Heated Constant Volume Trap

Regulates the temperature and flow of fluids during mud sampling

Applications

- Offshore and onshore gas analysis
- Gas analysis in ultra-deepwater wells in which long risers cool returned mud
- Recycled gas evaluation (when used in a delta configuration)

Safety Notices

- All components are rated for use in Zone 1, Class 1, Div. 1, gas group C, –104°F to 131°F (–40°C to +55°C).
- The peristaltic pump is certified for use in IECEx EExd Zone 1 and complies with ATEX Directive 94/9/EC.

Features

- The sampling device takes in mud from the return flowline and expels cuttings larger than 3/16 in. (5 mm) using wiper blades.
- A variable frequency drive (VFD) maintains a consistent mud-flow rate.
- A modified high-torque, constant-speed gas trap provides consistent degassing and maintains constant volume in the degasser.
- By means of a control panel in the safe area, the user can select from predefined temperature settings optimized for different mud types.
- Automatic and manual blowback systems clear blockages from the sampling device.
- All hoses connecting the sample device to the gas trap are chemical-, oil- and fuel-resistant.
- Load-tested, certified pad-eyes and sling-sets are included for easy lifting and handling of the equipment.

- An optional in-line Coriolis meter provides mud-density readings and enables the operator to monitor the flow rate.
- The heated constant volume trap (CVT) can be installed in a delta configuration to facilitate recycled-gas evaluation.

Benefits

- Offers the highest fluid-sample flow rate—1.5 gal/min (5.7 L/min)—of any heated CVT in its class
- Eliminates the variables of gas trap head-space, flow rate, and mud temperature to provide consistent, repeatable results across multiple wells
- Can be combined with a heated gas line and the Weatherford quad-column chromatograph to analyze C1 to C10, aromatics, Noble gases, and other gases within 90 seconds
- Works with all types of drilling fluids, including synthetic and oil-based muds
- Can be run by a single mud logger, which minimizes personnel needs

Tool Description

The Weatherford heated constant volume trap (CVT) regulates the temperature of

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Heated Constant Volume Trap

mud as it flows continuously from the return flowline through a specialized mud-sampling device. A peristaltic pump routes sampled mud through dual heating chambers and into a high-torque, constant-speed gas trap. With a heating capacity of 50 kW, the heaters warm water-based mud from 50°F to 158°F (10°C to 70°C) and oil-based mud from 50°F to 194°F (10°C to 90°F). The flow is regulated by a VFD, which provides a consistent volumetric flow rate. This configuration eliminates the variables that traditionally compromise the accuracy of gas-in-mud measurements: head space, flow rate, and temperature.

The heated CVT is available in a single or delta system. In a delta configuration, the heated CVT samples mud at the same, constant rate from both the active pit and the suction pit while maintaining a consistent mud temperature.

Specifications

Sampling Device

Flowline size for installation	8 in. to 16 in. (203.2 mm to 406.4 mm)
Flowline type for installation	Open or closed
Material	Schedule 316 stainless steel

VFD (for pump power supply)

Make	Lenze
Model	ESV751N02YXB
Input	1-phase, 200 to 240 Vac, 50/60 Hz
Output	3-phase, 200 to 240 Vac, 1 to 400 Hz

Fluid Handling Module

Installation location	Active pit, near the shakers
Weight	1,000 lb (453 kg)
Maximum ambient temperature	131˚F (55°C)
Voltage	3-phase 440/480 Vac, 50/60Hz
Dimensions (L × W × H)	45 × 36 × 44 in. (114 × 92 × 112 cm)

Suction Pit Sampling Device

Installation location	Suction pit
Material	Schedule 316 stainless steel