CONTROVAL

TECHNICAL DATA SHEET

METERING AND TRANSFER

LACT units

Measures the volume and quality of crude at the custody transfer point. Configured to your specification and the regulations of each country.

CORIOLIS · MAGNETIC · TURBINE · ULTRASONIC



LACT unit, Chevron Petroindependencia

AT A GLANCE

Volume and quality, measured at custody transfer.

01

Filtration, air elimination, BS&W, sampling and metering on one skid

02

Coriolis, magnetic, turbine, ultrasonic or PD metering

03

One or several metering runs, with prover or master meter connection

04

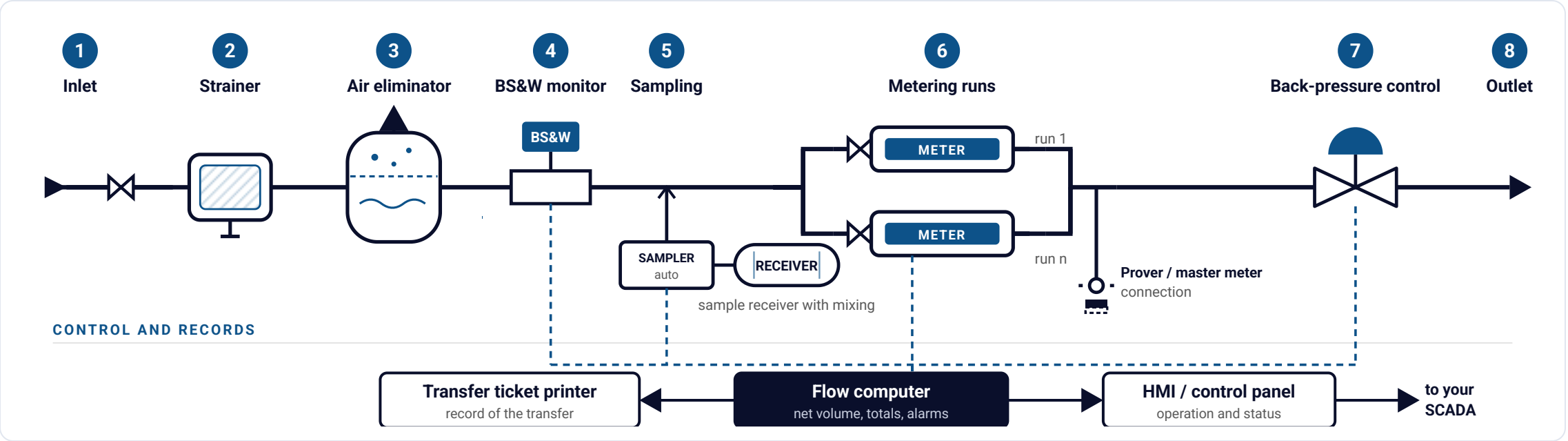
Configured to your specification and the regulations of each country

How it works

A LACT unit measures the volume and quality of crude at the custody transfer point. Filtration, air elimination, BS&W monitoring, metering, automatic sampling, flow computer and transfer ticket, on one skid.

The metering technology is selected per project: Coriolis, magnetic, turbine, ultrasonic or positive displacement. One or several metering runs, with a prover or master meter connection.

Instruments, equipment and mechanical and electrical elements are integrated on modular skids for efficient transport, installation and commissioning at site, so that all fiscal entities and users involved work from one consistent package.



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
Crude from the lease or tank battery enters through an isolation valve. A supply pump is added when line pressure is not enough.

2 — Strainer
Retains solids and debris that could damage or distort the meter. Differential pressure can be monitored to plan cleaning.

3 — Air / gas eliminator
Separates and vents entrained gas so that only liquid reaches the meter and the volume is not overstated.

4 — BS&W monitor
An in-line analyzer measures water content (water cut) continuously. Off-specification crude can raise an alarm or be diverted, as configured.

5 — Sampling
A probe takes a flow-proportional sample from a well-mixed stream, downstream of a static mixer or other mixing device, into a sealed receiver for laboratory analysis.

6 — Metering and proving
One or more metering runs measure the flow. A prover or master meter connection allows the meters to be proved in place.

7 — Back-pressure control
Holds the pressure above the fluid's vapor pressure so it stays in a single phase through the meter. Where needed, flow control keeps flow within the meter range.

8 — Outlet
Measured crude leaves to the pipeline, tank or vessel through the outlet isolation valve.

CONTROL AND RECORDS

Flow computer, HMI and ticket

The flow computer calculates net volume, the HMI shows status and alarms, the printer issues the transfer ticket. Data goes to your SCADA.



Crude quality and flow metering skid, Merey 20, PDVSA
Metering runs with gate valves, flow meters and quality instruments on a skid with access platform, installed at site.

Typical configurations and options

Metering runs	One or several runs; duty / standby or parallel operation
Run size	Sized for the flow range and the allowed pressure drop
Meter technology	Coriolis, magnetic, turbine, ultrasonic or positive displacement
Proving	Compact, bidirectional or master meter; or provision for a future connection
Sampling	Automatic proportional or manual; composite sample receiver; sample mixing
BS&W / water cut	In-line water-cut monitoring, with alarm or diversion as required
Flow computer and SCADA	Flow computer; serial and Ethernet communications to your SCADA
Back-pressure control	Control valve or back-pressure regulator
Strainer and air eliminator	Sized and rated to the line and the fluid
Transfer ticket	Transfer ticket and batch report printing
Area classification	Instruments, panels and wiring selected for the classified area
Materials	Carbon steel or stainless steel; NACE materials for sour service
Mounting	Skid-mounted, or trailer or vessel mounting
Instrument brands	We integrate Yokogawa, Flowserve, KECO, Magnetrol, Flexim, Swagelok and Thermo Scientific, and consider your preference



Quality and flow metering skid, Arecuna 4, PDVSA
Skid-mounted metering and quality measurement for crude, piped into the station.

Standards and documentation

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

TYPICAL REFERENCES

API MPMS Ch. 4	Proving systems
API MPMS Ch. 5	Metering
API MPMS Ch. 8	Sampling
API MPMS Ch. 10	Sediment and water
API MPMS Ch. 6.1	Lease automatic custody transfer (LACT) systems
API MPMS Ch. 11.1	Volume correction factors for temperature and pressure
API MPMS Ch. 12	Calculation of petroleum quantities
API MPMS Ch. 21.2	Electronic liquid volume measurement

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

LACT and metering skids we have built



Arecuna 4 metering skid under assembly in our workshop, PDVSA

Meter run piping and valves being assembled before factory acceptance testing.

Real projects, photographed in our workshops and at site. Ask us for references in your application.

DELIVERED

LACT unit, three metering lines, Myanmar	**Petronas**
Two LACT units: diluent and crude	**Chevron, Petroindependencia**
Quality and flow metering skids: Merey 15, 18 and 20, Oficina 16, Arecuna 4, Bared 5	**PDVSA**

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.

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