

# Extrutec is adept at rapid heating

A gas/- inductive log heating equipment in patented 'In-Line' version is available from extrutec, along with hot log saws.

Extrutec rapid heating systems usually consist of a log magazine with downstream installed gas fired rapid heater, which include a preheating zone and a directly heated gas oven section. Directly after the heater usually a hot log saw is installed, that cuts the logs to the desired length, that then are delivered the extrusion press.

A key feature of extrutec's gas heater technology is its special burner technology, which is used in conjunction with a high convection preheating zone. The general aim is to use as much log surface as possible to transfer the heat to the billet, so that as little energy as possible is required for the heating process and a high degree of thermal efficiency can be achieved.

In the high convection preheating zone, the hot exhaust gases coming from the directly gas heated furnace section are blown at high speed using slot nozzles perpendicular to the log surface to achieve in this area preheating of up to 180 °C.

In the directly gas-fired heating section, the logs are then brought to the desired final temperature with a large number of burner



This photo shows an IAS induction heater installed directly after the extrutec gas heater in patented 'in-line' configuration during workshop assembly.

nozzles. Here, temperature gradients up to 1.4 Kelvin/sec are achieved.

## In-line

Particularly successful is the so-called 'in-line' concept, a combination of the extrutec gas heater with an induction heater supplied by the cooperation partner IAS (Part of SMS Group). Here, the gas and induction heater are installed directly in line one after the other. The basic heat up process to 80-85% of the target temperature takes place in the gas heater while in the downstream induction furnace a multi-

stage temperature profile over the longitudinal axis of the billet is applied to allow isothermal extrusion at high press speed.

Compared to the conventional stand-alone solution, this has a number of advantages:

- The induction heater in 'in-line' concept is one coil shorter than in 'stand-alone' concept. This reduces the connected load and accordingly the installation costs
- The 'field extender', a water-cooled counterholder, is eliminated. This saves energy and water
- The temperature deviation from the set point is better for the in-line concept than for the standalone version
- The investment costs are reduced considerably, since not only the field extender is eliminated but also the billet transport after the hot saw (2-axis manipulator) and the loading unit of the standalone version.

Latest installations of extrutec/IAS In-Line Heaters were made at apt Extrusions GmbH & Co. KG in Monheim, and Hydro Extrusion Germany GmbH in Uphusen beginning of 2018.

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## Die heaters in overhead arrangement



With this method Extrutec provides full automatic heating of extrusion dies from room to desired extrusion temperature with minimal energy consumption while reaching tight temperature tolerances of  $\pm 5^{\circ}\text{C}$ . The cold dies are placed by the operator/ automatic die crane on a handover position. Upon request the dies are picked up by the integrated service shuttle and loaded in the next available pre-heated oven chamber and heated up to desired temperature according to the heat -up recipe chosen. The retrieval of the hot die is done in reverse order either after request of the operator or via signal exchange by the extrusion press to have the required die available in time for the next die change.

The advantages of the overhead configuration are:

- Space saving system. Charging and discharging in full automatic mode via onboard service shuttle
- Highly efficient and energy saving solution because of overhead arrangement. The heat stays inside the heating chambers during charging and discharging
- Convectional die heating with electrical damper registers arranged symmetrically around the recirculation fan (no radiation is used so no overheating of dies is possible)
- Fast heat input resulting in short heat up cycles



Die heating system installed at Aluminium Laufen in Switzerland.

- Homogenous heat distribution (cross flow) and gentle electrical heating of the dies and therefore tight temperature tolerances and long life cycle of the dies
- Onboard electrical cabinet with operator's panel integrated
- High temperature accuracy
- Highly efficient chamber insulation
- Reliable long living and nearly maintenance free design

Customers can also opt for a protective atmosphere, an optional version with 2 dies and 2 doors per heating chamber, additional onboard storage capacity for various dies, and having a connection to an automatic die crane system, connecting the die heater with the extrusion press as well as with the die stock system.

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