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by extrutech[®] 4.0



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Extrutech's in-house exhibition shows the potential of new heating solution EHK0 and many other innovations.

Extrutech headquartered in Germany, the specialist in heat transfer technology for metal extrusions, invited national and international customers to an in-house exhibition at its Menden site near Dortmund, Germany. From the 21st to the 29th of February, customers were able to see the latest developments in extrusion equipment. The event's

highlight was the daily heat-up tests of the new electric resistance-heated, high-velocity convection furnace (EHKO) for heating aluminum logs.

EHKO testing zone confirms high thermal efficiency of new heating concept

The main customer attraction in Menden was the test heater equipment of the newly developed heating system, the EKHO. This heating concept uses electric-resistant heated elements as a heat source and distributes the air in a convection process to the logs. Special about that new heating system, is the outrages thermal efficiency of 87%.



EKHO testing zone shown at the customer event

A test heater zone was built and commissioned at the Menden site last year to validate the new heating concept. It consists of a 2.5-metre-long section for 12-inch logs and its heating power of 280 kW is generated by an array of resistance heating elements. The heating tests confirmed the previously simulated data. Visitors to the customer event were able to observe the control behaviour for themselves. The test kiln will remain available for future customer demonstrations.

In real continues production situations, the EHKO heating concept is always operated in combination with an induction oven. With this combination, the most efficient base heating can be combined with all

the advantages of an induction furnace, such as accurate taper heating. The already proven “In-line” system, so far, a combination of a gas heater with an directly attached induction oven, will also be used in the new concept. The gas heater is replaced by the EHKO. In this way, the many advantages of the “In-line” setting, such as space reduction and the not-needed overhead manipulator system, result in a considerable reduction of the customer’s investment cost. The EHKO In-line version is a pending Extrutec patent.



EHKO heater in operational setting as “In-Line” (left) and offline (right) version with integrated Eco Shower Unit (ESU)

Integration of an Eco Shower Unit (ESU) as part of the EHKO heater

Another proven system from the Extrutec gas heaters can be transferred to the new complete electric heating system, the Eco Shower Unit. Until now, the ESU transfers exhaust gases from the gas heater into hot water and distributes them over the logs even before they enter the actual heater.

As a result of the high efficiency of the EHKO, waste heat is not generated. As an additional source of the needed heat, every other heat-intensive process of extrusion plants can be considered. Foundry equipment, anodizing, or even air compressors can be used to transfer the heat to the ESU and then preheat the logs in the

extrusion process. The Eco Shower Unit is a worldwide patented system of Extrutec, which has been sold over 40 times. With the integration of the ESU, a maximum thermal efficiency of up to 90% (considered for the extrusion process) can be achieved.

New log cleaning system

Extrutec offers a new and improved brush system to clean logs and billets, in addition to high-pressure cleaning systems that use hot water. Although high-pressure cleaning is effective, the 11-kW pump used to operate the equipment requires regular maintenance and can be prone to breakdowns depending on the contaminants. The new brushing device uses four brush units that completely surround the log at 90° angles, making log cleaning more effective and efficient without the need for a high connected load pump.

nEXT4.0 digitalisation system

The nEXT4.0 digitalisation system offers a software solution to record and evaluate the performance data of Extrutec equipment in real-time. nEXT stands for Next Level

Extrusion and means the new level of possible improvements while using data. The system includes a remote support modem, which allows Extrutec to access the equipment remotely. The remote support modem enables them to capture, visualise, and evaluate all SPS data. The equipment's built-in sensors provide information on the condition of specific components, such as the saw blade on the hot saw, allowing for predictive maintenance in later stages. nEXT4.0 can identify general optimisation areas, analyse faults, and efficiently solve equipment problems remotely. The application can be operated both online and offline for



IT security reasons. In offline mode, data access is only available when logged into the company network.

Induction furnaces with improved power electronics

Extrutech induction furnaces come with a new type of frequency converter as standard. The power electronics have been improved, and existing equipment can be retrofitted with new, efficiency-boosting components. Additionally, all in-line furnaces are now equipped with MIBu-type converters to feed the induction furnace module. Compared to conventional IGBT converters, MIBu converters do not require power factor compensation. This results in energy and space savings. For each induction unit, four capacitor fields are saved, freeing up three square meters of floor space. Additionally, the demand for re-cooling systems and induction furnace monitoring requirements are significantly reduced.



The initial furnaces that were equipped with the new converter technology were supplied approximately two years ago. Since then, Extrutech has replaced several older switchgear units with this new converter topology, resulting in significant improvements in efficiency and process management. This modern technology is maintenance-free and provides a significant advantage over mechanical switchgear systems and even those equipped with thyristor elements. These systems produce high inrush surges during the switching process. This technology can result in exciting energy savings of between 5 to 10%.

