

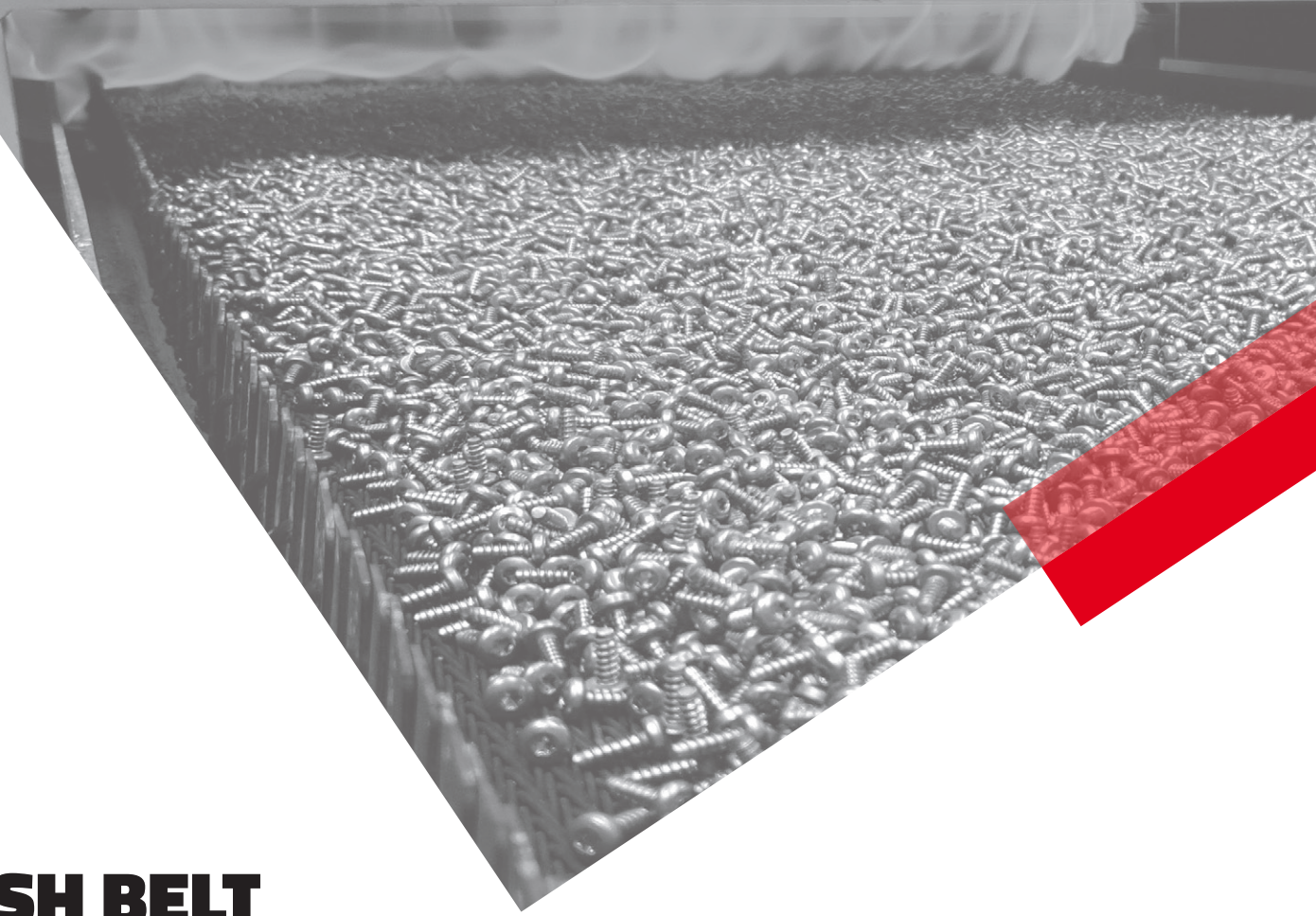


**SECO/WARWICK**



# MESH BELT CONVEYOR FURNACES

Workhorse for high-volume continuous heat treatments



# MESH BELT CONVEYOR FURNACES

Vortex Jet Airflow Coil Annealing Furnaces using High Convection



## INDUSTRIES

- / Automotive
- / Fasteners
- / Bearing
- / Tooling
- / Other type of small parts in mass production



## TECHNOLOGIES

- / Endo atmosphere or atmosphere based on liquid organic compounds.
- / Others protective atmospheres.



## PROCESSES

- / Carburizing
- / Carbonitriding
- / Hardening
- / Quenching
- / Tempering
- / Annealing

## CONTINUOUS MESH BELT FURNACES

If you produce light or medium weight parts where low cost, high volume production is required; a SECO/WARWICK mesh belt conveyor furnace will process your work efficiently and economically, typically free of oxidation and discoloration with less scale than other processes.

