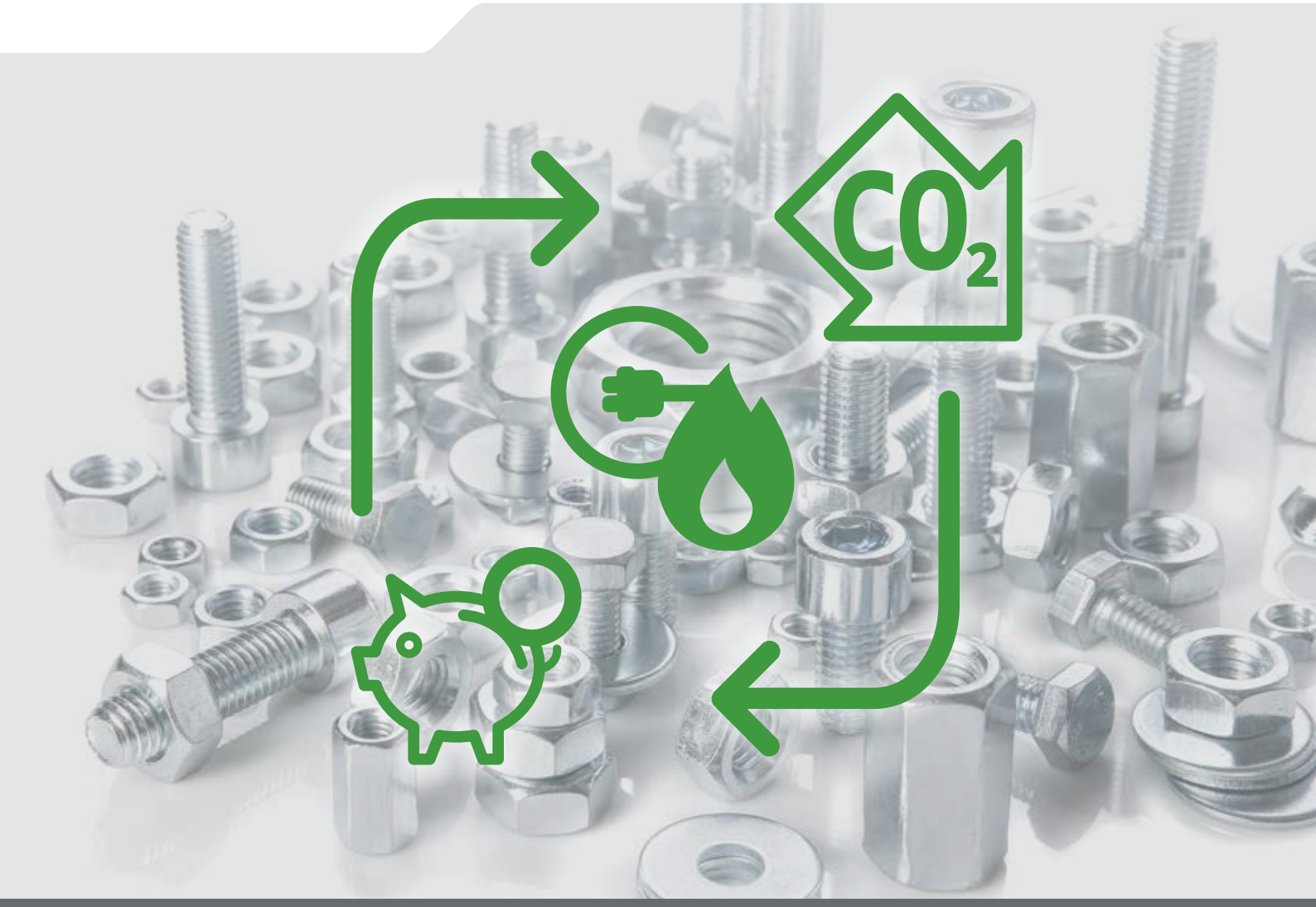
AICHELIN
industrial furnace solutions

Save Money & CO_2

When Hardening and Tempering Fasteners



Reliability at Work

AICHELIN

Your Affordable Belt Furnace: a Cast Link Belt Furnace

PLANT CAPACITY BETWEEN 750 – 2,500 KG/H

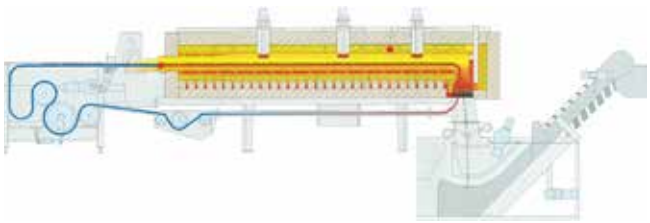
TREATMENT OF MORE SOLID SCREWS

TYPE. SCREW DIMENSION M6 - M36 X 400MM

Belt furnaces are dependable in plants for the hardening and tempering of fasteners such as screws, bolts, and nuts. The parts are loaded as bulk material and moved through the hardening and tempering furnace as well as through the hardening baths and washing machines on metallic transport belts.

