CONTROVAL

TECHNICAL DATA SHEET

PROTECTION AND PROCESS

Test separators

2-, 3- and 4-phase separators for well testing and flowback, skid or trailer mounted.



Test separator skid

AT A GLANCE

Well testing and flowback, on a skid or a trailer.

01
2-, 3- and 4-phase configurations

02
Skid or trailer mounted

03
ASME and NACE

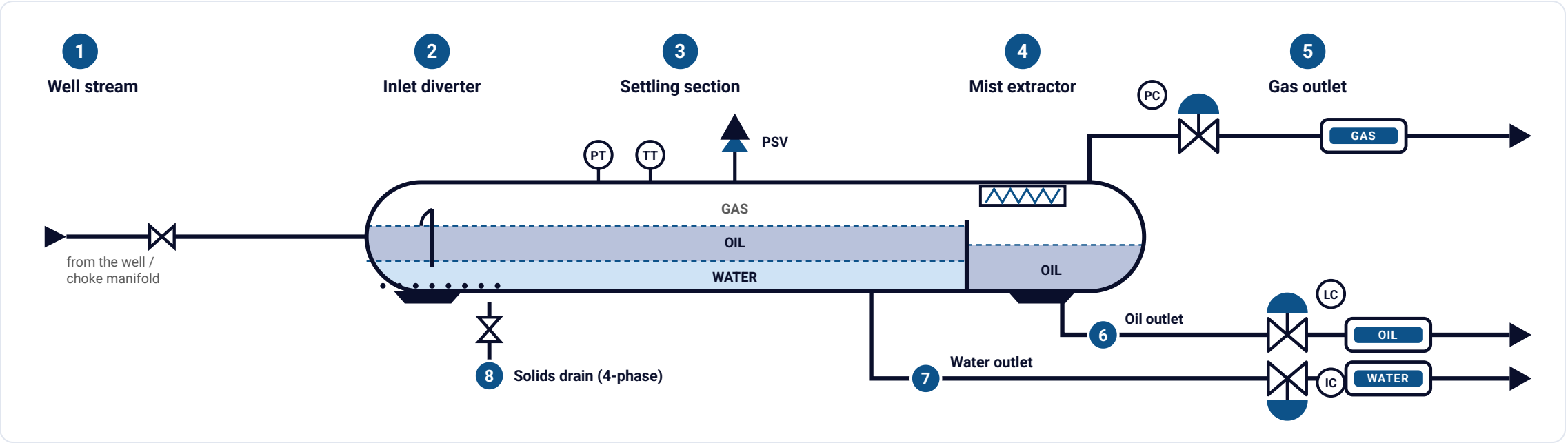
04
For well testing, flowback and pigging operations

How it works

Test separators split the well stream into its phases so you can measure what the well produces.

We build 2-, 3- and 4-phase units, mounted on a skid or on a trailer, to ASME and NACE requirements. Fabrication quality is assured under an ISO 9000 scheme, with full traceability of each component.

Level controllers, level gauges, control valves and flow meters give accurate measurement of each separated fluid.



Typical schematic configuration, shown for reference only. The final design, equipment, instrumentation and applicable codes depend on the client's process conditions, specification and project requirements, and are defined during engineering.

Step by step

In the order the fluid passes through it.

1 Well stream in
The well stream arrives from the wellhead or choke manifold through an isolation valve. It is a mix of gas, oil, water and sometimes solids.

2 Inlet diverter
Slows the stream and changes its direction, so most of the gas separates from the liquid as soon as it enters the vessel.

3 Settling section
Liquids rest in the vessel so oil and water separate by density. Vessel size sets the time available. A 2-phase unit has no water section.

4 Mist extractor
Catches fine liquid droplets carried by the gas, so the gas leaves dry and its measurement is reliable.

5 Gas outlet and pressure
A pressure control valve holds the vessel pressure. The gas passes through a meter before it goes to flare or to the line.

6 Oil outlet and level
Oil spills over a weir into a bucket. A level control valve discharges it through an oil meter.

7 Water outlet and interface
The oil-water interface is held by a control valve on the water line, which has its own meter. Used in 3- and 4-phase units.

8 Solids removal
In a 4-phase unit, sand and solids settle at the bottom and are removed through a drain, which matters in flowback.

▶ CONTROL AND RECORDS

Measurement and safety
Pressure and temperature transmitters and a relief valve protect the vessel. The gas, oil and water readings feed the well test report.

Typical configurations and options

Phases	2-phase, 3-phase or 4-phase
Orientation	Horizontal or vertical vessel, as the duty requires
Mounting	Skid mounted, or trailer mounted for moving between wells
Design code	ASME VIII Div. 1 pressure vessel
Materials	Carbon steel, or NACE materials for sour service
Internals	Vanes, inlet deflector, baffles, weir plates and mist extractor; options as the duty requires
Gas outlet	Pressure control valve and gas meter
Oil outlet	Level control valve and oil meter
Water outlet	Interface control valve and water meter (3- and 4-phase)
Solids handling	Solids drain for 4-phase units
Safety	Pressure relief valve and instrumentation sized to the vessel
Instrumentation	Pressure, temperature and level transmitters, gauges and local panel
Area classification	Instruments, panels and wiring selected for the classified area

Standards and documentation

Designed to ASTM, ASME, ISO and API standards. The applicable codes are agreed per project.

TYPICAL REFERENCES

ASME VIII-1	Pressure vessels: separator shell, heads and nozzles
API 12J	Oil and gas separators
NACE MR0175 / ISO 15156	Materials for H2S-containing (sour) service
API 520 / 521	Pressure relief devices: sizing and relieving systems
ASME B31.3	Process piping on the skid
ASME B16.5	Pipe flanges and flanged fittings
API RP 14C	Analysis, design, installation and testing of basic surface safety systems

TYPICAL DOCUMENTATION PACKAGE

- ✓ P&ID
- ✓ General arrangement
- ✓ Vessel and instrument datasheets
- ✓ Design calculations
- ✓ FAT procedure and report
- ✓ Operation and maintenance manual

> Factory acceptance test (FAT) in our workshops and site acceptance test (SAT) at the installation site.

Our work

A test separator we have built



Test separator skid

Horizontal vessel with access platform on a structural skid with lifting lugs.

Photographed in our workshops. Ask us for references in your application.

Need one built for your process?

controval.com

Send us fluid, flow, pressure and temperature, or just your idea. An engineer returns a proposed configuration.

UNITED STATES
+1 (832) 948-5754
salesusa@controval.com

COLOMBIA
+57 (316) 4762766
ventascolombia@controval.com

VENEZUELA
+58 (424) 2180781 · Also on WhatsApp
ventasvenezuela@controval.com