



Infrared helps to Produce High Performance Thermal Insulation System for Pipelines

Subsea pipelines are used to carry oil and oil/gas mixes from subsea wellheads to onshore refineries or offshore processing platforms. Oil discharges from wellheads at temperatures, typically, between 80°C and 160°C. To prevent wax and hydrate formation, which could restrict oil flow, it is important that the oil does not cool significantly in the ambient subsea temperatures. Consequently, pipe insulation is vital. Conventionally, this was achieved by pipe-in-pipe manufacture, where the space between the inner and outer pipes is filled with lightweight insulation material. This is expensive to produce and because it uses two individual steel pipes, it is also heavy. A reel pipelaying vessel can only carry a restricted tonnage, which, in turn, restricts the length of pipe it can lay before returning to port for re-loading. The new, patented, Bubbletherm pipe of the Barrier Group, is cheaper to produce than competitive pipe. It is now possible to lay pipe with reduced reload cycles and with lower levels of tension. When the pipe is laid from a "S" lay vessel, it is possible to lay 20 km of pipe in 11 days compared with the 45 days of its pipe-in-pipe counterpart. An important step in the manufacture of the new pipeline system is the application of the polypropylene protective wrap. This is carried out as a continuous process, where the wrap is overlapped to provide a three ply coating. The infrared system comprises five modules. The first module is used to provide rapid activation of the adhesive on the wrap, the second heats the top of the wrap to maintain flexibility. The third module provides additional heat before the wrap is brought into contact with the insulation and the final two modules apply heat to the insulation as it is rotated to ensure that hot adhesive is not applied to a cold surface.

The QRC emitters provide high energy short wave radiation rapidly and responsively. They feature a new quartz reflective coating, which ensures the stability of process parameters, such as temperature and coating homogeneity. Dave Robinson, adhesives consultant at Barrier, explains, "The high power and the response of the infrared emitters are vital to the curing process. The Heraeus units are capable of bringing the adhesive very rapidly to its working temperature and, just as importantly, they can switch off very quickly, so that there is no damage to the wrap material".



Features

- Manufacturing of insulated tubes for subsea pipelines
- Application of the polypropylene protective wrap instead of pipe-in-pipe manufacture
- Infrared heaters cure adhesive
- laying of 20 km of pipe in 11 days compared with the 45 days of its pipe-in-pipe counterpart

Technical Data

- Five modules with 24 QRC heaters
- total power of 50,4kW
- QRC heaters with nano reflector, short wave
- Precise temperature control by optical pyrometers for modules 1, 3 and 5

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