

Furnace Types

Chamber Furnaces

These furnaces are offered for a range of heat-treatment applications including stress relieving, normalizing, hardening and tempering. Effective insulation reduces heat loss into the work environment and aids in faster heat-up. These furnaces utilize electrical heating elements or are gas fired/oil fired. The furnaces are designed to provide consistent results through uniform heating, accurate temperature control and control of furnace atmosphere

Each furnace is fitted with standard and special accessories including vertical doors fans, cooling venturiers, racks, baskets, loading devices, quench systems, various controlled atmospheres, special thermocouples, temperature controllers/recorders and alarms. Temperature range is 500o C to 1200°C.



Pit-Pot Type Furnaces

Pit-Pot type furnaces are specially designed for annealing, normalizing & salt-bath solution treatment. The furnaces are electrically heated with high-tech ceramics blanket insulation. These furnaces are provided with steel baffles which accommodate the charge basket. Hence charge is not exposed to direct radiation of heat. Furnaces can be provided with centrifugal blowers for even heat distribution. Doors are vertical lifting and revolving type with press & lock lever mechanism. Temperature of furnaces is controlled automatically by on/off digital temperature controllers and digital timers with alarm. Furnace with forced air circulation for tempering also offered.

The furnaces are thermetically sealed with good temperature uniformity and hence are suitable for carbofluids, endogas or nitrogen methanol atmosphere. Hence they find applications in carbonitriding, bright hardening, bright annealing, bright normalizing etc.



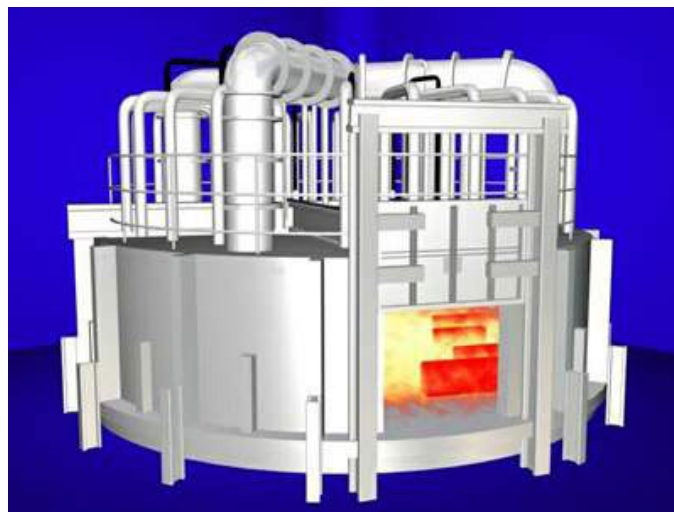
Bogie Hearth Furnaces

These furnaces are used for heating parts which is too large to be handled on continuous basis or which would be difficult or impossible to load or unload. Large castings and fabrications can be heat-treated in these furnances. These furnace are electrical heated or oil/gas fired heating upto 1200oC. Provision for high temperatures with non-metallic heating elements like silicon carbide, super kanthal etc are offered. Applications include stress relieving, tempering, annealing & normalizing.



Rotary Hearth Furnaces

These furnances are used for heating parts which is too large to be handled on continous basis or which would be difficult or impossible to load or unload. Large castings and fabrications can be heat-treated in these furnances. These furnace are electrical heated or oil/gas fired heating upto 1200oC. Provision for high temperatures with non-metallic heating elements like silicon carbide, super kanthal etc are offered. Applications include stress relieving, tempering, annealing & normalising



Vacuum Furnaces

These Furnaces are engineered to provide the highly controlled furnace environment required for effective heat treating of material. These furnace systems represent a clean processing alternative with no adverse effect on environment. Advantages of vacuum heat treatment include: No change in surface structure, composition or properties of steel, No oxidation or decarburizing, No need to clean after treatment and No heat loss.



Vacuum Furnaces are engineered to offer capabilities involving combinations of high temperature, high vacuum, process containment, fast and frequent temperature changes, gas or pressure changes. Vacuum furnaces are ideal for degassing, bright annealing, aging, case hardening, vacuum coating, brazing & sintering.

Rotary Retort Furnaces

These furnaces are designed for heat treatment of mass produced small components such as steel balls, fasteners, tools, washers and small castings. These furnaces are electrically heated and provided with tilting mechanism. An adjustable speed heat resistant retort is fitted inside this type of furnace. This provides constant motion for the work piece for both uniform heating.

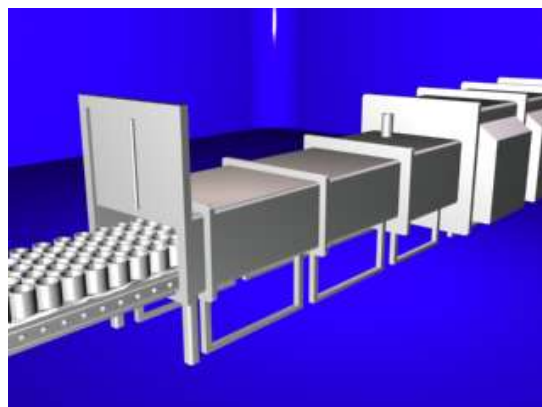
Applications include normalizing, hardening, annealing, stress relieving and tempering. Options for quench tanks with forced cooling chamber are available. Automation for temperature control and recording is also offered.



