

Hyderabad Plant is equipped with highly integrated and flexible manufacturing facilities to produce a wide variety of special metals and alloys in various mill forms such as forged bars/ flats, Rings; near net shapes and closed die forgings, hot rolled bars/ sheets, cold rolled sheets, strips and foils; wires, castings, tubes and fasteners.

## MELTING TECHNOLOGY

MIDHANI has a unique combination of advanced melting and refining furnaces necessary for melting superalloys, Titanium, special steels etc. to standards required for the industries. MIDHANI produces alloys with close compositional control, metallurgical cleanliness and homogeneity with the help of an impressive array of melting and refining furnaces.

### Special steels and Superalloys Melting

- 5 T Arc Furnace(EAF) & 20T EAF/LF/VD
- 2 T Air Induction Melting Furnace(AIM)
- 5 T Vacuum Induction Refining Furnace(VIR)
- 50kg, 600 kg, 2.5T & 6.5 T Vacum Induction Melting Furnaces(VIM)
- 4 T/10T Vacuum Arc Re-melting Furnace(VAR)
- 5 T/10T Electroslag Refining Furnaces(ESR)

### Titanium Melting

- MIDHANI has Vacuum Arc Remelting furnace for the production of Titanium ingots upto 6.5 T. For electrode preparation, a 3000 T capacity Compacting press and a Plasma arc welding unit are available.
- Electron beam melting(EBM)
- Vacuum Arc Skull Melting

## FORGING AND RING ROLLING PLANT

Forging facility at MIDHANI includes a 1500 T, 6000T hydraulic forge presses and Ring rolling mill. Two rail bound manipulators fully integrated with programmable press functioning ensures close control of forging parameters for most of the alloys, particularly those required for aircraft industry. The forge shop houses a number of LPG fired re-heating furnaces with close atmospheric control ensuring low sulphur pickup and providing superior surface quality.

- 6000T (60MN) forge press
- 1500T (15MN) forge press
- Ring rolling

## HEAT TREATMENT PLANT

The heat treatment is by far the most important stage in the manufacture of special metals and alloys, since the end product quality depends on evolution of microstructure. Heat treatments have so selected as to ensure close temperature and atmosphere control.

- PLC controlled LPG fired and Electric heated Furnaces for jobs upto 6000 m long.
- Quenching facilities (Oil, Water, forced Air & Sub Zero)
- Furnaces are calibrated (TUS) and meet AMS2750E accuracy requirements
- Uniform tempering with constant air circulation and optimum temperature control within  $\pm 5^{\circ}\text{C}$
- A high vacuum furnace is used for annealing

## HOT ROLLING PLANT

To meet the aerospace standards, the bar, sheet and strip products are to be manufactured to very close dimensional tolerances. The high resistance to deformation, coupled with requirements of more precise dimensional tolerances, makes the rolling of these materials difficult.

- 2-hi, 2-stand sheet mills
- 3-hi strip mills
- 3-hi, 3 stand bar mill
- 7 stand wire rod mill
- Roller Hearth furnace with Quench Unit for re-heating sheets for finishing mills and also for annealing of sheet products under controlled atmosphere. Max. temperature 1100 °C
- leveling and straightening and shearing facilities

## **COLD ROLLING PLANT**

The super alloys, Titanium alloys and many high & ultra high strength steels' require specialized facilities for cold deformation in to thin gauges. The rolling parameters for these diversified alloys widely vary. Therefore, the cold rolling mills have been carefully designed to ensure precision rolling.

- 4-hi strip mill
- 6-hi sheet mill
- 12-hi strip mill
- 20-hi foil mill
- Continuous annealing line
- Bell annealing furnaces
- Finishing lines for slitting and strip grinding

## **BAR AND WIRE PLANT**

The plant is equipped with wire drawing machines, annealing lines, polishing, straightening and cutting machines to draw wires upto a minimum of 0.02dia.

- Bull Block Machines
- Multi head Dry Drawing Machine Wet Drawing Machines
- Automatic Wire Straightening and Cut to Length Machine
- Combined Drawing, Straightening, Cutting and Polishing Machine
- Wire Shaving Machine
- Continuous Annealing furnaces
- Vacuum annealing Furnaces
- Schumag Drawing machines, Peeling machines, Centerless grinding machines

## **FASTENERS PLANT**

Hexagonal bolts, Hexagonal socket, Head cap screws, Cheese Head screws, Countersunk screws, Locking washers, and Plates, Wire locking screws and Nuts, Studs, Specialised and Custom made fasteners, Lock nuts, Locking plates and Split bushes, etc.

## **INVESTMENT CASTING PLANT**

Vacuum investment casting facility enables MIDHANI to supply near-net-shape castings of Nickel, Iron & Cobalt base Superalloys and Titanium & Titanium alloys.