



PLUTO LNG TRAIN 2

SR Number:

26221-100-MRA-JA32-00001

Title:

Packaged Analyzer Shelter

Scope of Work: Analyzer Shelter Design

The Seller will provide pre-assembled, pre-tested, air conditioned (HVAC) analyzer shelters designed so that they can be quickly installed upon a prepared site requiring only external connection of utilities, signal cables, sample/return lines for quick and easy start-up and commissioning. Seller shall confirm the size of the shelter to ensure that it has adequate space for flow metering panel and future expansion.

Items furnished by the Analyzer System Seller

- The analyzer shelter(s) complete as specified with analyzers, sample systems, sample tubing, and probes. Sample tubing supplied by the Seller shall consist of the pre-fabricated heat traced and/or insulated tubing bundles, and any other specialty item demanded by application requirements (e.g. surface treatment, performance alloy).
 - Sample conditioning systems for at-line and off-line analyzers as appropriate.
 - Cylinder rack, complete, excepting gas cylinders.
 - Calibration standards and cylinder gases for checkout at Seller's facility. Seller shall supply regulators, cylinder fittings and gauges for calibration standards, fuel gases, and carrier gases that are permanently mounted.
 - Engineering services to complete the design of shelter and procure specified equipment to fabricate and complete working system.
 - Drawings and documentation as specified herein.
 - Fabrication labor to assemble, checkout, and deliver a complete and operable system.
 - Services of competent analyzer technician(s) to completely checkout and demonstrate a completed working system at Seller's facility (FAT) and Site Acceptance Test (SAT) as required.
 - Preparation and arrangement for shipment of all equipment to jobsite or module yard.
 - Suitable packaging for site storage as per project requirements and Supplier recommendations.
 - Startup assistance shall be available
 - Training for equipment supplied in the packaged system shall be available.
 - Supervise field installation shall be available.
 - HVAC System.
 - Shelter gas detection and alarm system, including gas detectors as specified, logic based processor/controller, gas leak alarm horns and beacons and an exterior mounted mimic panel. The Seller shall provide oxygen deficiency monitors for personnel protection in the analyzer shelters. These will be powered and controlled by the Seller supplied Gas Detection (and Alarm) System (GDS).
 - Seller shall provide serial data communication protocol and copper/fiber optic (FO) media converters as required, FO patch cords and a fiber optic patch panel in each analyzer shelter. The patch panel shall include spares for accommodating additional gas chromatographs that may be installed in the future.
- Alarms or events from the analyzer shelter shall be available at the PCS. Alarms will be incorporated in the PCS Alarm Management System.
- The trace moisture analyzer sample conditioning system shall incorporate electropolished and Silcotek DursanTM coated sample wetted surfaces for all components, fittings and tubing. Whenever

possible, VCR fittings in lieu of compression fittings shall be used in sample wetted tubing and component connections for system assembly and where potential post installation maintenance is anticipated. Orbital welded joints and socket weld fittings shall be used for assembly permanent connections. In general, sample system fabrication best practice consists of pre-assembly via orbital welding of tubing spool pieces with VCR end connectors for final assembly, in so much as practical, before sending off the spool pieces for interior surface electropolish and Dursan coating treatment.

All equipment provided must meet local codes for Western Australia, Project Specifications, as well as any other Australian/local regulations, statutory requirements, and Australian codes and standards as applicable.