Conveyorised Furnaces

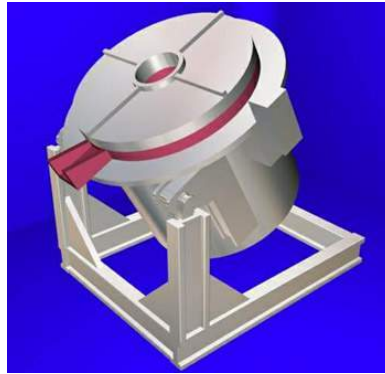
These furnaces are suitable for heat-treatment of bulk jobs on a continuous basis like forged steel parts, washers, fasteners, sockets and bearings. Conveyors can be mesh belt type or slat type or chain-strap type. Speed of conveyor can be varied through DC control drives. Multi-Temperature zones depending on application can be offered.

The furnace incorporates strong steel body with high grade thermal insulation. Automation of temperature control/programming/recording is offered. Gas-tight muffle inside heating chamber for circulation of protective gas can be provided for treatment under protective atmosphere such as bright hardening, brazing, annealing and sintering.



Non-Ferrous Melting Furnaces

Melting of non-ferrous metals such as aluminum, lead, zinc, etc is accomplished by wide range of non-ferrous melting and holding furnaces. Engineered options accommodate varied requirements for thermal and fuel efficiency, melting style, loading and unloading (pouring), space requirements, metal loss, metallurgical purity, oxidation, dross formation and handling and maintenance costs. The furnaces are offered in two designs tilting barrel type and pot-crucible type. These furnaces permit easy alloy changes, have a low maintenance requirement and are available either electrically or oil heated.



Industrial Ovens & Driers

They are designed for a wide range of applications including drying, baking, curing, preheating, stress relieving, annealing & sintering. The ovens are constructed from double walled CRCA sheet with energy saving insulation. Heating is by SS tubular finned heaters or Infra Red heaters with soft start. The ovens are provided with air circulators and front opening doors with ball locking arrangement for safety. Automatic temperature control is with on/off digital temperature controllers & timers. Temperature range is from 50oC to 300C.



Drum Heating Ovens

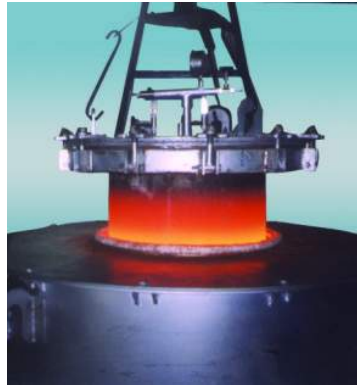
These types of Ovens are designed for heat - sensitive chemicals, agrochemicals & drugs. The contents in mild steel drums are heated at a constant temperature in the oven as per customers specifications. Specially designed high temperature blowers ensure uniform air circulation and constant temperature inside the oven. Drum Revolving mechanism to ensure uniform heat distribution can be offered. with maximum temperature upto 400o C. Heating zone length vary from 3 meters to 6 meters, belts width from 4 meters to 9 meters and process time range from 10 minutes to 30 minutes. Both gas-fired models & electrically heated models are offered.



Vacuum Brazing Furnace

These Furnaces are Pit - Pot design. They are used for brazing small mild steel or stainless steel components using copper as the brazing material. The components are placed in specially designed baskets. The heat treatment is carried out under vacuum. Advantages of vacuum heat treatment include: No change in surface structure, composition or properties of steel, no oxidation or decarburizing, no need to clean after treatment and no heat loss. Vacuum Brazing Furnaces are engineered to provide the highly controlled furnace environment required for effective heat treating of material. These furnace systems represent a clean processing alternative with no adverse effect on environment.

These Furnaces are engineered to offer capabilities involving combinations of high temperature, high vacuum, process containment, fast and frequent temperature changes, gas or pressure changes.

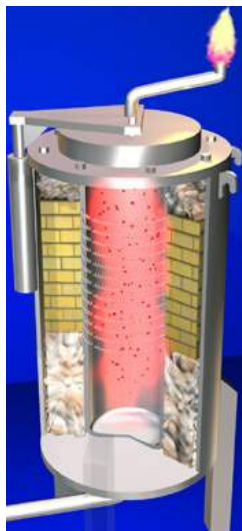


Fluidised Bed Furnace

Fluidised Bed Furnace with its temperature & atmosphere flexibilities enables any heat treatment to be carried out on any steel with temperatures upto 1200 deg C. The same furnace can perform neutral hardening, carbon nitriding, carburising, normalizing, annealing and stress relieving. Features incorporated include :- Ceramic fiber blankets, Fine aluminium fluidising medium contained in the super alloy retort, Lift and swing lid that closes on the retort, Exhaust duct with burner is provided on the lid for the spent gas. An electric control panel, gas manifold and gas mixing panel are provided.

Advantages of Fluidised Bed Furnaces

- **High heat transfer rates and temperature uniformity:** When heated fluidised bed becomes excellent media for heat transfer. The particle size being smaller, the heat transfer rate is higher.
- **Low maintenance:** There are no moving parts like fans, conveyors and hence no maintenance problems. Separate gas generators are not required. Soot formation does not pose problem as the soot deposits on the particles are burnt.
- **Pollution Free:** These furnaces are not poisonous and extremely safe for the operators. Effluent treatment and disposal equipment are not required.
- **Ease of Operation:** Furnace operation is extremely simple and safe. It involves only setting the desired temperature and gas flow and immersing the components. At the end of cycle the components are lifted out and furnace switched off while waiting for the next batch.



Gas Carburizing Furnace

These are atmosphere control furnace to give an installation where all control atmosphere treatments can be done at the same station. It has in addition to carbonizing, decarb free bright annealing and hardening, made shallow depth carbonizing control possible. Accessories like quench tanks, washing machines & tempering furnace are supplied.



Reference:

http://www.agneeindia.com/chamber_furnace.html