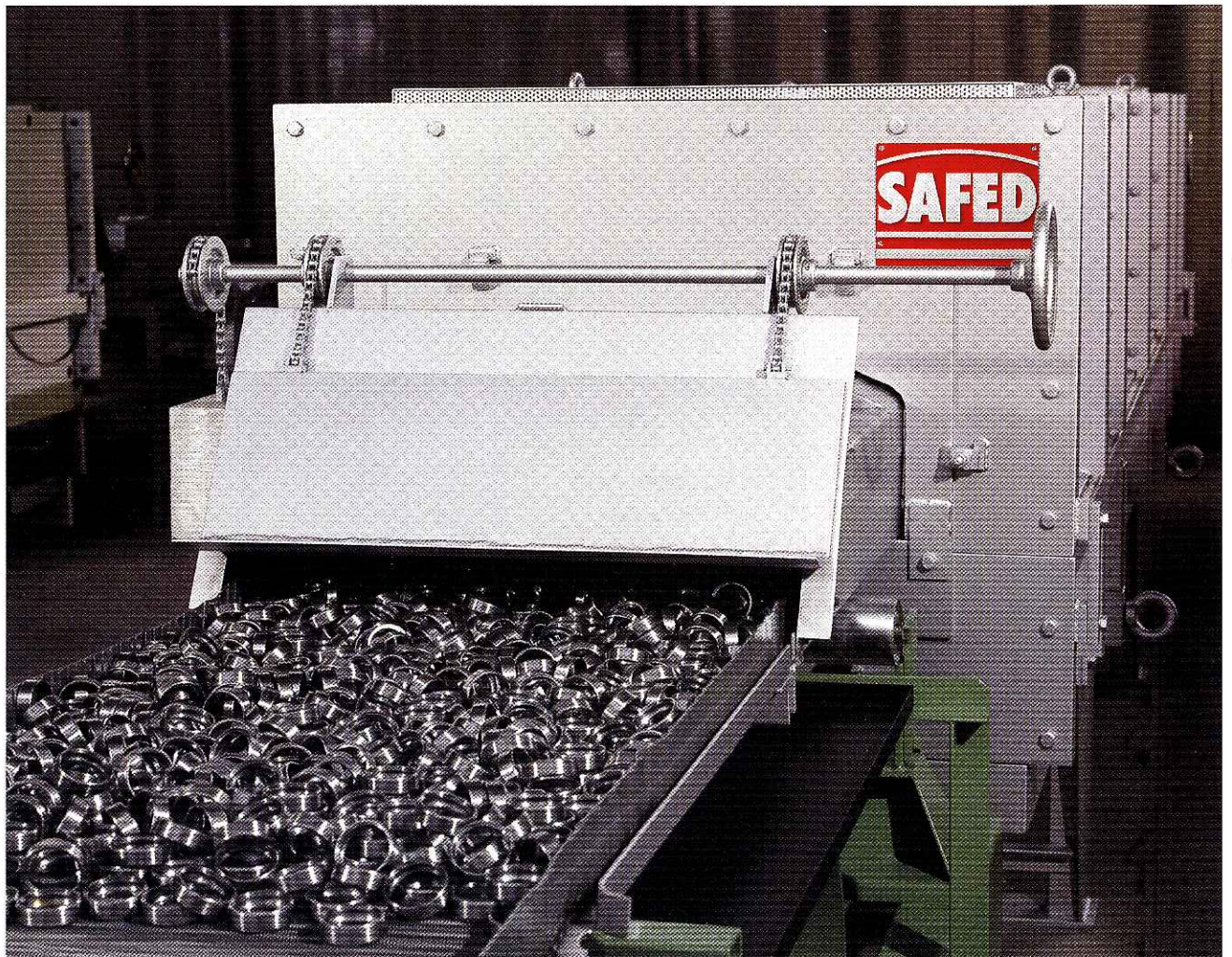




FOUR ÉLECTRIQUE DELÉMONT S.A.