The furnace is particularly well suited to continuous production line operations accepting parts ready for heat processing and discharging them ready for assembly or packaging.



Because the furnace can be utilized for many heat processes, it is widely applied for parts or assemblies used in volume production industries such as automotive, home appliance, electronics, aircraft and hardware.



## BENEFITS

- / Durability of key components - mixer, muffle, belt
- / Repeatability of the results for a wide range of workpieces
- / Special technical solutions for crucial elements:
  - / Unique muffle design increasing its strength and service life time
  - / Special version of dual oil curtain
  - / Atmosphere mixers which provide excellent temperature uniformity and atmosphere distribution

- / Effective insulation enabling the reduction of energy power consumption
- / Special version of hardening oil tank designed to reduce deformation of the parts
- / Ultra-efficient washing machines

## MAIN FURNACE PTE/PTG TYPE

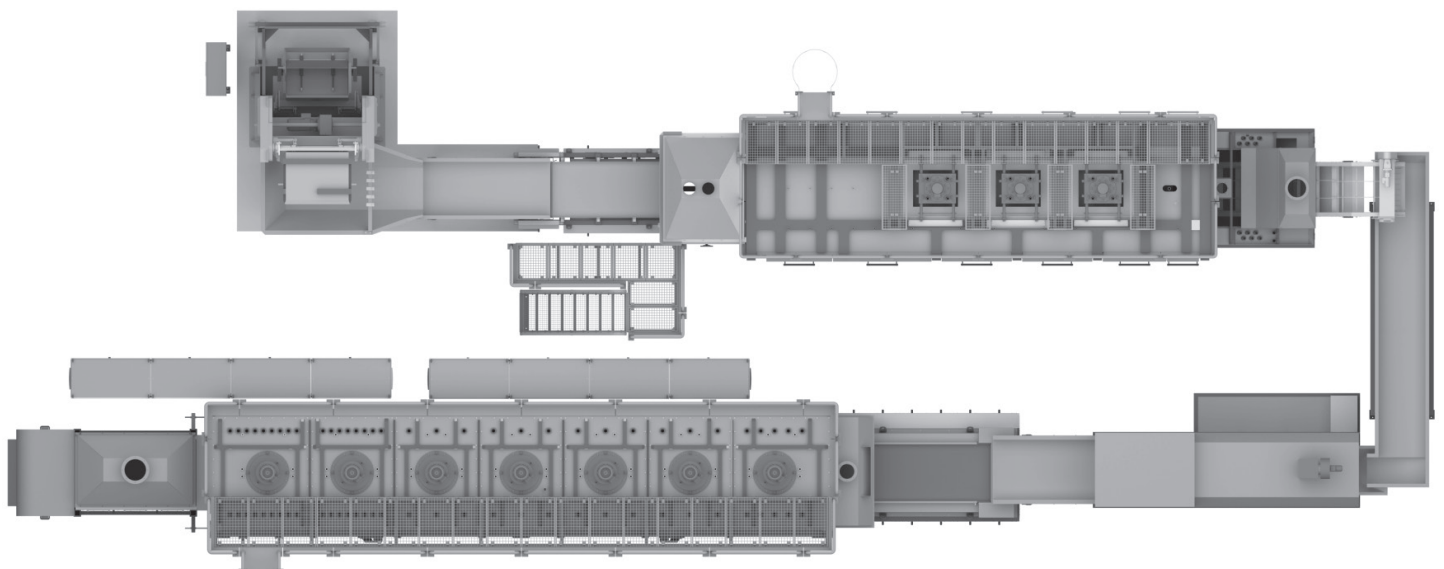
Mesh belt furnaces is designed for carburizing, carbonitriding, hardening and tempering of small parts. Parts given for the treatment are supplied to the belt by loading set, heat treatment in PT furnace is carried out under controlled atmosphere, created from the mixture of methanol, nitrogen, ammonia or ENDO, nitrogen, ammonia.

## HEATING CHAMBER ASSEMBLY

The furnace casing, when using welded gas tight construction, is lined with high temperature resistant brick insulation in the side walls and floor. The removable roof lined with a lightweight insulation, allows for easy accessibility to the heating chamber for maintenance.

## DOORS

Entrance door is manual, adjustable to minimize atmosphere consumption and contamination during the process.



