

DIPE\*

## Modular Multi-Sensor Clamp



### FEATURES

- **Non-Intrusive Sensor**
- Multi-Sensor System (Pressure & Temperature) for deep offshore applications (up to 3000 msw)
- Installable on risers and pipelines (from 4" to 16 ")
- Detect disturbances before the damage is caused
- **Pressure measure accuracy: 1% FS**  
(test performed @1500msw under insulation foam – 350bar)

**The first non-intrusive sensor for severe slugging detection and control on riser and pipelines in deep water applications**

\* DIPE principle is patented

## Modular Multi-Sensor Clamp

### GENERAL

The **DIPE Modular Multi-Sensor Clamp** is designed to measure internal pressure and temperature in pipelines and risers in order to detect instabilities in the flow.

The system consists of a clamp which is adapted to ROV operations and supports different sensors to detect phenomena that can lead to “**severe slugging**”.

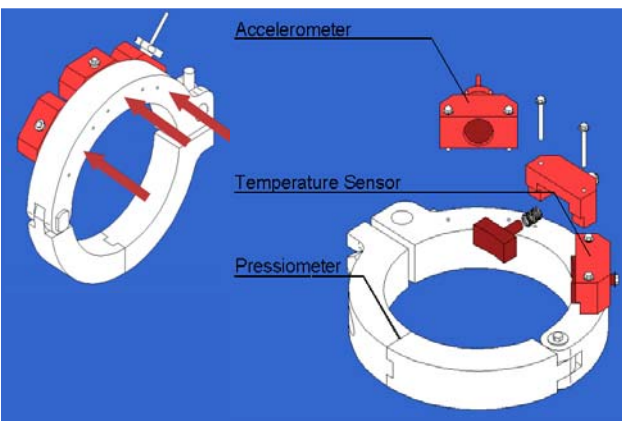
The **DIPE System** was developed by **Cybernetix** in co-operation with **TOTAL**.

### SENSOR SYSTEM

The combination of a **pressure sensor** and a **temperature sensor** allows the detection of effects such as “terrain” or “severe slugging” before they can cause damage to a production installation. An additional sensor such as an **accelerometer** can be added to the clamp. The whole system is rated for applications up to **3000 meters depth & 20 years life duration**.

The advantage of the **DIPE** system, beyond being non-intrusive, is its modularity : different types of sensors can easily be installed around the clamp which allows thus the monitoring of almost any behaviour of the subsea production lines.

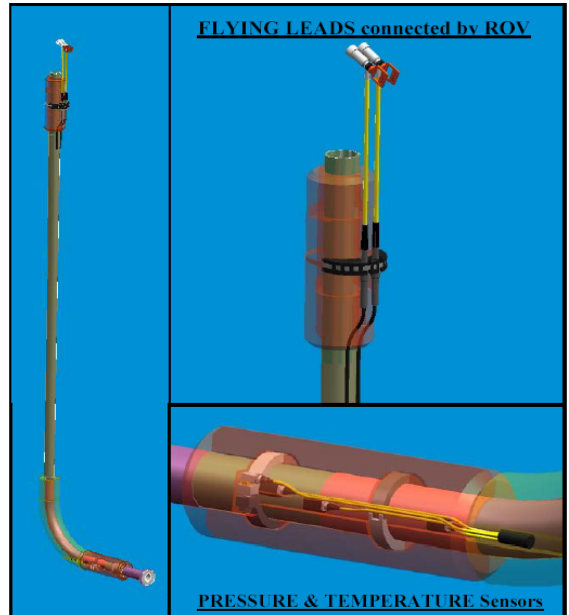
The size of the clamp can be adapted to any pipe dimension between 4” to 16”.



### INSTALLATION

The **DIPE clamp** is installed below the thermal insulation foam.

The Data Acquisition and Recording System which is fixed near the **DIPE** clamp transmits the data either by umbilical or acoustic modem to the surface unit.



### OVERVIEW

- The Sensor architecture has proven its liability and performance on onshore oil pipelines.
- The DIPE clamps have been integrated and successfully tested on all production spools of ROSA offshore field (Block 17 – Angola).

