Infra-red speeds up manufacture of connectors for concrete clad, plastic-lines wastewater pipes

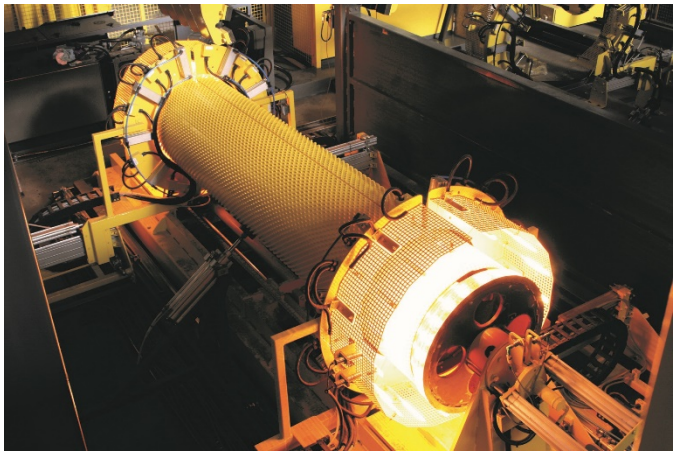
The Mueller concrete works in Achern, Germany manufactures new and revolutionary drainage pipe systems, so-named PERFECT pipe, which have been originally developed by Schluesselbauer Technology GmbH of Gaspoltshofen, Austria. In essence, pipes are formed from plastic, fitted with socket joints and clad in concrete. The concept is to create a permanent, tight connection between the inner liner of high grade plastic and the pipe of high strength concrete. The resulting waste water pipes are both resistant to aggressive substances in the waste water and also capable of withstanding the high static loads to which they are subjected, especially when buried underground in roads which carry a lot of traffic. In addition PERFECT pipes are easy to handle on construction sites and reliable in operation.

To manufacture the pipe liners, sheets of high grade polyethylene (HDPE) are first cut to the required lengths. Thus HDPE liner sheet is extremely corrosion- and abrasion-resistant. On its reverse side it carries many small protrusions, called anchors, which are used later to create a firm connection with the concrete. With the aid of a robot, the sheets are then welded up as cylinders. To achieve connection between pipes by means of the internal PERFECT connector, the cylinder ends are thermoplastically deformed around the connector. Originally, this was done using a hot connector tool but today a custom-built Heraeus infra-red system is used.

The heart of the Heraeus system lies in short wave infra-red emitters, each of 120mm heated length and a nominal power of 1000 Watts. The emitters are arranged in a circle and this emitter ring can be flexibly adjusted to suit the particular pipe diameter. The emitter power output is controlled so that the temperature can be controlled by means of pyrometers.

By using the new infra-red system, there is no need for pre-heat of the pipe ends and heating itself is now contact-free. As a result, the whole process is much faster and there is no possibility of plastic material sticking to the heating source.

Finally, the sleeved pipes are clad in liquid concrete in a process developed by Schuesselbauer.



Features

- Targeted heating of the plastic
- Contact-free heating
- Extremely energy-efficient, as the infra-red emitters are switched on only when heat is required.

Technical Data

- Short-wave infra-red emitters with a nominal power of 1000 Watts per emitter
- 120mm length emitters tailored to the application.

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