Mesh belt conveyor furnace type BdL

for heating with forced air circulation



Temperature

200°C 220°C 240°C 260°C 280°C 300°C 320°C 340°C 360°C

Tempering colours



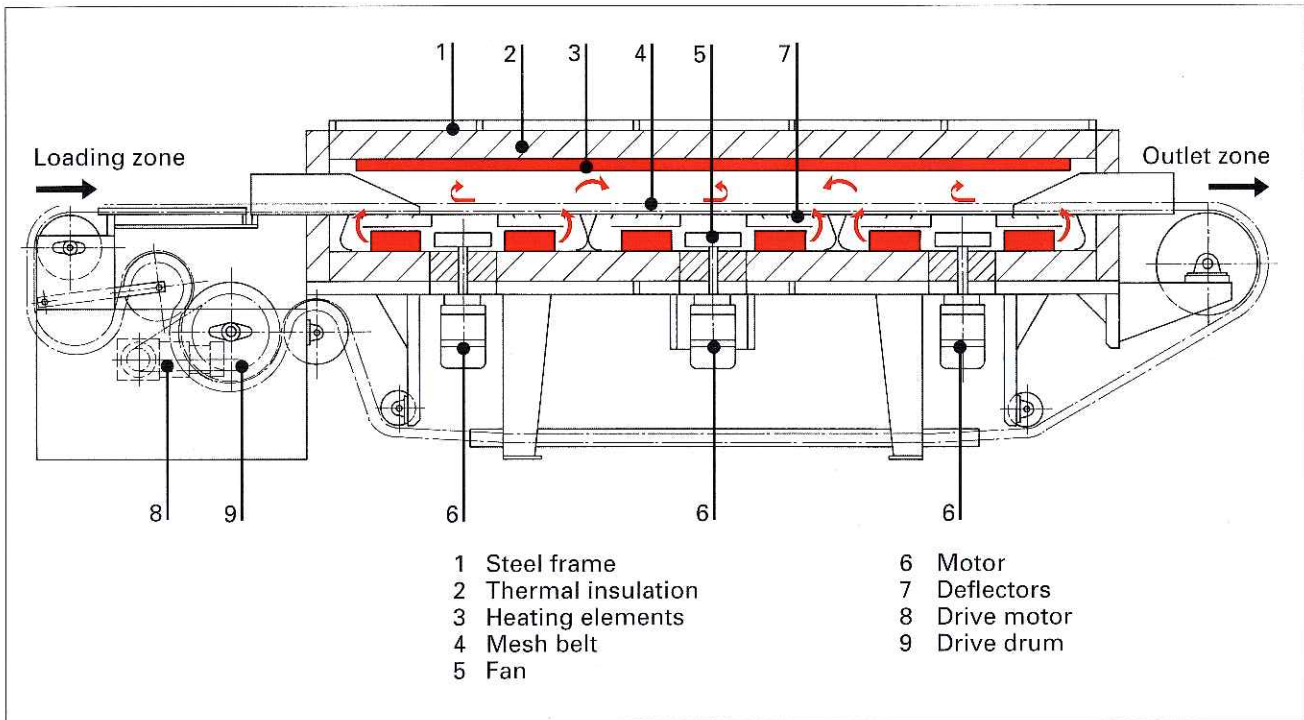


Fig. 1

Heat treatments in BDL-type furnaces

Heat treatment of steels and cast-irons

Tempering
 Annealing
 Stabilizing
 Ageing
 Enamelling
 Dehydrogenation

Heat treatment of aluminium and soft alloys

Annealing
 Stabilizing
 Homogenizing
 Hardening

Advantages

- Uniformity of temperature in the load due to forced air circulation.**
- Continuous loading on mesh belt with side-plates.**
- Uniform heating, homogeneous and precise.**
- Speed of mesh belt adjustable and uniform.**
- Possibility for integration in automatic production lines.**
- Automatic loading and unloading facilities.**



Fig. 2
 Example of parts treated in furnace type BDL.

Basic concept

BdL-type furnaces are built with a rigid steel frame and high grade thermal insulation.

The heating chamber is electrically heated by resistance wires or, depending on application, by gas burners. The heat is transmitted to the parts being treated by forced air circulation using powerful fans. This system is ideal for the low working temperatures inside the heating chamber.

