

50+
Years of Legacy

HEAT TREATMENT FURNACES

Precision Thermal Engineering

for Ferrous & Non-Ferrous Industries

Solution Treatment Furnaces | Ageing & Industrial Ovens
| Homogenizing Furnaces | Die Pre Heating Furnaces
| Pit type Annealing Furnaces | Bogie Hearth Heat Treatment Furnaces



Pioneer Furnaces is a trusted name in the field of induction melting and heating technology, designing and manufacturing advanced induction furnaces for the non-ferrous metal melting, heating, heat-treatment, and coating industries since 1972. With an engineering legacy spanning over five decades, Pioneer is recognized for delivering robust, energy-efficient and highly reliable furnace systems backed by prompt and committed service support. The company is ISO 9001:2015 certified, reflecting its strong process discipline, quality orientation and customer-centric approach.

Reliability | Precision | Performance

For over five decades, Pioneer Furnaces has been a trusted engineering partner to the global non-ferrous and steel industries, delivering robust, energy-efficient and process-accurate thermal systems. Besides being leading designer and manufacturer of induction melting and heating furnaces for non-ferrous industries and coating technologies for steel industry, Pioneer also offer industrial heat treatment furnaces, particularly for copper and aluminium alloys, extrusion plants, cable manufacturers and automotive suppliers.

Our heat treatment solutions are engineered with the same design philosophy that defines all Pioneer products: process reliability, temperature uniformity, metallurgical integrity and long lifecycle value.

▪ Heat Treatment Furnace Portfolio

Pioneer offers a comprehensive range of electrically resistance heated industrial furnaces, custom-designed to meet stringent metallurgical and production requirements.

- ▶ Solution Treatment Furnaces
- ▶ Ageing & Industrial Ovens
- ▶ Homogenizing Furnaces
- ▶ Die Pre-Heating Furnaces
- ▶ Pit type Annealing Furnaces
- ▶ Bogie Hearth Heat Treatment Furnaces

Each system is engineered for precise temperature control, uniform heat distribution, efficient air circulation, and ease of operation, supported by modern automation and safety systems.

▪ Solution Treatment Furnace

Batch Type Drop-Bottom Solution Treatment Furnaces

Applications:

Solution treatment process of Aluminium castings, extruded profiles and cable conductors.

Operating Temperature Range:

530°C to 550°C

Key Engineering Features:

- ▶ Custom-designed heating chambers for large charge baskets
- ▶ Capacity up to 2 tonnes for aluminium castings
- ▶ Furnace length up to 3 metres for extrusion plants
- ▶ Hydraulic lifting and swivelling type door ensuring effective sealing and minimal heat loss
- ▶ Fast quenching with proven quench delay ≤ 10 seconds
- ▶ High temperature control accuracy of $\pm 0.75\%$
- ▶ High-efficiency hot air circulation with replaceable circulation fan
- ▶ Designed for ease of operation, maintenance and process repeatability



▀ Ageing Furnaces & Industrial Ovens

Trolley Type Heat Treatment Ovens

Applications:

- Ageing of aluminium castings and extrusions
- Heat treatment of all aluminium alloy conductors (AAAC)
- Industrial drying of ferrous and non-ferrous components

Operating Temperature Range:

80°C to 230°C

Key Engineering Features:

- Optimised air diverter system ensuring excellent temperature uniformity
- Validated uniformity across 9-point temperature mapping
- Customised chamber designs with depths up to 11 metres
- Trolley-mounted loading with doors on both ends for operational flexibility
- Modular replaceable heater banks and circulation fans
- High temperature accuracy of $\pm 1^\circ\text{C}$
- Smooth trolley movement and user-friendly control system



▀ Homogenizing Furnaces



For Aluminium Logs and Billets

Applications:

Homogenising of aluminium logs and billets for improved extrusion quality and extended die life

Operating Temperature Range:

Up to 580°C

Key Engineering Features:

- Chamber-type design with charge car and bogie hearth configuration
- High thermal efficiency with reduced heat losses
- Faster heating rates and excellent temperature uniformity
- Modular fan and heater battery design for easy maintenance
- Designed for consistent metallurgical properties across billets sections

