training.
- Service Level Agreements (SLA).
- Analyser Maintenance Support.
- Spare parts & consumables.
- Life Cycle assessment.
- Upgrades & retrofits.
- End of life services & replacement.



The following LNG Sampling product sheets are available:

- LNG Probe & Vaporiser System >2.5 barg.
- LNG Probe & Vaporiser System (CryoSamp) > 0.7 barg.
- Intermittent (CP/FP) Sampling System.
- Continuous Water Seal (Dome) Sampling System.
- Continuous Waterless (Membrane) Sampling System
- Intelligent Quality Reporting Module (iQRM).

360°KAS is an independent system integrator that serves industrial production processes worldwide with high-end analysing, sampling and pilot plant solutions. We take care of the whole process from basic and detailed design, through procurement and final system integration on site. From our office, assembly and test facility in Moerdijk, the Netherlands, we help our global customers with their daily challenges related to representative sampling.

If results are valuable to your business and standard solutions do not work, 360°KAS is your partner. Your partner for:

- **Analyser & Sampling Systems**

From sample take-off, sample preparation, sample storage up to actual analyser measurement we are able to provide you with a fit for purpose and trustworthy solution.

- **Pilot Plants**

R&D Test Units for continuous, semi-continuous and batch, dedicated and multi-purpose, fixed/ fluidized bed, liquid, gas and multi-phase reactor applications.

- **LNG Sampling Systems**

Serving the LNG Value Chain with solutions to take verifiably accurate and representative LNG samples from a cryogenic flow.

- **Spares, Service & Maintenance**

All services necessary to maintain and operate your systems safely and accurate from initial start-up till controlled end of life cycle.

- **Instrument Sales**

Our portfolio of distributed products.

**SpectraSensors®**  
An Endress+Hauser Company

**XOS®**  
better analysis counts

**WELKER**

**ZEGAZ**  
Instruments

**APPLIED™**  
ANALYTICS

360°KAS is part of the Industry International Group (IIG). IIG is a privately owned holding of different companies that share a passion to innovate and engineer technology to help their clients optimize their core processes.



Graanweg 6a, 4782 PP Moerdijk, The Netherlands  
T +31 (0) 85 303 22 00  
info@360KAS.com  
[www.360KAS.com](http://www.360KAS.com)