

Surface Well Test Equipment

As a major supplier of well testing equipments, Expro provides a range of systems suited to specific testing environments and has a proven track record. Expro well testing equipment allows easy expansion of modules to handle future increasing and changing process conditions.

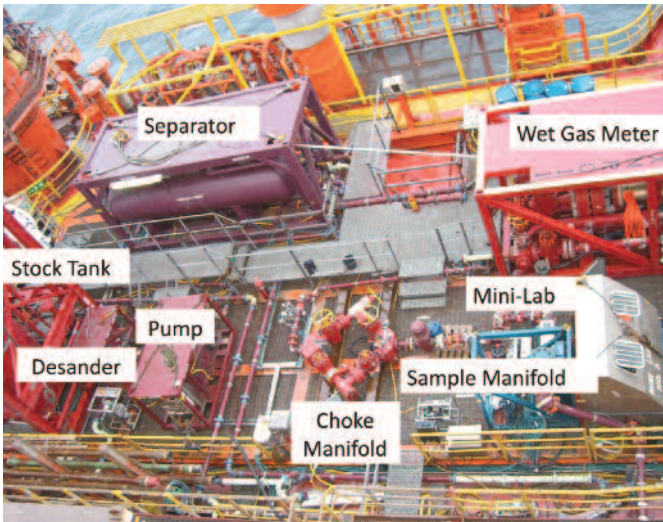
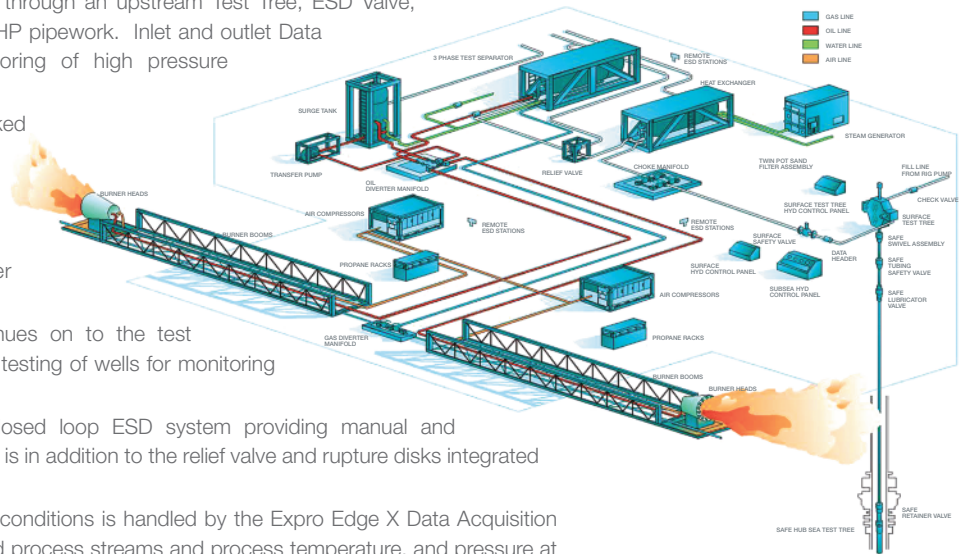
The pressure control is handled through an upstream Test Tree, ESD Valve, Data Headers, Choke manifold, HP pipework. Inlet and outlet Data Headers allow the safe monitoring of high pressure process conditions.

The process stream, once choked down through the choke manifold, passes through a heat exchange designed to raise the temperature of the process fluids for better downstream separation.

The test process stream continues on to the test separator, allowing the individual testing of wells for monitoring production rates.

Safety systems consist of a closed loop ESD system providing manual and automatic safety shut-down. This is in addition to the relief valve and rupture disks integrated into the process equipment.

Real-time monitoring of process conditions is handled by the Expro Edge X Data Acquisition system which monitors separated process streams and process temperature, and pressure at critical points.



Equipment Benefits:

- Dual fisher oil level control valve
- Special internals with high efficiency 99% for 10 micron and larger
- Proven design used Internationally for many years
- Drip pans under major equipment with drain connections
- Offshore paint specification for durable life
- BV and Lloyds third party certification
- Easy operator access to instrumentation on equipment
- High and low level switches on separator to work with ESD System
- High pressure switch on steam heater shell to work with ESD System

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Expro's horizontal, three-phase Test Separator has automated controls on gas pressure, gas/oil and oil/water interfaces, mounted on an oilfield structural steel skid with drip pan, crash frame and three-coat, offshore type paint system, rated for sour (H₂S) service. The unit is fully manifolded for complete flexibility of operation, including bypassing and/or co-mingling oil, gas or water. The Test Separator is designed with a removable crash frame which reduces the overall weight of the unit for carriage.

There are many different sizes and configurations of Expro's test separator to meet varying requirements.

Steam Heater

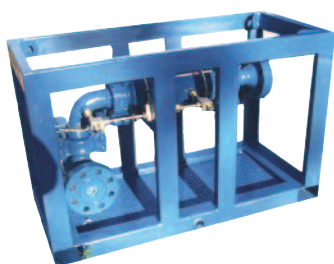
The Expro steam heater offers a high-efficiency heat transfer with a small foot print. The steam heater is mounted on a sturdy, oilfield-type skid with a lifting/crash frame enclosure. Heat transfer is accomplished by applying superheated steam directly to the high-pressure upstream pre-heat process tube bundle with a full opening two-inch adjustable choke separating the low-pressure downstream post-heat process tube bundle. The tubes are sealed in an ASME vessel set with automated steam process controls for both temperature and pressure control. Steam condensate is directed to a steam trap for recycling back to the steam generator.



The steam heater comes with a high-pressure diverter (by-pass) manifold on the inlet to the outlet for bypassing the tube bundles. Safety systems in this type of heater include a relief-valve and rupture-disc located on the heater vessel, and a fail-safe temperature control device. A high-pressure pilot monitoring the vessel pressure is available for interfacing with an Expro ESD system.

The steam heater is built in accordance with Expro Equipment Sales "Engineering Standards and Practices" which meets or exceeds most International standards and codes, and is offered with third party Independent Design Review Certification and fabrication Certificate of Conformance.

Multi Sensor Relief Valve (MSRV)



The MSRV is a rapid acting relief valve without the limitations of existing safety valves, allowing a greater flexibility in safety system design. In an over-pressure situation the MSRV will respond through utilization of its safety logic and protect the whole system. Its ball valve design is hydraulically actuated by well pressure from primary sensor points. These points constantly monitor the process pressure, and when it exceeds a pre-determined value, the rupture disc inside the sensor point ruptures and the respective impulse line is energized thus opening the valve. Once actuated, the MSRV will remain open until pressure is applied to the respective closure.

The MSRV is typically installed between the choke manifold and the heater. The purpose is to protect the heater tube bundle from over pressure if the upstream choke cuts out due to sand erosion etc.

The MSRV has the following advantages over a conventional relief valve:

High relief capacity

Insensitive to system back pressure

Positive acting with no simmering or chattering

Accurate set point pressure

Extreme high pressure integrity

Four impulse port multi sensor facility

Multi operable capability

ESD control logic