



FOR ALL YOUR THERMAL PROCESS REQUIREMENTS

CASE STUDY

Forge Reheating Furnaces

Magma Combustion Engineering completed a project for a major UK forging company, which included the design, supply, installation and commissioning of four fixed hearth reheating furnaces.

AIM

The customer had a number of requirements for the new furnaces to comply with, in order to increase output and reduce operating costs. Firstly, a close temperature tolerance of $\pm 10^{\circ}\text{C}$ within the working envelope was required throughout the operating temperature range of 700°C to 1250°C , to allow processing of ferrous and other grades of material for aerospace applications. Secondly, the furnaces had to have minimal fuel usage, which, because of the intermittent nature of their operation, necessitated the use of low thermal mass linings, together with tight control of air/fuel ratio across the burner operating range. Finally, the geometry of the furnaces had to allow an existing manipulator rapid access to heated stock, to minimise uncontrolled heat loss during forming.

SCOPE OF THE WORK

Working to the above brief, four fixed hearth furnaces were designed, supplied, installed and commissioned. These were constructed to the standard required for the heavy industrial environment in which they are sited, whilst incorporating such features as low thermal mass ceramic fibre linings, high velocity burners, and sectional doors. Additionally, each furnace was controlled by a PLC based process automation system, incorporating advanced algorithms, with a touch-screen HMI.

BENEFITS

The four furnaces were constructed and commissioned over a period of time, without disturbing production operations. By meeting all the objectives set for the new furnaces, in particular that for close tolerance control with temperature uniformity surveys that fulfilled the requirements for furnaces reheating material to be supplied to the aerospace industry, the operating economics of the plant and its ability to meet customer requirements were substantially enhanced.

CONTACT US

Want to know more about how Magma can help you?

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PHOTOS

A selection of photos from this case study.



Fig. 1 Split door reheating furnace.



Fig. 2 Burners on reheating furnace.

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