A series of deflectors distribute the air uniformly in the entire working chamber. Thus, the temperature is perfectly homogeneous in the whole load. In the event of a fan stopping, a centrifugal contact located at the end of the shaft automatically switches off the heating supply.

Parts are conveyed through the furnace by means of a mesh belt. The driving drums are controlled by a d.c. reduction gear motor. The speed shown on an indicator is uniform and can be changed progressively.

Principle of operation

Parts are loaded in bulk or in rows on the conveyor belt and pass freely through the heating chamber.

They are heated uniformly and maintained at temperature for a required time; at the outlet zone of furnace they are cooled down either:

- freely at ambient air (fig. 1)
- with an air-blower (fig. 3)
- by quenching in a suitable fluid (fig. 4).

Process Control and Automation

Temperature: the furnace temperature is individually controlled in each heating zone. Depending on the application, it is possible to use electronic temperature controllers, of compact design, or a programmable controller (PLC) as part of a complete supervision package.

Process Supervision: a fully automated process supervision system (PC), complete with monitoring and control instrumentation, as well as computer-aided Quality Standard documentation, is available, on request.

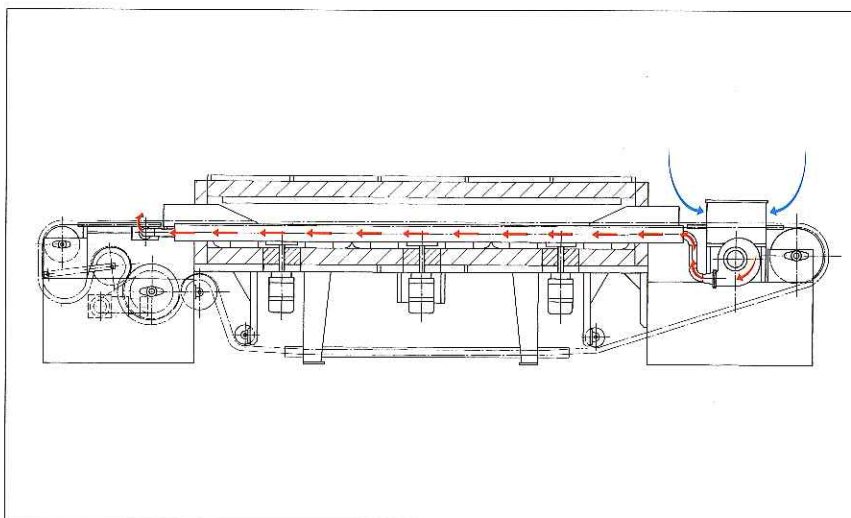


Fig. 3 Cooling by air-blower of the parts at the outlet zone, with optional «recuperation» of hot air for preheating the parts at the loading zone (type BdL...R).

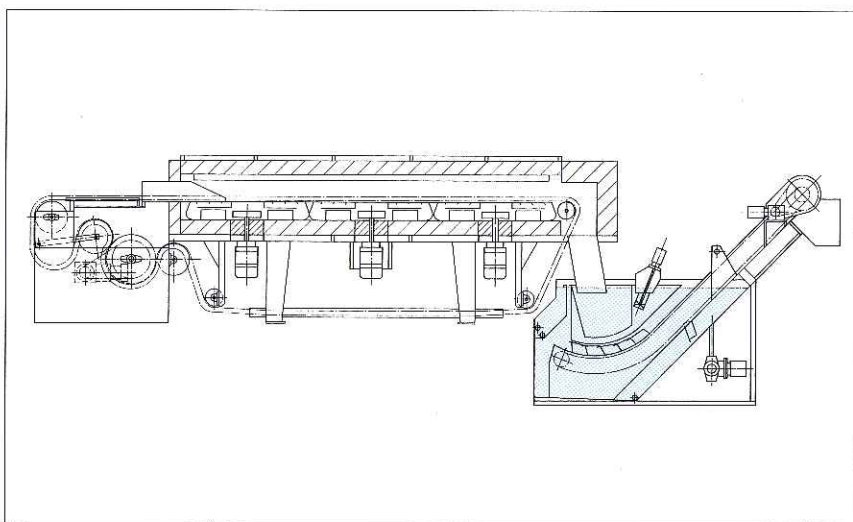


Fig. 4 Furnace with tank for stop-tempering, blackening or hardening. Type BdL...T with automatic bucket chain extraction.