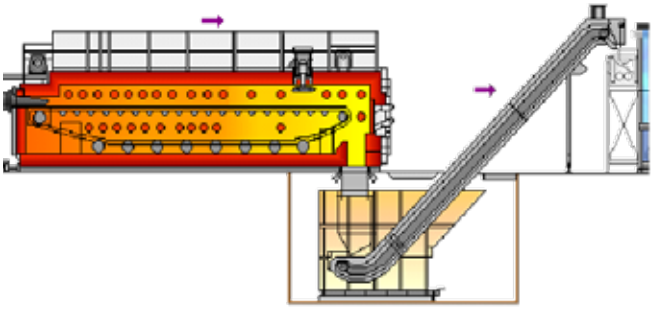
Conveyor belt ovens with wire link belts are ideal for small and medium capacities up to 750 kg/h. They are characterized by high flexibility and economy (e.g. for screws M2 - M16 x 200 mm).

MESH BELT FURNACE



The constant cooling and re-heating of the metallic transport belt in the mesh belt furnace makes for higher energy costs.

CAST LINK BELT FURNACE



In this case, an AICHELIN heat treatment plant with cast link belt furnace is the better alternative, both technically and economically. Such a plant will play its assets at plant capacities of 750 to 2,500 kg/h.

Very Clear Advantages of a Cast Link Belt Furnace

1. The permitted belt load of 170 to 220 kg/m^2 with a solid cast link belt is twice as high as in the case of a mesh belt. This increases their production capacity.

2. A plant with a cast link belt furnace is designed in a more space-saving manner. That way, you will need less hall space. Moreover, the compact dimensions reduce temperature loss in the furnace walls.

3. The lifetime of cast link belt furnaces is about five times longer than that of the larger mesh belt furnaces. The typical service life of conveyor belts is four to five years for hardening furnaces and up to ten years for tempering furnaces, which has a positive impact on your investment cost.

4. Cast link belt ovens do not require an annual belt change and therefore reduce your maintenance costs.

5. The risk of unplanned belt changes is eliminated when operating cast link belt ovens, which increases the operating time of your system.

6. The cast link belt is compactly located on the interior side of the furnace and runs continuously inside the hot furnace. The items to be treated hence heat up quickly and uniformly. You will therefore see reproducible heat treatment results with narrow tolerances.

7. In a plant with a cast link belt furnace, the conveyor belt is entirely on the inside. Unlike in the case of a mesh belt, there is no energy loss that would have to be compensated by constantly reheating the belt.

YOUR ADVANTAGE: A SIGNIFICANT REDUCTION OF YOUR OPERATING EXPENSES

Calculation example: Comparison in thermal balance between a mesh belt furnace and an AICHELIN cast link belt furnace

Project	Cast link belt furnace kW	%
Connection value/ Reserve	520	
Percentage items to be heated	256	71
Percentage belt	**0**	**0**
Percentage protective gas	15	4
Percentage radiation	26	7
Percentage firing efficiency	7	2
Percentage wall loss	59	16
Total consumption	**363**	**100**

Projekt	Mesh belt furnace kW	%
Connection value/ Reserve	600	
Percentage items to be heated	256	58
Percentage belt	**65**	**15**
Share of protective gas	18	4
Share of radiation	29	7
Percentage firing efficiency	9	2
Percentage wall loss	62	14
Total consumption	**440**	**100**

Calculation example: Comparison of annual savings in heating costs with a 1,500 kg/h plant with a cast link belt furnace by AICHELIN

Furnace type	Cast link belt furnace High-temperature furnace	Mesh belt furnace High-temperature furnace	Cast link belt furnace Low-temperature furnace	Mesh belt furnace Low-temperature furnace
Capacity	1,500 kg/h	1,500 kg/h	1,500 kg/h	1,500 kg/h
Bandwidth	1,400 mm	1,600 mm	1,400 mm	1,600 mm
Operating length	7,100 mm	10,000 mm	9,300 mm	12,000 mm
Process time in furnace	60 min	60 min	90 min	90 min
Belt load	155 kg/m²	94 kg/m²	178 kg/m²	117 kg/m²
Power consumption at **890°C** working temperature	**363 kWh**	**440 kWh**		
Power consumption at **425 °C** working temperature			**171 kWh**	**189 kWh**
Difference between furnace types		77 kWh		18 kWh
Percentage power requirement	**82.50 %**	100 %	**90.5 %**	100 %
Energy demand for 6,800 h / anno (kW)	2,468,400	2,992,000	1,162,800	1,285,200
Savings per year / 6,800 h (kW)	**523,600**		**122,400**	
Electricity rate € per kWh (depending on the customer)	€ 0.40	€ 0.40	€ 0.40	€ 0.40
CO_2 emissions [t/a] - Electricity	679	823	320	353
Savings CO_2 [t/a]	144		37	
Einsparung pro Jahr / 6.800 h (€)	**€ 209,440**		**€ 48,960**	

Annual savings in heating costs € 258,400. -* per plant.
This corresponds to a CO_2 reduction of around 210 t per year**

+ Savings in cooling water***

ANNUAL SAVINGS IN ENERGY COSTS OF € 140,000 TO € 350,000:
AN AICHELIN PLANT WITH A CAST LINK BELT FURNACE PAYS OFF IN ONLY 2 TO 5 YEARS.

