Floating Production Storage and Offloading Project

**PROJECT DETAILS**

**Client:** A Global Oil & Gas Company  
**Location:** Barents Sea, Norway  
**Completion Date:** December 2014  
**Contract Scope:** Engineering Design and Material Supply of Electric Heat-Tracing and Tubing Bundle, Control and Monitoring System using ABB DCSi  
**Applications:** Temperature Maintenance, Freeze Protection, Anti-icing/De-icing  
**Technology:** Raychem Self-Regulating Heat-Tracing Systems, ABB Industrial IT Control System, Raychem RTB Tubing Bundles

**KEY CHALLENGES**

As this was one of the first oil fields developed in the Barents Sea, it inherently brought with it many challenges including effective protection from the Arctic climatic conditions and icing of the platform. The client, together with another global oil and gas player, chose to develop the field using Sevan Marine’s cylindrical Floating Production Storage and Offloading (FPSO) concept. This FPSO is designed to operate under the challenging conditions found in the Barents Sea. When packaged with a de-icing strategy for the decks, handrails and stairs, it is equipped to meet the strict environmental requirements stipulated for operations in the Arctic climate.

The severe Arctic conditions and de-icing requirements, limitation of electrical power load (in order to limit the overall FPSO weight), and very little experience with the NORSOK design presented some challenges, as well as standardization of the Control & Monitoring System.
SOLUTION
Pentair’s Industrial Heat Tracing Solutions regional teams were able to successfully execute this project through extensive internal collaboration and detailed communication with key customer stakeholders. The European team provided Arctic climate experience, and executed the Control & Monitoring design and packaging requirements. Meanwhile, the Asia Pacific team provided extensive Marine/FPSO knowledge, and executed the Electric Heat Tracing & De-icing Design portion.

Winterization of the escape way was executed by utilizing Humovoll’s Deck Coating Solution, which is dependent on Raychem Self-Regulating Heating Cable Technology. Pentair’s Industrial Heat Tracing Solutions design team was involved in the customer’s 3D modeling work (PDMS) which allowed for fast responses to design revisions and updates, such as the placement of junction boxes and end seals.

Through the use of TraceCalc Pro, the client was offered a quick and easy guide to the layout of their heat-tracing design, which included managing heat loss, and minimizing the number of circuits and electrical loads. This design map was created while providing an automated heating cable and component selection at the same time using Pentair’s proprietary software solution.

PRODUCTS
To meet the needs of this challenging application, Pentair Industrial Heat Tracing Solutions offered the following Heat Management System:

- Raychem Self-Regulating Heating Cables for Temperature Maintenance and Freeze Protection
- NGC-30 Multi-Circuit Heat Tracing Control, Monitoring and Power Distribution System
- OneCo Stainless Steel Junction Box and Connection Accessories
- Engineering, Design and Project Management Services

BENEFITS
Utilizing Pentair Industrial Heat Tracing Solutions Heat Management System, the client was able to meet all of the requirements set for this project. Pairing Raychem Self-Regulating Heating Cable Technology with the NGC-30 Controllers substantially reduced the energy consumption with accurate power output to minimize the heat loss of the pipes and vessels. A centralized Control & Monitoring System provided information on the status of heat-tracing circuits, and better reporting enabled predictive maintenance which reduced costs and improved overall performance.

With decades of experience in designing, manufacturing and installing heat management systems, Pentair Industrial Heat Tracing Solutions was able to provide a comprehensive solution to satisfy the customer’s unique needs. The use of multiple heat trace technologies, heat tracing circuits, and power distribution panel boards ultimately led to the overall success of this project.

Pentair Industrial Heat Tracing Solutions provides unique solutions for various applications and offers a full suite of optimization strategies customized for a given application resulting in the highest reliability and performance at a reduced CAPEX/OPEX for the project.