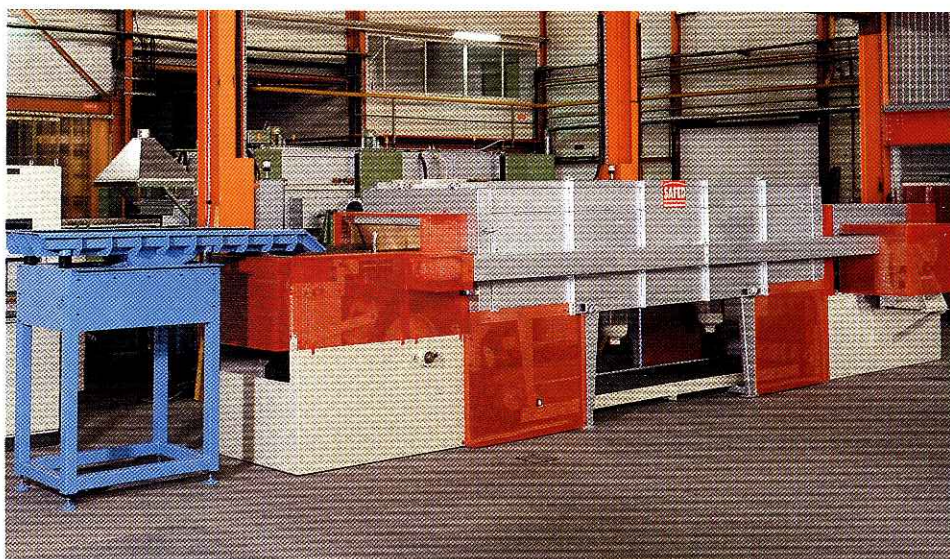


Fig. 5 Mesh belt conveyor furnace type BdL 60 / 40 for continuous tempering with forced air circulation.

Technical data

Maximum operating temperature: type 4 BdL: 400°C, type 5 BdL: 550°C.

Type			BdL 40	BdL 60	BdL 80	BdL 120
Useful working dimensions	width	mm	370	590	770	1150
	height	mm	80	150	200	200
Heating length		mm	1500	3000	3000	4000
			3000	4500	4500	6000
			4500	6000	6000	8000
			6000	7500	7500	10 000

Specifications may be changed without notice.



Fig. 6 Continuous heat treatment line for screws with automatic loader, mesh belt conveyor furnace type T 80/36 for carbonitriding, washing machine and furnace type 6 BdL 40/40 R for tempering with forced air circulation.

Ancillary equipment

A range of ancillary equipment helps to increase the operational efficiency of SAFED furnaces and allows easy integration to various types of production.

All these equipments developed by SAFED include automatic loading systems as well as washing and degreasing machines. They meet with reliability standards required by an intensive industrial production.

SAFED Manufacturing programme

Automatic mesh belt conveyor furnaces with integral quench tank (series T).

Automatic mesh belt conveyor furnaces with atmosphere circulating fan units and integral quench tank (series T Turbo).

Mesh belt conveyor atmosphere furnaces with «Water-jacket» type cooling channel (series Bd).

Mesh belt conveyor furnaces with forced air circulation (series BdL).

Automatic shaker hearth furnaces with integral quench tank (series Vi).

Retort pit furnaces with or without atmosphere circulating fan (series SN, SR).

Static forced air circulation furnaces (series SL).

Endothermic gas generators (series PROP, NAT)

Methanol dissociators (series MET).

Ammonia dissociators (series NIT).

Continuous washing machines and automated cleaning equipment (series TR, TP).

SAFED Application Centre

The SAFED Application Centre is entirely devoted to heat treatment research, trials and demonstrating purposes. This department comprises a modern metallurgical laboratory and experimental section equipped with the main types of SAFED furnaces for single or production trials.



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