



WIREKÖRNER

Ofenanlagen für Draht und Band
Furnaces for wire and strip



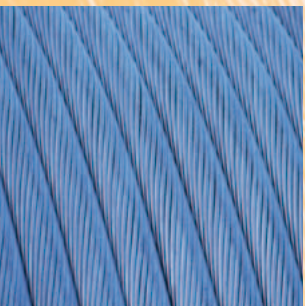
Patenting furnaces

FOR RESOURCE-SAVING
WIRE PRODUCTION

PRECISE ATMOSPHERE CONTROL

LOW ENERGY COSTS

RESOURCE-SAVING TECHNOLOGY



**WIRE
KÖRNER** furnaces
always consume
exactly the amount
of energy which
they need in a
specific moment.”

There are three ways to achieve efficient energy use:

- take the energy exactly where it is needed,
- avoid heat loss,
- exploit waste heat.

Wire KÖRNER combines all three elements in the design of its directly heated patenting furnaces. They consume between eight and ten percent less energy than common furnace designs of the past.

Energy-conscious

High-speed burners transfer the heat at flow velocities of up to 120 m/s into the wire by convection. This provides much better energy efficiency than heating by radiation. The heat input by the high-speed burners employed by Wire KÖRNER can be adjusted in several steps. This ensures that the burners consume exactly the amount of energy they need, not more.

To minimize heat loss via the furnace wall, Wire KÖRNER has optimized the layout of the wall, among others by means of insulating ceramic fibers. An additional coating ensures a long service life of the furnace wall even under conditions of high CO contents and high flow velocities.

An up to 2.5-mm-thick layer of Microtherm® high-temperature insulating material behind the furnace lining provides additional protection against heat loss and optimal insulation also at high temperatures. Proof of the highly efficient containment of heat losses is the low temperature of the outside furnace shell, which is below 50 °C.

The low heat storage capacity of the furnace wall additionally affords the benefit that also during heating up of the furnace energy consumption is minimized.

Innovative

With an innovative sensor, Wire KÖRNER has for the first time implemented a system for furnace atmosphere control, which – with great precision – adjusts the proper air/combustion gas ratio. Equipped with this system, the new furnaces are clearly superior to conventional pre-mix systems in terms of regulating precision and stability of the gas/air ratio.

The atmosphere in the first zone of the furnace is slightly oxidizing in order to remove all residues of drawing emulsion. In the middle zone, combustion is stoichiometric, requiring little energy. In the third zone, a reducing atmosphere avoids scale formation.

In addition to the savings on energy, controlling the air/gas ratio keeps NO_x emissions low and prevents decarburization of the wire.

The furnace temperature is adjusted with a precision of ± 2 °C.



Eco-friendly

A central recuperator installed in the flue gas duct reduces the flue gas temperature at the stack from 600 °C down to 400 - 500 °C, while preheating the combustion air for the high-speed burners to 200 - 250 °C. Already in the preheating zone, Wire KÖRNER exploits the thermal energy of the flue gases to heat up the wire.

A special feature of the furnaces is their capability of complete combustion. The counter-current flow inside the furnace transfers excess CO into CO₂ in the last zone.

ABOUT WIRE KÖRNER

Wire KÖRNER GmbH designs and manufactures plant and equipment for the complete process chain of wire and narrow strip heat treatment, from the drawn wire through to the finished end product. The range of heat treatment plants comprises bell-type, chamber and channel furnaces for patenting, annealing, galvanizing, hardening, tempering and chemical treatments. The company provides design, engineering, manufacture, erection, commissioning and after sales service. Wire KÖRNER maintains a worldwide network of branches and licensees.

Wire KÖRNER's numerous quality and efficiency-enhancing innovations regularly attract the industry's attention. For example, the recently developed wire patenting furnace with an innovative atmosphere control system achieves substantial energy savings, or the recuperative immersion burner for ceramic galvanizing furnaces has been designed for very long service lives, just to mention a few examples.

Wire KÖRNER is a company of the KÖRNER Group, which was established in 1928. Thus the company builds on more than 80 years of experience in industrial furnace technology and auxiliary equipment. Within the group, Zink KÖRNER GmbH specializes in plants for batch galvanizing. TVT KORDT GMBH develops plants for thermal process technology, with a focus on industrial furnaces for the heat treatment of steels, special steels and non-ferrous metals.



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