

APPLICATION NOTE

Application of FISCHER products

AN023en

Thickness measurement of INCONEL[®] coatings on waste heat recovery boilers

Known for their resistance to oxidation and corrosion, Inconel alloys are often used in extreme environments subject to high heat and pressure. This is why Inconel coatings are often used in waste heat recovery boilers, which recycle the energy contained in hot exhausts given off by various manufacturing processes. However, to assure the functionality of the coating, a minimum thickness must be guaranteed, and thus, measured precisely.

Energy that would otherwise be lost in discharged exhaust is captured and reclaimed in waste heat recovery boilers. The hot flue gas is fed into the boiler where it heats up water flowing through pipes within the housing, producing either hot water for use in other industrial purposes or, depending on the temperatures involved, steam that powers a gas turbine to generate electricity.

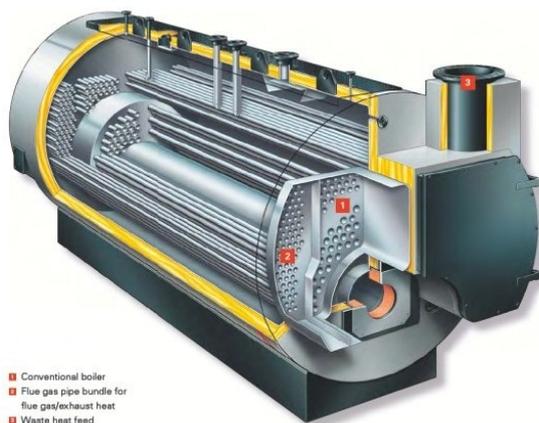


Fig. 1: Looking inside a waste heat recovery boiler

To protect them against these often aggressively corrosive gases, the pipes are coated with a 2 mm thick layer of Inconel material. However, once this protective coating wears down to less than 1 mm, the pipe bundles need to be retrofitted. This is why monitoring the thickness of the Inconel coating is so important during maintenance of waste heat recovery boilers.

The DELTASCOPE[®] FMP coating thickness measuring gauges rise to the challenge of this application. The external FGB2 probe allows free positioning, enabling measurements from any angle on the pipe bundles. The measuring range for this probe is 0-5 mm – with an accuracy and precision of less than 1.5% for readings on coatings between 0.1 and 3 mm thickness. The matrix mode of the FMP software delivers a nice overview of the coating thickness distribution over the various pipe bundles. Measurement results can be easily transferred to a computer for evaluation, recording and storage using the convenient FISCHER DataCenter software.



Fig. 2: DELTASCOPE[®] FMP30 with the FGB2 probe, ideal for Inconel coating thickness measurements.

To avoid the costly – if not disastrous! – consequences of corrosion damage on pipe bundles in waste heat recovery boilers, the thickness of the Inconel coating must be inspected regularly. The DELTASCOPE[®] FMP instrument with the FGB2 probe makes this task easy. For further information please contact your local partner for FISCHER products.

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