

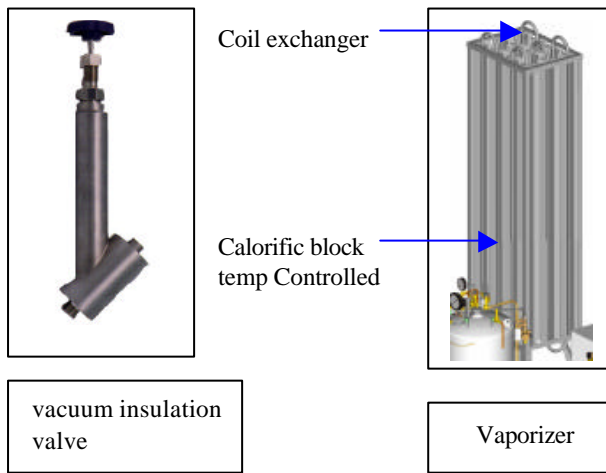
LIQUEFIED GAS AUTOSAMPLER

ISOSAMPLE 8100

SUBJECT:

For LNG custody transfer it is now a common practice to determine the composition, density and gross calorific value of LNG delivered by direct on line GC plus indirect lab analysis methods. A precise sampling is prerequisite for both analysis.

The ISOSAMPLE 8100 has been designed to provide a reliable and completely automated sampling of Liquefied Natural Gas or Refrigerated Light Hydrocarbon Fluid according to the requirements of the latest ISO 8943 draft issued in September 2004 .



I- ISOSAMPLE 8 100 main features:

Thermal insulation of the sample take-off probe by high vacuum on tube and block valve with extended bonnet vertically mounted.

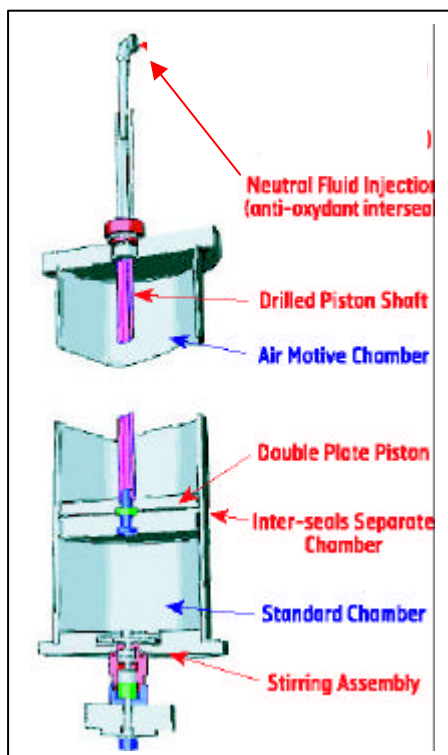
Sample vaporizer by coil exchanger sealed in calorific block temperature controlled. Inlet / outlet temperatures and pressures are monitored with interlock shut-off system. This principle eliminate the fractionated distillation effect usual on former technology.

At vaporizer outlet sample gas is flow controlled and accumulated in constant pressure piston floating cylinder holder featuring a patented double plate seal. The motive chamber is air supplied to avoid exaggerated Helium consumption and only a small volume of Helium is injected in the inter-seal separate chamber to avoid contamination by air.

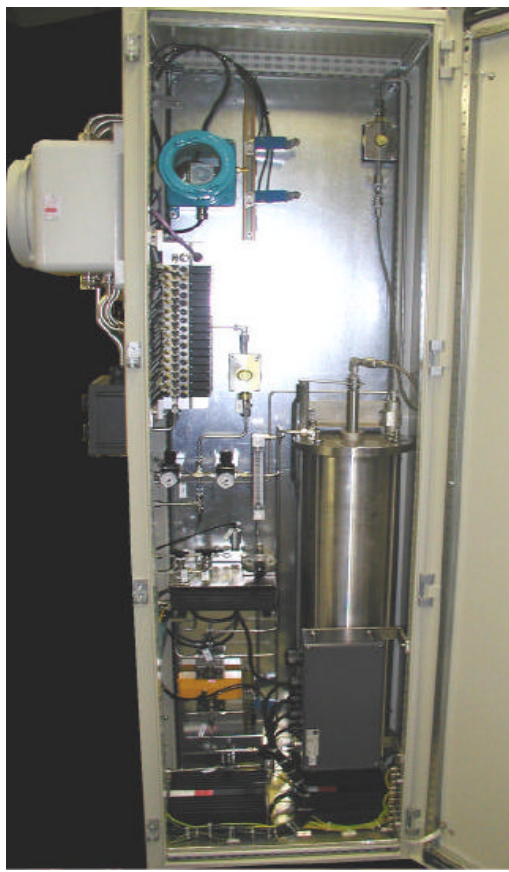
The constant pressure floating cylinder holders have adequately capacity to hold a representative sample of the loading batch.

Patented purging device is operated for the removal of any residual gas from previous operations, before sampling is commenced according to ISO 8943-91 sect. 6 6 2 and 7 2 a

The spot transportation cylinders are automatically charged every hour during the transfer at 4 barg pressure in compliance with the fill and empty method Annex D of ISO 10 715 and the batch transportation cylinders at the end of transfer are automatically fed at 7 barg pressure within the same method.



Piston Floating Holder Cylinder



Holding Cylinder Enclosure

The system processing is controlled via a solenoid valve actuator bus manifold through a Profibus data-link and sampling sequence with alarm history are reported on the controller screen with data acquisition by keyboard. Customer data interchanges for maintenance acquisition and SCADA are supported by Data Highway through Modbus or other protocol.

As option, a process gas chromatograph featuring thermal conductivity detector is supplied on gas sample taken downstream of the LNG vaporizer from the same take-off point with those of the floating piston cylinder holders.

The system and the accuracy of the measured components comply with the technical requirements of ISO 6974- and performance check of this analyser are verified according to ISO 10723.

The whole system ATEX II 2G certified for hazardous location is integrated in a rugged cabinet in Stainless Steel with a IP 65 rating to accept outdoor location in harsh environment.

II- SYSTEM INTEGRATION:

The sample take-off probe and block valve are connected to the sample vaporizer by vacuum tube for thermal insulation; these items are supplied as loose parts .

The microflow controller /spot cylinders piston holder / Control unit are enclosed in a rugged cabinet in epoxy painted carbon steel 20/10 mm sheet and IP 55 rating to accept location in harsh environment.

To compensate the Joule/Thomson effect, the microflow controller is electrically heated and the cabinet is accurately temperature controlled at 40°C +/- 5°C to avoid condensation.

The front door features laminated safety windows for control unit display view.

The spot transportation cylinders hook-up system is located in a separated cabinet at the left side and temperature controlled between 40 and 50°C.



Spot and Batch transportation Cylinders



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