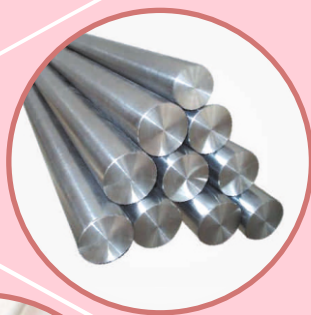


# SUPERALLOY PRODUCTS



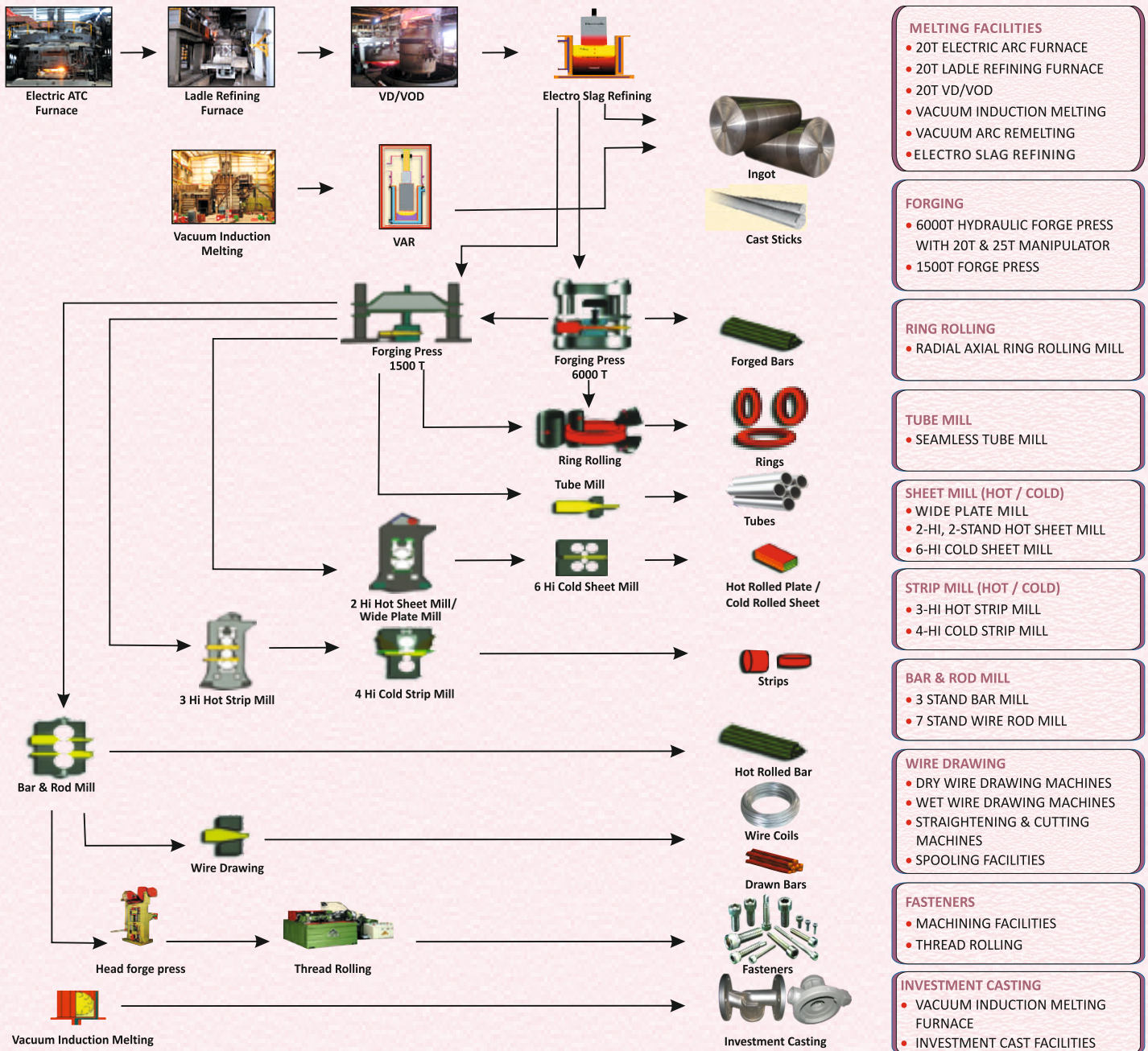
मिश्र धातु निगम लिमिटेड  
MISHRA DHATU NIGAM LIMITED

## ABOUT MIDHANI

**Mishra Dhatu Nigam Limited (MIDHANI)**, A Govt. of India Enterprises Company was set up in 1973 at Hyderabad, INDIA. MIDHANI is an ISO 9001:2015 & AS 9100-2016 Certified company with modern metallurgical facilities and technical competence. It is listed at BSE / BSE (Code BSE:541195 / NSE:MIDHANI) with 26% shares in Public.

