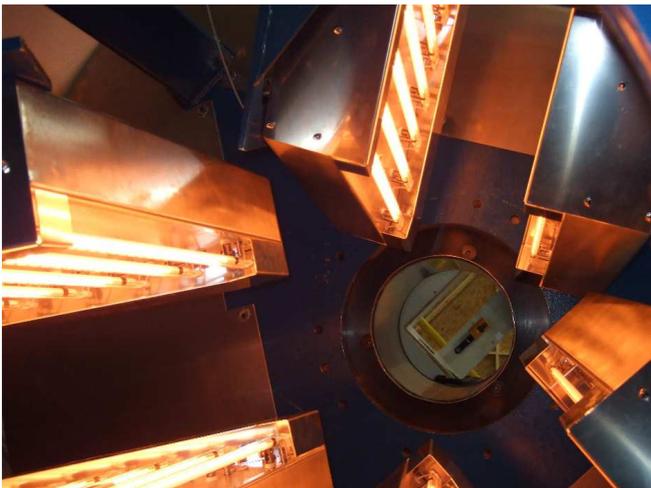


Infrared heat helps manufacturing Pipelines

High power infrared emitters from Heraeus Noblelight, fitted with newly developed opaque quartz reflectors, are helping to ensure the bonding of a high-tech polypropylene composite coating on pipeline manufactured using an innovative pipeline construction technology. The custom-built shortwave infrared system is moved around the pipe to allow the infrared heaters to be located as close as possible to the pipe surface.

The new pipeline construction technology, X200, from Pipestream Inc, a portfolio company of Shell Technology Ventures Fund 1, relies on using a thin-walled pipe for fluid containment, with the pipe's hoop strength being conferred by strips of martensitic steel which are helically wound around the thin-walled pipe, at diameters up to 24 inch. The assembly is then coated with a suitable coating material, such as polyolefin tape. Pipe manufacture, including coating, is a continuous process producing continuous pipe lengths in excess of 450m. The individual manufacturing stages are fitted within standard ISO containers, so that pipe manufacture can be carried out at point of use, allowing faster installation, shorter project lead times and higher pressure ratings.

The manufacturing process is a three-stage one. First stainless steel is formed and welded to create the inner liner. The martensitic steel strip is then helically wound on and fixed to the liner. Finally, a polyolefin tape is helically applied, both for insulation and for corrosion protection. This is bonded to the pipe by an adhesive, and the high power infrared heaters are used to heat the pipe before the coating tape with its adhesive is applied. As the coating tape is a thermal insulator, it is not possible to cure the adhesive through the coating. However, one pair of heaters heats the tape itself to maintain flexibility. There are three pairs of high power short wave modules arranged around the pipe circumference. QRC® infrared emitters used in this application provide high energy short wave radiation rapidly and responsively. Their quartz reflective coating has a special nano- and micro-structure which ensure the stability of process parameters, such as temperature and coating homogeneity. The emitters operate at around 2000°C with a power density of 300 kW /m², enabling them to provide very large amounts of heat rapidly and efficiently to exactly the point of use.



Features

- Manufacturing of pipeline tubes up to 450m length
- Coating of the tubes with polyolefin tape to avoid corrosion
- Infrared heaters cure adhesive on tape

Technical Data

- curing adhesive under martensite to 200°C so bonding the strip to the stainless steel inner liner, then reactivating the adhesive on the polypropylene out layer to 160°C
- QRC heaters with nano reflector, short wave
- 3 pairs of modules rotating to match the winding speed of the tape
- zone-controlled by pyrometers to provide hold temperatures to ±3°C

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