▪ Die Pre Heating Furnaces

Applications:

Pre-heating of extrusion dies prior to installation on presses

Available Configurations

- ▶ Box-type die pre heating furnace with pneumatic top door
- ▶ Bogie hearth type die pre heating furnace

Key Engineering Features:

- ▶ Trunk-type top opening and drawer-type constructions
- ▶ Easy loading, unloading and selective die handling
- ▶ Uniform heating ensuring reduced thermal shock to dies
- ▶ Robust construction for repeated heating cycles



▪ Pit Type Furnaces

Applications:

- ▶ Annealing of copper wire coils and plates
- ▶ Annealing of transformer cores
- ▶ Annealing of carbon steel sheets

Operating Temperature Range:

Up to 800°C

Key Engineering Features:

- ▶ Controlled atmosphere operation
- ▶ Pot fabricated from SS 310 for high-temperature durability
- ▶ Robust construction for repeated heating and cooling cycles
- ▶ Controlled heating and cooling profiles
- ▶ Easy charge basket loading and unloading
- ▶ Excellent door sealing arrangement for minimal heat loss



▪ Bogie Hearth Heat Treatment Furnaces

Applications:

Suitable for a wide range of ferrous and non-ferrous heat treatment processes:

- ▶ Annealing of aluminium coils
- ▶ Homogenising of aluminium logs
- ▶ Annealing of copper coils and plates
- ▶ Annealing of carbon steel coils
- ▶ Stress relieving of fabricated structures
- ▶ Hardening and tempering processes

Operating Temperature Range:

Up to 1100°C

Key Engineering Features:

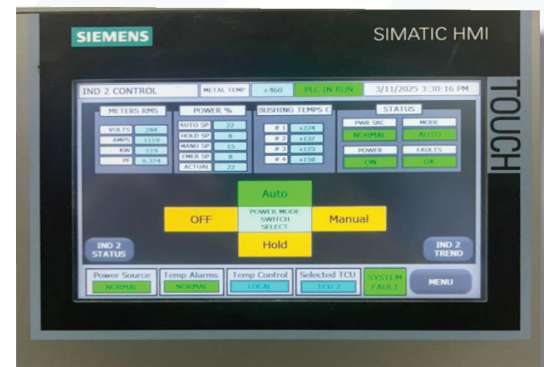
- ▶ Excellent temperature uniformity validated by 9-point testing
- ▶ Motorised rise-and-fall type door with pneumatic door pressing system
- ▶ Effective sealing at door and bogie interfaces ensuring negligible heat loss
- ▶ Modular heater banks and circulation fans for high serviceability
- ▶ Temperature accuracy of $\pm 0.75\%$ across the heating zone
- ▶ Smooth bogie movement and intuitive control interface



▪ Automation, Controls & Safety

All Pioneer heat treatment furnaces are equipped with modern electrical and control systems to ensure repeatable metallurgical results, energy efficiency and operational safety:

- ▶ PLC-based temperature and process control
- ▶ High-accuracy thermocouple feedback
- ▶ Programmable heating and cooling cycles
- ▶ Safety interlocks and alarm systems
- ▶ Optional SCADA connectivity and data logging



▪ Why Pioneer for Heat Treatment Solutions

- ▶ 50+ years of thermal engineering expertise
- ▶ Proven installations across aluminium, copper, extrusion and automotive sectors
- ▶ Custom-engineered solutions tailored to process requirements
- ▶ High temperature uniformity and process repeatability
- ▶ Robust construction and long service life
- ▶ Best in industry service support and spare part availability

Product Portfolio

- ▶ **Coreless & Channel Type Induction Melting and Holding Furnaces**
for aluminium, copper, and copper alloys (like brass, bronze, etc.) and zinc & zinc alloys
- ▶ **Custom-designed Induction Heating Systems**
specially for non-ferrous extrusion applications
- ▶ **Heat-treatment Furnaces**
for a wide spectrum of metallurgical applications
- ▶ **Coating Solutions**
Pre-melt furnaces
Launders
Pots with inductors for GI | GL | GA | ZAM | Al-Si | Galfan

Our Key Clientele



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