

## DACOS "Flight" Recorder



DACOS "Flight" Recorder strapped to a riser

### Features and Advantages

The DACOS "Flight" Recorder is a portable battery operated recorder for use in hostile subsea environments. It can measure and record strain, movement, inclination, vibration, and environmental parameters such as water current.

The purpose of the DACOS "Flight" Recorder is to:

- Detect and quantify extreme events
- Quantify dynamic response and document fatigue
- Keep track of response history.

It operates with no cables and allows quick installation. Solutions for ROV installation and retrieval are available.

### Available Recorder Versions

#### **Dynamic and Quasi-static Angle Recorder:**

Measures dynamic angles in situations with limited or no linear motion or quasi-static inclination when linear motion is present.

**Dynamic Motion Recorder:** Measures dynamic angles and linear motion.

**Strain Bracelet Recorder:** Measures axial strain at the surface of the structure, and the measurements are used to provide axial stress and bending moments. A solution with a tangential strain sensor is available for monitoring of hoop stress.

**Water Current Recorder:** Measures water velocities or the average water current in one volume of water or an array of measurement cells at fixed distances from the sensor.

**Combined Recorders:** Several sensor types may be integrated into one recorder ensuring simultaneous measurements in a compact arrangement.

**Options:** Temperature and pressure sensors.

## Equipment and Operation

The DACOS "Flight" Recorder is a portable, battery operated data logger with a maximum memory capacity of 512 Mbytes.

The recorder incorporates internal sensors like dynamic angle and motion sensors, and external sensors like strain bracelet and water current sensors. Eight sensors may be monitored simultaneously, periodically or continuously.

Different depth ratings are available, down to 3 000 m (10 000 ft) water depth.

The recorder may sample sensor signals at selectable frequencies up to 96 Hz. The signal digitization has 16-bit resolution. Data will be available when the recorder is retrieved after the monitoring period is over, or immediately if ROV operated readout and on-line systems are used.

A special version for vibration measurements with high-speed sampling frequency up to 100 kHz and 2 GB data storage capacity is available.

The data collection is controlled by the three parameters "initial wakeup", "time series length" and "time between time series". After "initial wakeup" data collection may also be initiated by removing an external magnet, which keeps the recorder in disarmed mode.

The recorder size is typically 175 – 200 mm (7 – 8 inches) in diameter and 500 to 700 mm (20 to 28 inches) in length, depending on depth rating, battery capacity and number and types of sensors.

The recorder may be bolted or strapped to the object. Various fixation arrangements are available including a "Snap-On" facility for quick installation.

## ROV Installation and Retrieval

Versions for ROV installation are available, for installation on risers, pipelines or structural members; or in torque tool receptacles or other pre-installed docking stations for accurate positioning and alignment.

## Service and Assistance

The DACOS "Flight" Recorder is available for hire or purchase. Recorders for hire are available off the shelf and may be provided within typically 2-3 weeks.

FORCE Technology Norway AS provides recorders for hire, and post-processing and analysis of the collected data. The analysis may include identification and quantification of extreme events exceeding operational thresholds, quantification of modal vibrations, accumulated fatigue counting, and trends in statistical parameters. Deliverables may be report(s) and raw data and results on a CD-ROM.

FORCE Technology Norway AS has in-house expertise on structural response and re-assessment of risers and structures. This helps us to optimize the application of equipment and the analysis of the measured data.

FORCE Technology Norway AS also offers customization of equipment, planning and engineering of larger monitoring projects, development of procedures and offshore assistance during installation and retrieval operations.

## References

Phillips Petroleum - Ekofisk jackets  
Norsk Hydro - flare tower and flexible risers  
Conoco/Statoil - tow of tethers for the Heidrun TLP  
APL - Mooring systems for STL (Heidrun, Njord)  
BP - Drilling Riser on Schiehallion and Nyk Høgda, Vortex Induced Vibration (VIV) monitoring  
Statoil - Drilling riser on Vema, VIV  
Shell - Drilling riser on Helland Hansen, VIV  
Statoil - Free spans on subsea pipelines  
Shell - Riser monitoring, Gulf of Mexico, ROV installation and retrieval  
Norsk Hydro - Subsea template vibration monitoring, ROV installation and retrieval



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