

INTEGRITY MONITORING

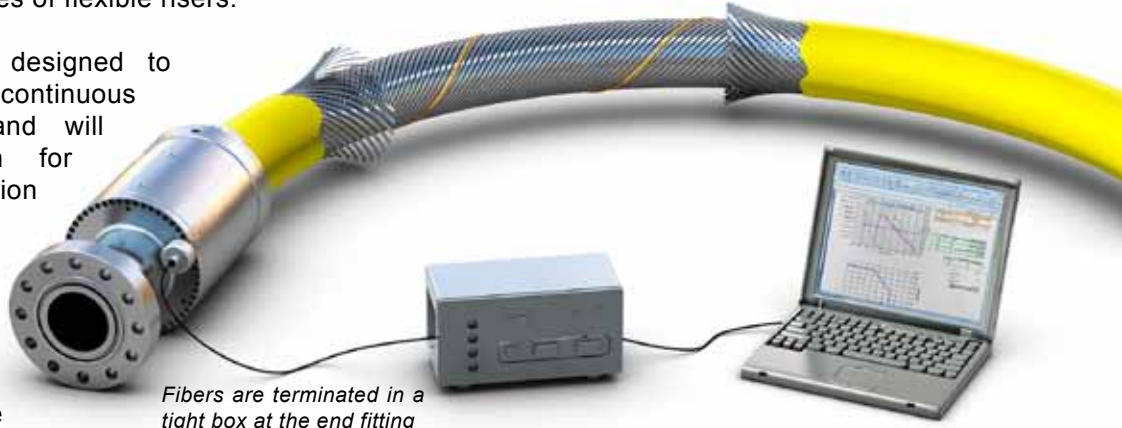
EMBEDDED SENSING SYSTEMS

NKT Flexibles is offering the option of including integrity monitoring systems with deliveries of flexible risers.

The monitoring systems are designed to meet the increasing focus on continuous monitoring of installations, and will provide valuable information for integrity management and condition dependent maintenance.

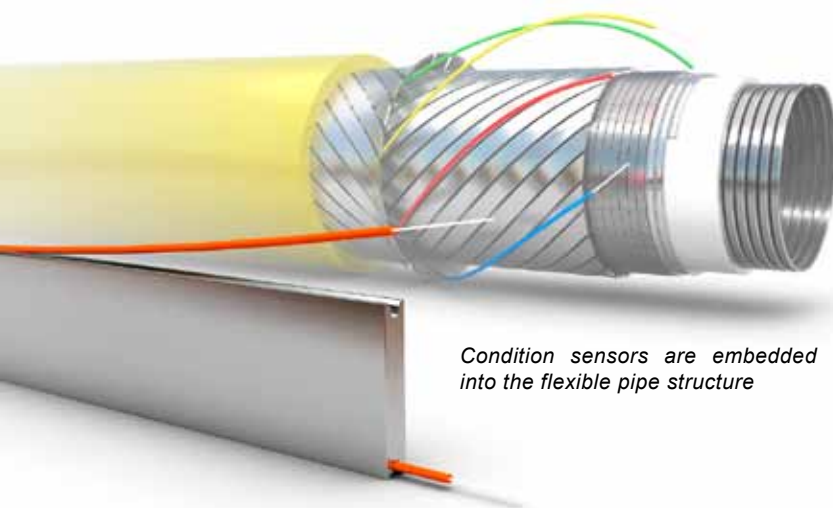
The monitoring systems are based on sensors embedded into the structure of the flexible risers. This enables access to points of interest not accessible with equipment clamped on the outside:

- inside the end-fitting
- inside I- and J-tubes
- under bending stiffeners



Fibers are terminated in a tight box at the end fitting

After pipe installation fibers are connected to the equipment placed in the control room



