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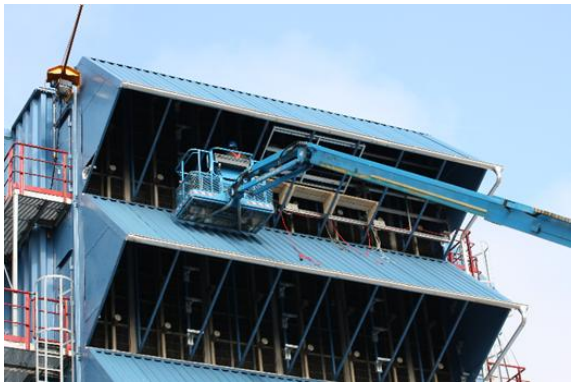

IR-Anti-Icing-System Increases the Up-Time of Gas Power Plant

Modern combined-cycle (gas and steam turbine) power plants generate electricity at a relatively high efficiency of around 60%, significantly higher than conventional power plants at around 40%. Moreover, they can be brought on line very quickly and so are used to handle medium and peak electricity demand loads. Electricity consumption is not steady, but demand is in peaks and troughs. To meet this, fast-acting power plants must be used. These can provide high power output within minutes. Gas power plants offer this capability, and they rely on a supply of clean intake air. If the inline filters become iced up, this can lead to a plant shutdown. An efficient de-icing system, which above all must operate quickly and reliably, is therefore essential to guarantee the availability of the power plant even in the cold winter months.

FEATURES

- Nonwoven material filters arranged in arrays of small filters within large filter housings
- Anti-icing systems with infrared emitters
- Infrared heaters use less power and are easier to install than other heating techniques

TECHNICAL DATA

- Medium-wave infrared heaters
- Areas of 8.8 x 4 m with 24 emitters each
- Total power output of 236 kW
- Frames each containing three 2.20 m-long emitters
- Modules can be easily switched on and off and controlled from a switchboard or the main control room

Trianel GmbH is a co-operative of 47 public utilities. The experience of the last two particularly harsh winters caused Trianel to consider enhancing its existing anti-icing systems. Any solution had to be easy to retrofit and very responsive. The plant in Hamm previously used waste heat from electricity generation for filter de-icing. This hot air is blown onto the pocket filters, made of fleece material. However, there can be local hot and cold zones, especially when the hot air is not distributed sufficiently. In contrast, infrared radiation has significant benefits. Energy is transferred without direct contact and generates heat within the material itself. In addition, infrared heat is rapidly available, and the heating process is more energy-efficient than many conventional methods.

“I am convinced that infrared systems can heat the filters comprehensively and evenly without significantly impairing the cross-sectional airflow of the intake air,” says Thomas Kleinwaechter, manager of technical management and maintenance in Hamm. Trianel also emphasized that the de-icing enhancement system was a complete turnkey solution. There was a time window of only three weeks for the total electrical and mechanical installation and this work had to be carried out at heights of 11 to 25 meters. The co-operation between the power plant staff and Excelitas worked so well that the system was fully operational in just two weeks.