Schlumberger

Surface Well Test Equipment Winterization

Protect surface well test equipment to withstand harsh cold weather environments

Applications

In some harsh cold weather environments, weatherproofing is essential to ensure that equipment works properly. Schlumberger has the expertise in both design and engineering to develop multiple complementary solutions that use the most effective techniques for an environment. We've helped operators in cold environments in Aberdeen, Alaska, Kazakhstan, Russia, and locations where winter conditions dip below 0 degC [32 degF].

Protect against below-freezing temperatures

Without sufficient winterization, equipment cannot function properly to the point that testing has to be suspended. To protect against below-freezing temperatures, an insulation system can be designed specifically for the equipment. The appropriate operating temperature is calculated to ensure that the equipment works within its normal range. Another method is to apply heat tracing on equipment when the insulated package is not applicable.

How it works

Insulated skid package

To compensate for extreme cold temperatures, the well test package is designed with an insulated skid, which includes a series of removable insulation panels constructed from metal-fiber-metal sandwich panels. Installing the insulation panels makes the skid a closed system, referred to as the "cabin." This configuration requires a gas detection system inside the cabin. If dangerous gasses develop inside, the system activates a bright light beacon to alert the operator. To assist with visibility, the cabin contains an Ex d fluorescent light fixture system with an Ex d on-off switch. The skid also contains a heating system using flameproof and hazardous area certified air fan heaters to maintain the equipment's temperature within the recommended normal operation range.

Equipment with insulated skid package: separators SEP-TWB, SEP-NFW, SEPL-FW, SEPL-EW, and SEPL-BW; plug and trash catcher PTC-HW; knockout drum KOD-HW; wellhead cyclone vessel CSRU-AW; diesel pump PMP-TDW; and gauge tank GTHP-DA

Thermal insulation methods

Electrical heat tracing

Electrical heat tracing uses self-regulating cables made from semiconductive material, conductors, and insulation. This special blend of materials creates electrical paths for conducting current that changes in response to temperature fluctuations. The cables are installed on equipment and wrapped around piping.

Rock wool insulation materials

Rock wool strips are used as a layer of insulation that can be applied to the heat tracing cables or can be embedded with the equipment under a metallic coat. The coat offers further frost protection maintaining an acceptable temperature of fluids inside vessels and pipes.

Equipment embedded with heat tracing designed for minimum ambient temperature of –30 degC [–22 degF]: surge tank VST-FWC and knockout drum KOD-B.

Maintain operating temperature range

Adding mitigation measures to surface well test equipment operating in extremely cold weather conditions makes it possible to maintain the operating temperature range for the equipment to function properly.

Knockout drum KOD-HW within insulated skid package.

Insulated pipe with electrical heat tracing cable and wool insulation.

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