*) Depending on the local gas or electricity prices as well as on the plant capacity.
**) Based on the average electricity mix of the previous five years.
***) More cost savings incur thanks to no cooling water being needed for an AICHELIN plant with a cast link belt furnace, as the belt does not need to be re-cooled.

Let’s Check

AICHELIN will provide a free quote
on the operating cost of your new plant.

Please submit
- a reference part
- your desired plant capacity
- your local electricity or gas prices

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IN GOOD COMPANY

Numerous companies are already increasing their operating profit.
We are happy to give you an insight into our work in a personal meeting.

GET YOUR PRODUCTION SLOT NOW!

CONTACT US VIA:

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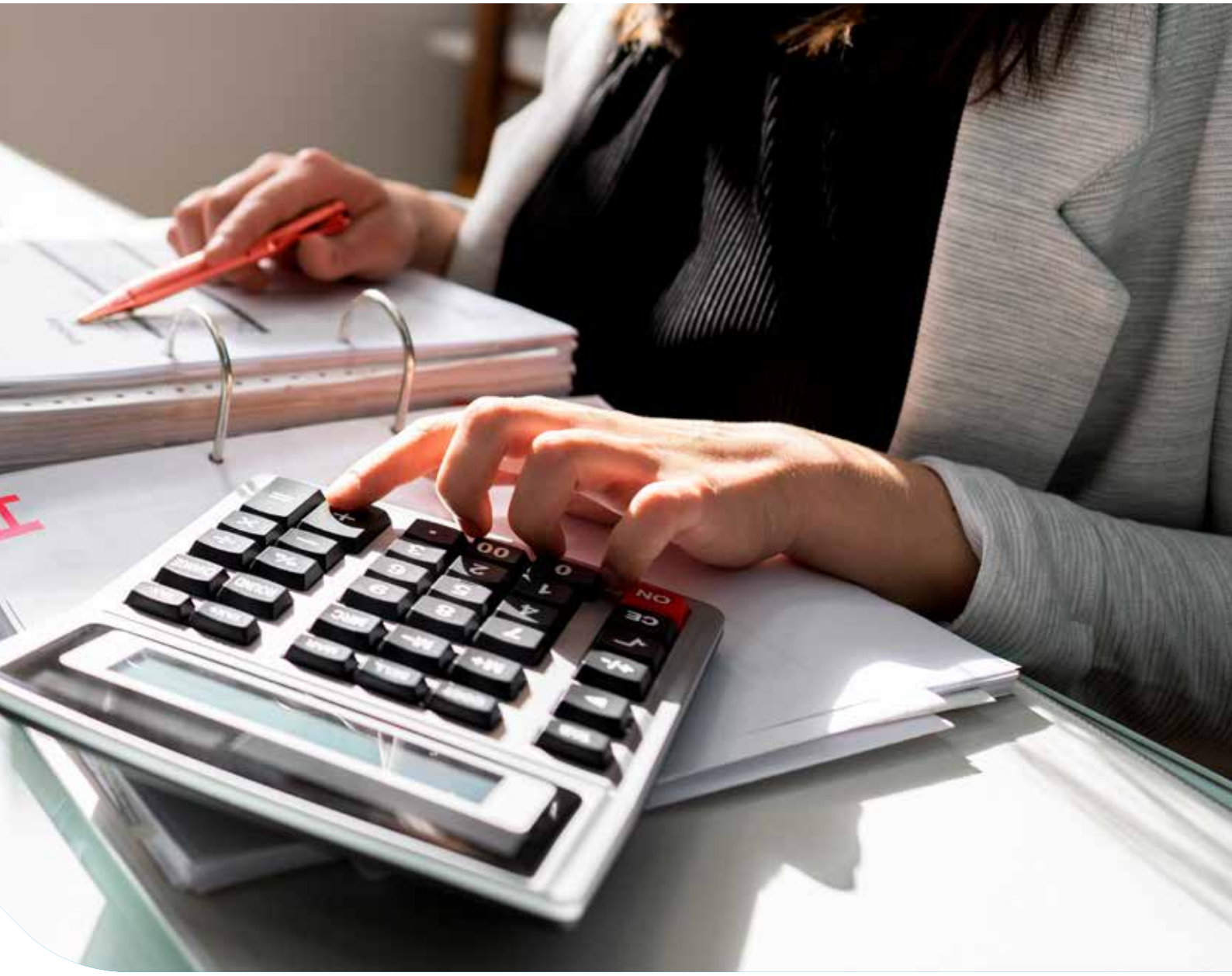

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