## **HEATING SYSTEM**

In our solution we can propose furnace with electric heating system or gas heating system. Both of the solutions are used in these types of constructions. The heating elements or heating burners are placed vertically/horizontally at the both furnace sides along the heating chamber

## **BELT DRIVING SYSTEM**

The power unit of the belt is placed in the furnace frontal part at the transport belt inlet into the chamber. It is made as a frame construction of steel sections. At the frame there is a system of driving drums and tensioning drums installed, their function is also to maintain the straight movement of the belt.

## **MUFFLE**

Horizontally oriented muffle made from various grades of heat resistant and gas-tight welded sheets is placed inside the heating chamber of the furnace. In the upper side of the muffle a variety of ferrules is placed which are to hold atmosphere mixers, oxygen probe, atmosphere sample intake, furnace atmosphere inlet and enriching/leaning gases. This type of construction gives us very good results for temperature uniformity, cooling rates for different loads. Removable covers simplify periodic cleaning.

## **ATMOSPHERE CURTAINS - HOOD**

An air-gas flame curtain of the furnace ignites escaping atmosphere gases and minimizes air filtration. Exhaust hoods of the furnace carry away waste atmosphere and products of combustion.

## **OIL QUENCHING TANK**

The tank has the form of a rectangular container and is made from steel plate and sections. The whole structure is tightly welded and its walls have thermal insulation. On the tank a pump, supplying oil to the oil curtain in the furnace chute is mounted. On the lateral wall of the chute sight-glass, which

allows proper setting of the oil outflow in the oil curtain, is placed. The oil curtain prevents oil vapors from the tank from penetrating into the furnace.

## **TEMPERING FURNACE MBC TYPE**

Mesh belt furnaces MBC type is designed for low and high tempering of small parts. Parts given for the treatment are supplied to the belt by loading set, heat treatment in MBC furnace is carried out under nitrogen or air.

## **WASHING MACHINE**

The equipment serves for dipping and spray washing of the load and for its drying after washing. In the processes before Heat Treatment in the washing machine additional we can do defosfating. The tank for washing liquid has the form of a rectangular container and is made from steel plate and sections. It is placed on four legs screwed to the floor. A metal partition divides the tank into two parts or three parts (dependent of the process). In our solution we can propose rotary drum solution and mesh belt solution.

## **SCADA**

Electrical supply of technological line is carried out with the help of one integrated control cabinet. The control cabinet together with the electrical installation of the furnace is used in order to ensure proper course of heat treatment process in the device, among others the following:



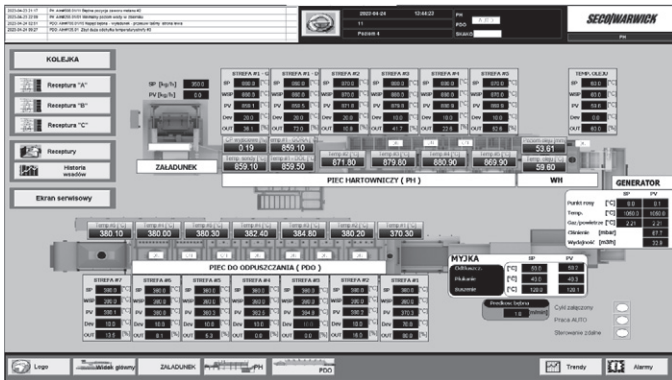
- / Regulation of temperature and carbon potential
- / Protection from extensive temperature in every zone of the furnace
- / Regulation of temperature of washing liquid and drying with hot air
- / Protection from over-exceeding washing liquid temperature and hot air temperature
- / Stepless regulation of belt movement speed

The customer portal is an online platform offering additional services for you. This is where you will find information about your device at any time. It offers:

- / Access to additional services not available in the basic control system
- / Trouble-free service and support
- / Provides full access to relevant, up-to-date information
- / Gives the user the opportunity to get help online.

