CONTROVAL

TECHNICAL DATA SHEET

METERING AND TRANSFER

Sampling skids

Representative samples of crude and other liquids, taken automatically or by hand.

FLOW-PROPORTIONAL · MANUAL · COMPOSITE RECEIVERS · PRESSURIZED CYLINDERS



Sampling skid

AT A GLANCE

A sample is only worth what it represents. We condition the stream first, then draw the sample.

01
Flow-proportional, time-proportional or manual sampling

02
Static or motorized mixer, or circulation loop

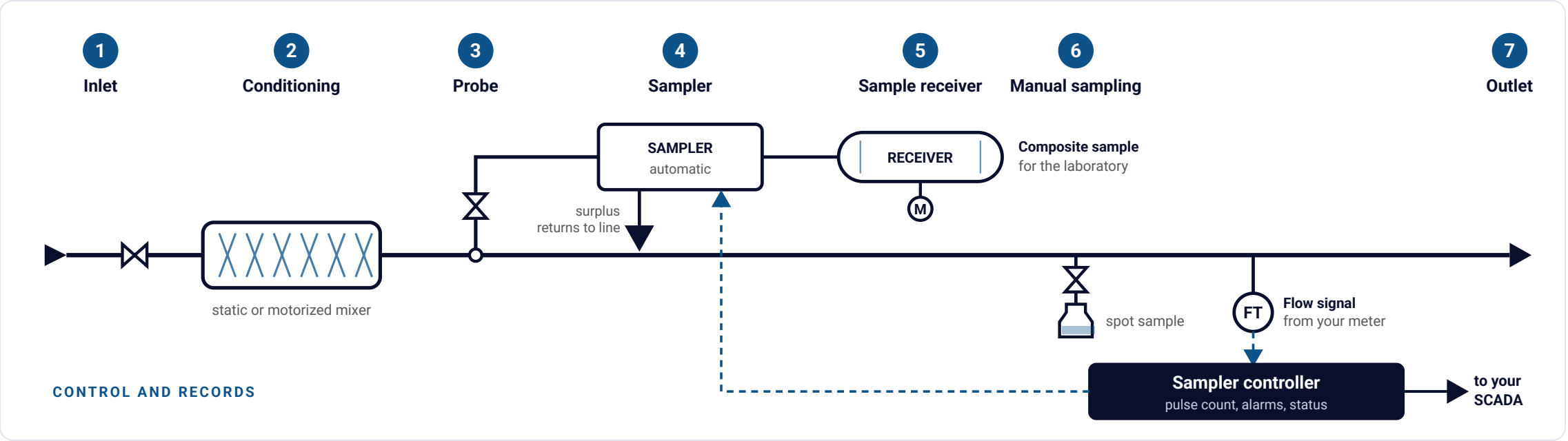
03
Composite receivers with mixing and level indication

04
Floating-piston cylinders for volatile liquids

How it works

Water and solids tend to settle toward the bottom of the pipe. A static or motorized mixer blends the stream before the probe, and the probe draws from the center of the pipe, so the composite sample matches what actually flows.

The automatic sampler takes small, equal portions in proportion to flow, driven by a pulse from your meter or flow computer. Manual sampling points give spot checks and a backup. The controller counts pulses, commands the sampler, raises alarms and reports status to your SCADA.



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 Inlet and isolation
The stream enters through an isolation valve, upstream of the sampling point.

2 Fluid conditioning
A static or motorized mixer blends oil, water and solids so the stream is uniform where the sample is taken.

3 Sample probe
Takes the sample from the middle of the pipe, not from the wall or the bottom, where water and solids tend to settle.

4 Automatic sampler
Takes small, equal portions in proportion to flow, using a pulse from your meter or flow computer.

5 Sample receiver
Collects the portions into one composite sample, with mixing, ready to take to the laboratory.

6 Manual sampling point
Valves and a closed container to take spot samples by hand, as a check or as a backup.

7 Return and outlet
The surplus sample returns to the line, so no product is lost. The product continues to the outlet.

▶ CONTROL AND RECORDS

Controller
Counts flow pulses, commands the sampler, raises alarms and sends status to your SCADA.

Typical configurations and options

Sampling mode	Automatic proportional, manual, or both on the same skid
Sampler drive	Pneumatic or electric, selected for the site utilities and area
Sample trigger	Flow pulse from your meter or flow computer, or time-based
Fluid conditioning	Static mixer, motorized mixer or circulation loop
Sample conditioning	When required, the sample is conditioned before analysis: temperature reduced with a heat exchanger and pressure with a regulator valve. Drains are provided whether the fluid is recycled or discharged, and temperature and pressure sensors and safety valves give monitoring and protection. The sample can be analyzed on the spot or taken to the laboratory
Sample probe	Single or multiple probes, sized for the line and the flow
Sample receivers	One or several composite receivers, with mixing and level indication
Pressurized sampling	Floating-piston cylinders for volatile liquids, as required
Control	Sampler controller or PLC; alarms; serial and Ethernet to your SCADA
Instrumentation	Pressure and temperature gauges, flow and level switches
Integration	Stand-alone skid, or integrated with a LACT or metering skid
Area classification	Instruments, panels and wiring selected for the classified area
Materials	Carbon steel or stainless steel; NACE materials for sour service
Components	We integrate Swagelok, Yokogawa, Magnetrol and Thermo Scientific, and consider your preference

Standards and documentation

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

TYPICAL REFERENCES

API MPMS Ch. 8.1	Manual sampling of petroleum and petroleum products
API MPMS Ch. 8.2	Automatic sampling of liquid petroleum and products
API MPMS Ch. 8.3	Mixing and handling of liquid samples
API MPMS Ch. 10	Sediment and water
ISO 3170 · 3171	Manual and automatic sampling of petroleum liquids
ASTM D4057 · D4177	Practices for manual and automatic sampling

TYPICAL DOCUMENTATION PACKAGE

- ✓ P&ID
- ✓ General arrangement
- ✓ Instrument datasheets
- ✓ 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



Sampling skid

Skid-mounted sampling point: isolation valves, sample probe, sampler and receiver on one frame, built and tested in our workshops.

DELIVERED

Automatic sampler integrated in the LACT unit for Petronas, Myanmar	**Petronas**

Need one built for your process?

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

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