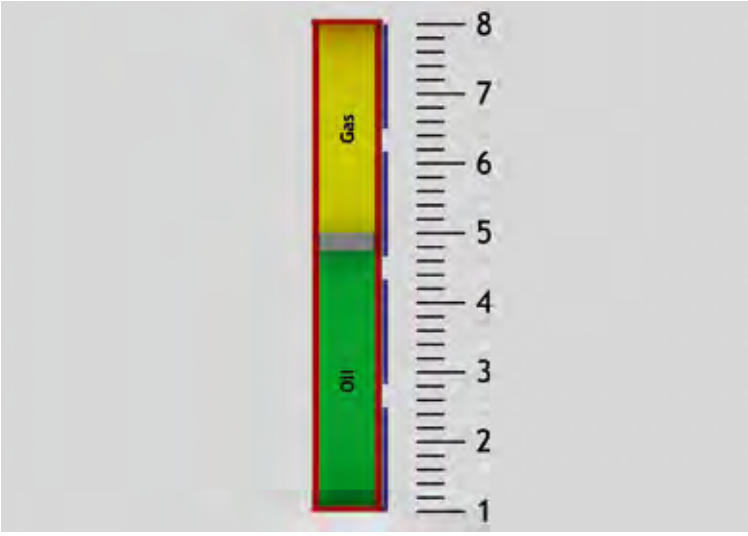
PistonTrack® system

PistonTrack is a compensator monitoring system for enhanced drilling safety and efficiency. It monitors the position of the piston inside the hydraulic accumulator in the heave compensating system.

From driller's cabin at SnorreB with PistonTrack™ installed



The graphical display presents the result as a column showing the oil and gas levels in the accumulator

SAFER OPERATIONS

Heave compensating systems are used on most floating drilling vessels to decouple the drillstring from the vertical motion of the rig. During critical operations, for instance well testing and BOP landing, compensator lock-up may cause disaster.

PistonTrack is not affected by changes in the composition of accumulator fluids due to rough operating conditions, as has been experienced in other systems.

WELL-DEFINED GRAPHICS

The graphical display has been designed to give the driller a real-time, clear and intuitive picture of the accumulator's position and movement. The information is presented as a bar graph with gas, piston and liquid indicated with colors and a trend line showing the position for the last 2.5 minutes.

PistonTrack is based on the advanced electronics and software, and is suited for remote diagnostics, maintenance, and upgrade (ready for e-field and integrated operations).

EFFICIENT INSTALLATION

PistonTrack can be installed on all types of drilling rigs. It is suitable for new-build or retrofit on existing installations with:

- Cylinder-based draw works
- Top compensator
- Wireline and cylinder-based riser tensioner systems

The system can be installed, calibrated and commissioned in one week while the vessel is in operation. The calibration and fine-tuning after installation requires movement of the piston. The normal procedure requires a trial with full motion for calibration, an hour for analysis of data, and a final verification run.

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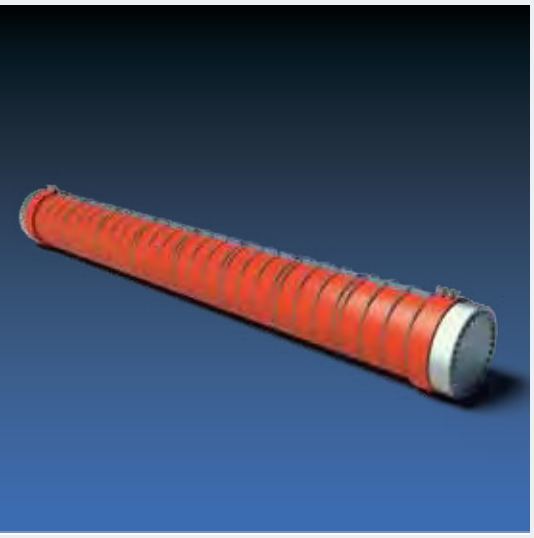

REFERENCE INSTALLATIONS

- Bideford Dolphin, 2003
- Snorre B, October 2005
- West Navigator (main rig), 2006
- Borgland Dolphin, 2006
- West Navigator (aux rig), 2006
- West Venture (main rig), 2006
- West Venture (aux rig), 2006
- West Venture (main rig), 2007

TECHNICAL SPECIFICATIONS

PistonTrack is based on a proprietary electromagnetic method. The system works by monitoring the piston from an array of individual sensor elements clamped to the outside of the accumulator. PistonTrack is reliant on mounting a permanent magnet on to the piston before operations.

SENSORBAR WITH 3 SENSING ELEMENTS

Length x width x height:	1000 x 67 x 37 mm
Material:	PE80, antistatic polyethylene
Max. cable length to EX cabinet:	15 m (50 ft)
EX protection class:	EX-m (molded polyurethane)

EX HOUSING NEAR ACCUMULATOR

Material:	AISI 316 (stainless steel)
EX protection class:	EX-d, IP- 68
	Up to 4 sensor bars per EX housing
Power supplies:	Datalogger: 24 V DC, 5A
Measurement system:	24 V DC, 20A

DATA LOGGER AND OPERATOR DISPLAY

Industrial PC with PistonTrack software and graphical display
Remote support, upgrade and maintenance
Online connection via local area network
Optional 4-20 mA analog output

DATA COMMUNICATION

Simplex RS485 with signal ground

POWER CONSUMPTION

Data logger and display:	25 W (typical)
Sensors and electronics:	approximately 7 W per primary sensor

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