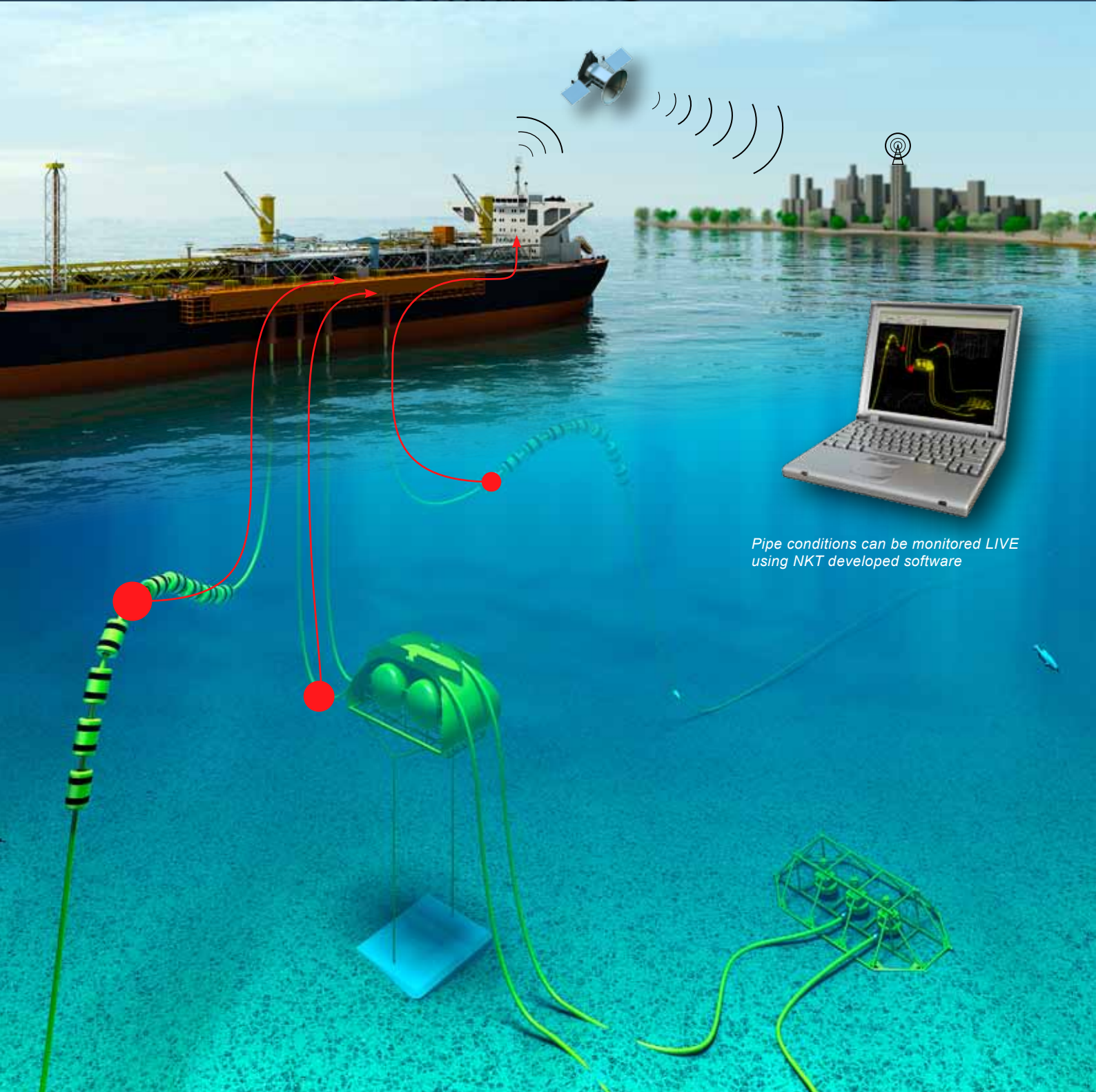
Condition sensors are embedded into the flexible pipe structure

Optical fibersensors are embedded into the tensile armour wires

APPLICATIONS

- *Continuous fatigue assessment through direct measurement of stress in the tensile armour wires*
- *Detection of breach of outer sheath (position and time of event)*
- *Monitoring of polymer temperature under bending stiffener (Warning for polymer overheating)*
- *Temperature monitoring along the entire pipe length during shut-down (prevent hydrate clogging)*

Embedded Sensing Systems



*Pipe conditions can be monitored LIVE
using NKT developed software*

System Assessment Services

Rev. 1/2010

NKT
Flexibles

Priorparken 480, DK 2605 Brøndby, Denmark
www.nktflexibles.com / sas.info@nktflexibles.com
Telephone: +45 4348 3000. Telefax: +45 4348 3010