HEAT TREATMENT FURNACES UTILISED

The Heat Treatment Processes can be performed in one or more furnace types. The selection of a furnace type is dependant on the process required, the size of the component / length of steel and the surface finish required.

**Pit Retort Furnaces**
Processes normally carried out are neutral hardening, gas carburising and gas nitriding. Annealing and normalizing under protective atmosphere can also be done. The furnaces use protective to slightly reactive atmospheres in the processes.

**Vacuum furnaces**
This furnace consists of a chamber in which a vacuum is drawn and then the furnace is heated. The heating, under vacuum, allows far greater control and precision as well as resulting in clean, non-oxidised component. After hardening the components are quenched in either an inert gas or oil. High value components of an intricate nature (tool dies) and which require a good surface finish & minimal deformation are ideally suited to these furnaces.

SPECIALISED HEAT TREATMENT

**Sealed Quench furnaces**
These furnaces, as the name implies, enables one to harden/carburise components and then quench them under a protective/reactive atmosphere without having to remove the components from the furnace and thus expose them to the atmosphere. The type of components that are heat treated in the Sealed Quench furnaces are high value components that need to be heat treated under atmosphere.

**Austemper Furnace (Continuous Line Process)**
This is a continuous belt fed furnace used for hardening (austempering) small components under a protective atmosphere. The components are moved along a belt through the hot atmosphere controlled zone and dropped into a molten salt bath. The components move through the salt bath on a conveyor into a washer and drier resulting in a complete and final product.

**Shaker hearth furnaces (Continuous Line process)**
These furnaces are specifically designed for neutral hardening (quenching and tempering) under protective atmosphere of small, high volume articles (e.g. fasteners, nails, and springs).

**Top Hat furnaces**
As the name applies these large box-type furnaces are placed on a bed which has steel billets/bars or components laid out on them. Heat treatment processes include stress relieving, normalizing, annealing and quench & temper. These furnaces are typically used in the Heat Treatment of small through to large items such as forgings, fabrications, bar stock which has been purchased in the untreated condition, round bar in coil form and castings. The atmosphere is not controlled, so some oxidation does occur. This is not normally serious as further machining is done on the components.