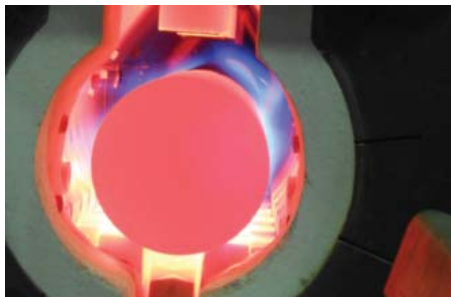


New Otto Junker billet heater at MKM in Hettstedt

Otto Junker GmbH and MKM Mansfelder Kupfer und Messing GmbH of Hettstedt in Germany, the noted copper and brass processing company, are glad to report the successful start-up of a new gas-fired billet heater. The new system replaces a previous heater supplied in the early 1990s which was designed mainly for brass stock at the time.

The new design is aimed mainly at lowering the energy consumption, in addition to achieving a better heat distribution throughout the billet and improved ease of operation. In order to maximise the efficiency of the heater plant, a number of measures were taken. Thus, Otto Junker developed new burners which deliver higher fuel efficiency and can operate on preheated air for combustion.

"After close to 20 years, and in the face of an altogether different set of requirements, investing in a replacement was the logical step for us", recalls Eberhard Topf, Head of Maintenance for the tube/rod product segment at MKM Mansfelder Kupfer und Messing (MKM).



2 View of the heater interior

Heat utilisation

The exhaust gases first pass through the exhaust duct above the heating chamber into a heat exchanger which uses part of the energy for preheating the combustion air. From here the still hot exhaust gas is fed into the 18-metre-long preheating zone which consists of three individual preheat chambers. In these chambers, the hot gases are repeatedly blown onto the billets at high velocity. Thus, a large portion of the energy still present in the exhaust gas is used to preheat the billet before the exhaust gas is discharged into the stack at a temperature of around 200°C. Such energy as it still carries is then further utilised in part by MKM for its hot water supply, so the energy input is exploited to the fullest extent possible.

The newly developed burners and the optimised burner arrangement in the heating chamber make for an improved heat transfer into the billet. In addition, a tight-closing door was fitted at the heater exit end. "Together with the refined walking beam sealing system, the heating chamber is thus sealed off as effectively as possible to keep the energy inside the heater and to prevent any ingress of oxygen", reports Jan van Treek, Project Manager at Otto Junker.

"The walking beam allows us to work with a gap of a few millimetres between the billets, which effectively prevents them from sticking. Inside the heater this gap will close again as a result of the thermal expansion", Eberhard Topf explains.

Pyrometer-based temperature measurements taken vertically from above, in conjunction with the

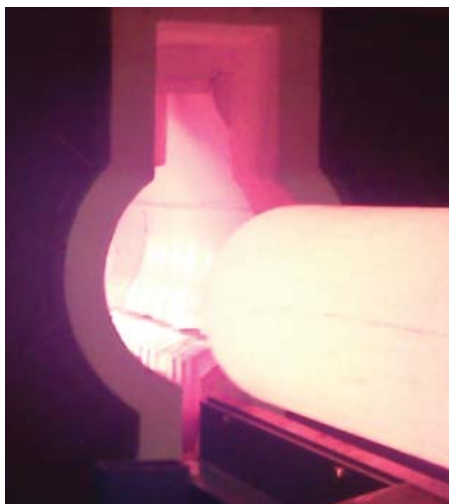


1 Overall view

walking-beam system, facilitate changeover between different billet diameters. Another highlight is the redundant temperature monitoring feature: along with the proven temperature profile which ensures step-by-step heating of the billet column and adapts dynamically to the press cycle, the temperature of the heating chamber is now monitored as well for increased safety.

Rapid transfer

Billet discharge is effected by means of a gripper car which enters the heater chamber to lift the billet up and extract it from the heater. The car transfers the billet to the overhead cross-conveyor supplied, which places the billet directly in MKM's billet



3 Billet discharge

loader. This design effectively minimises the furnace-to-press transfer time. The visualisation system allows the operator to check all key parameters at a glance and to track all billets related to each given job.

Upon completion of pre-assembly the customer used the opportunity to inspect the system at Junker Industrial Equipment in Czechia (Czech Republic) and to carry out some advance functional tests. In the course of this visit, MKM was impressed by the production capacity in place and by the solid build quality of the equipment.

Now that the system has been successfully commissioned, more benefits are becoming evident. "The new system has enabled us to outperform a 10-year-old production record this year. Moreover, we haven't had any sticking billet problem yet, whereas these used to occur at least once a month with the old system," explains Patrick Leidenroth, Manager of Tube/Rod Production, MKM, "and we have been able to increase our product quality further, which implies additional benefits for ourselves but most of all for our customers as well."

Otto Junker wishes to thank MKM's staff for their pleasant and constructive cooperation. The system thus put into place has set new standards in heating of copper billets, providing a cost-efficient technology that combines high performance with a maximum of safety and reliability.

Reader Reply No.38

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