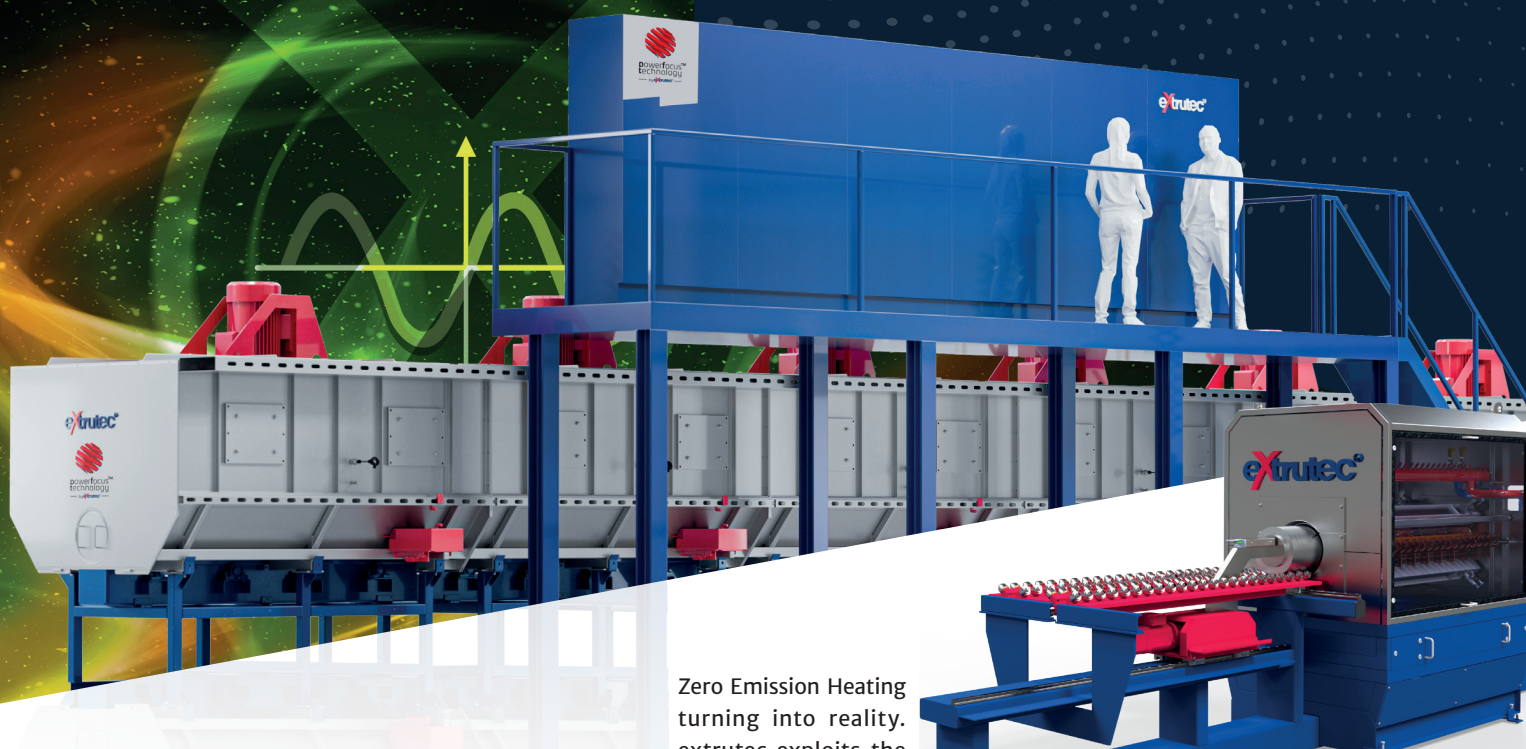
By installing a new switchgear system, including new controls and a converter, it is possible to retrofit even 40-year-old equipment. This allows customers to operate their existing induction furnaces more efficiently, using the same coils and mechanical components. The investment costs for this retrofit are much more favourable compared to a complete equipment replacement.



Showing of the new power electronics during the customer event

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Take the green way for extrusion Technology



Zero Emission Heating turning into reality. extrutech exploits the potential of electric log/billet heating systems to the fullest. By combining two electrical heating systems, the newly developed electrically heated high-velocity convection furnace (EHKO – efficiency of up to 87%) and a state-of-the-art induction furnace, with the patented hot water pre-heating Eco Shower Unit (ESU) efficiencies above 85% are achieved. extrutech – solutions for the sustainable production of extrusions.

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