

LNG DISPENSER

All instruments and controllers are integrated into a modern housing taking into account all specificities related to LNG refueling. The dispenser has to be connected to the LNG pump skid by 2 vacuum insulated lines.

The Coriolis flow meter and related electronics are validated for Measure & Weights approval according to MID directive and present highest accuracy available today for LNG measurement

Refueling completion is controlled by low flow detection and continuous pressure control via the pressure transmitter thus ensuring two safety interlocks.

☆ Communication with station supervision system

- ✓ **ADVANCED INTERFACE:** Modbus for communication with PLC (specific software to communicate through PC with the dispenser). More than 200 parameters can be exchanged.
 - Parameters can be saved in hard onto the eeprom (More than 50 parameters)
 - Possibility to save real parameters IEEE754 enabling direct exporting on a PC software
 - Electronic is slave, therefore, the PLC can be programmed as master
- ✓ **SIMPLE INTERFACE:** Possibility to have 0-24 VDC signals for pump start-up and stop and other functions. (Zener barriers to be foreseen on the control panel)
- ✓ Emergency stop button to be directly connected to the station control panel who will engage a shutdown of power supply of the electronic
- ✓ As standard, IFSF communication with payment system. (Lonwork protocol can be used as well or by RS485).
- ✓ Power supply in 230V
- ✓ Instrument air supply of 7 bar
- ✓ USB connection for start-up and maintenance when in safe atmosphere

☆ Improved design

The design of the dispenser has been improved to be user friendly and is dedicated to LNG refueling. Thanks to the position of the dispenser screen the operator safely stays behind the dispenser during the refueling and is not blocked in-between flexible hoses during refuelling operation. Moreover, the dead-man operation button is placed in such a way that it is easy to handle and ergonomic.

☆ **Enhanced flexible hose layout**

The layout of the flexible hoses has been improved to ensure a longer lifetime. They are now hanging from the top of the dispenser and are supported by dedicated support arm limiting bending radius. In addition a specific support is installed in order to ensure a good bending radius when the nozzle is replaced onto his receptacle.

☆ **Improved user interface**

In order to make the use of the dispenser much more user friendly only one “dead-man” button has to be pushed to start the refueling sequence. There is no other buttons except the Emergency stop Button.

The dispenser automatically detects flexible hose disconnection.

The graphical interface of the screen looks like any standard fuel display with 3 lines for the total weight, total price and price per kg.

An additional instruction line shows useful information to the operator that brings an additional understanding of the refueling steps.

- 4 LCD displays of 6 digits in large characters
 - DGE conversion of simple instructions
 - Total price
 - Total weight
 - Price per unit of weight
- 1 LCD alphanumeric display in 2 lines of 16 characters
 - Information about the process (disconnect nozzle, cool down, fault, ready.....)
 - Possibility to manage multi languages with English by default (if managed by the payment system or by the PLC)
- 1 dead man button (Continuous push for safety reasons)
- 1 Emergency stop button
- Optional: Cold / Saturated LNG switch button, or through the payment system

The Cryostar LNG dispenser will include the following equipment as standard:

- ✓ Coriolis type flow meter for high measurement accuracy
- ✓ Automatic air actuated valve in piping system
- ✓ Break-away system for highest safety on refueling and vent line (screw connection)
- ✓ Integrated air purge gun to clean the nozzle
- ✓ Thermal relief valves connected to a vent collection line
- ✓ Emergency stop button on the front of the dispenser with plastic cover protection. To be connected to the safety panel of the station (panel not part of this offer)

- ✓ A dead-man button also used for starting and ending manually the refueling operation (if continually push, the system will automatically stop the filling when the tank will be full)
- ✓ Communication with a payment system through **IFSF protocol** (Lonwork protocol 2 wires)
- ✓ Earthing cable to prevent any spark during the connection of the LNG connector. Plug with wire directly connected on the dispenser
- ✓ LNG inlet connection through the bottom of the dispenser
- ✓ 3 pieces fitting: screw connection (Coupling union 1")
- ✓ Quality:
 - PED according to 97/23/CE (Does not apply on the Dispenser)
 - ATEX: Zone 1 2G IIA T1
 - CE marking
- ✓ Factory Acceptance Test (FAT) done by Cryostar: more than 25 check points

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- Electrical power supply
230 Vac 50Hz monophasé 10 A or 24 Vdc 4 A
- Earthing / grounding
- Civil work
- Dispenser placement, anchoring
- On-site piping to the Dispenser inlet
- On-site wiring between the dispenser and the electrical cabinet