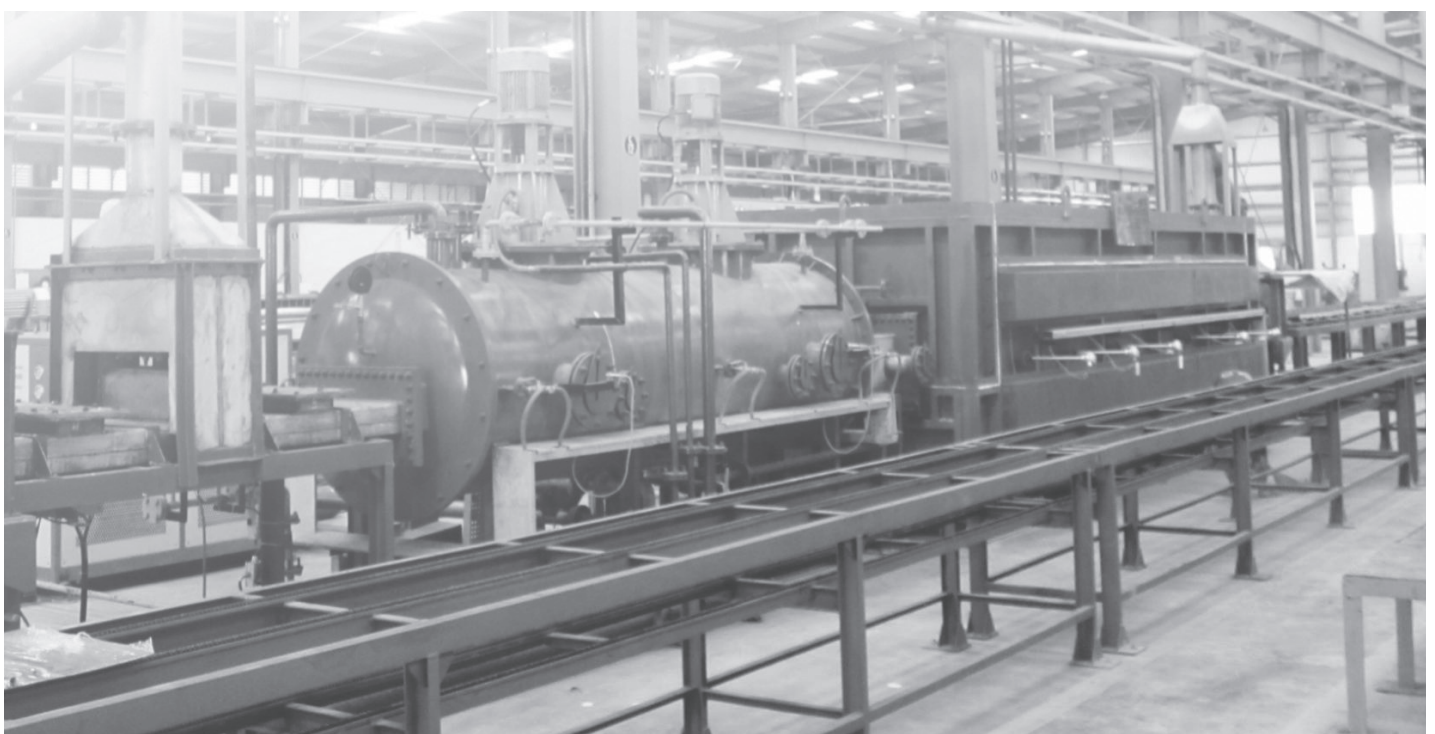
## INDUSTRIAL SERVICES

A wide range of services are available for our equipment. These include rebuild projects, field service, spare parts, equipment supply, control and combustion upgrades, and fabrication services. As a result of these services, we have provided our customers improved performance, lower emissions, better efficiency and enhanced product temperature uniformity.



## MESH BELT FURNACE SIZES, DATA & RATINGS

| Production capacity [kg/h] | Processing time [min] | Belt width [mm] | Feeding height [mm] | Feeding length [mm] | Surface load [kg/m <sup>2</sup> ] | Feeding density [kg/dm <sup>3</sup> ] | Maximum heating power [kW] |
|----------------------------|-----------------------|-----------------|---------------------|---------------------|-----------------------------------|---------------------------------------|----------------------------|
| 200                        | 30                    | 400             | 4000                | 20                  | 62,5                              | 3,1                                   | 120                        |
| 300                        | 30                    | 400             | 6000                | 20                  | 62,5                              | 3,1                                   | 160                        |
| 400                        | 30                    | 600             | 5500                | 20                  | 62,5                              | 3,1                                   | 175                        |
| 500                        | 30                    | 600             | 6500                | 20                  | 64                                | 3,2                                   | 200                        |



## SECO/WARWICK Invention Meets Reliability

SECO/WARWICK is the **1<sup>st</sup> Choice Supplier**  
of Solutions for Heat Treatment and Metallurgy.

We create innovative products that provide our customers with reliable, safe and environmentally friendly solutions for heat treatment and metallurgy and ensure the economic efficiency of their businesses. Expertise includes end-to-end solutions in 5 categories: vacuum heat treatment, atmosphere, and aluminum thermal processing, controlled atmosphere brazing of aluminum heat exchangers and vacuum metallurgy.

SECO/WARWICK Group, with 7 companies located on 3 continents, has customers in nearly 70 countries with more than 5000 deployed solutions. The company provides standard or customized state-of-the-art heat processing and metallurgy equipment and technologies to leading companies in the following industries: automotive, aerospace, electronics, tooling, medical, recycling, energy including nuclear, wind, oil, gas, solar and production of steel, titanium, and aluminum.

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