MIDHANI specializes in manufacturing a wide range of Superalloys, Titanium alloys and Special steels meeting stringent international standards for application in Aerospace, Defence, Energy, Space, Chemical and other hi-tech industries. With the dedicated research facilities and decades of experience, MIDHANI is capable of manufacturing more than 500 different grades of materials under single roof.

## SUPERALLOYS MANUFACTURING PROCESS IN MIDHANI



- MELTING FACILITIES**
  - 20T ELECTRIC ARC FURNACE
  - 20T LADLE REFINING FURNACE
  - 20T VD/VOD
  - VACUUM INDUCTION MELTING
  - VACUUM ARC REMELTING
  - ELECTRO SLAG REFINING
- FORGING**
  - 6000T HYDRAULIC FORGE PRESS WITH 20T & 25T MANIPULATOR
  - 1500T FORGE PRESS
- RING ROLLING**
  - RADIAL AXIAL RING ROLLING MILL
- TUBE MILL**
  - SEAMLESS TUBE MILL
- SHEET MILL (HOT / COLD)**
  - WIDE PLATE MILL
  - 2-HI, 2-STAND HOT SHEET MILL
  - 6-HI COLD SHEET MILL
- STRIP MILL (HOT / COLD)**
  - 3-HI HOT STRIP MILL
  - 4-HI COLD STRIP MILL
- BAR & ROD MILL**
  - 3 STAND BAR MILL
  - 7 STAND WIRE ROD MILL
- WIRE DRAWING**
  - DRY WIRE DRAWING MACHINES
  - WET WIRE DRAWING MACHINES
  - STRAIGHTENING & CUTTING MACHINES
  - SPOOLING FACILITIES
- FASTENERS**
  - MACHINING FACILITIES
  - THREAD ROLLING
- INVESTMENT CASTING**
  - VACUUM INDUCTION MELTING FURNACE
  - INVESTMENT CAST FACILITIES

## KEY WESTERN ALLOYS

| International Superalloy Grade | Equivalent Midhani Grade | Conformity to International Specifications |  |   |                                 |
|--------------------------------|--------------------------|--|--|---|---------------------------------|
|                                |                          | UNS  | ASTM   | AMS   | Others                          |
| ALLOY 600                      | SUPERNI 600              | UNS N06600                                 | ASTM B 163, B 166-B 168, B 366, B 516, B 517, B 564, B 751, B 775, B 829               | AMS 5540, 5580, 5665, 5687                                    | DIN 17742, 17750-17754          |
| ALLOY 601                      | SUPERNI 601              | UNS N06601                                 | ASTM B 166-B 168, B 751, B 775, B 829  |   | DIN 17742, 17750-17754          |
| ALLOY 617                      | SUPERNI 617              | UNS N06617                                 | ASTM B 166, B 168, B 546, B 564  | AMS 5887-5889   | DIN 17744, 17750-17754          |
| ALLOY 625                      | SUPERNI 625              | UNS N06625                                 | ASTM B 366, B 443, B 444, B 446, B 564, B 704, B 705, B 751, B 775, B 829              | AMS 5581, 5599, 5666, 5837, 5869                              | DIN 17744, 17750-17754          |
| ALLOY 690                      | SUPERNI 690              | UNS N06690                                 | ASTM B 163, B 166-B 168, B 564, B 829  |   |                                 |
| ALLOY 713                      | SUPERNI 713              | UNS N07713                                 |  | AMS 5377, 5391  |                                 |
| ALLOY 718                      | SUPERNI 718              | UNS N07718                                 | ASTM B 637, B 670  | AMS 5589, 5590, 5596, 5597, 5662-5664, 5832, 5914, 5950, 5962 | DIN 17744, 17750-17754          |
| ALLOY 740                      | SUPERNI 740              | UNS N07740                                 |  |   |                                 |
| ALLOY 76                       | SUPERNI 76               |  |  | AMS 5390  |                                 |
| ALLOY 100                      | SUPERNI 100              |  |  | AMS 5397A   | EMS 55089                       |
| ALLOY 42N                      | SUPERNI 42N              |  |  | AMS 2269  |                                 |
| ALLOY 738                      | SUPERCAST 738            |  |  | AMS 5490  |                                 |
| ALLOY 800                      | SUPERFER 800             | UNS N08800                                 | ASTM B 163, A 240, B 366, B 407-B 409, A 480, B 514, B 515, B 564, B 751, B 775, B 829 | AMS 5766, 5871  | DIN 10028, 10095, 10302         |
| ALLOY 825                      | SUPERFER 825             | UNS N08825                                 | ASTM B 163, B 366, B 423-B 425, B 564, B 704, B 705, B 751, B 775, B 829               |   | DIN 17744, 17750-17754          |
| ALLOY 286                      | SUPERFER 286             | UNS S66286                                 | ASTM A453, A638  | AMS 5525, 5726, 5731, 5732, 5734, 5737, 5858, 5895, 7235      |                                 |
| ALLOY 80A                      | SUPERNI 80A              | UNS N07080                                 | ASTM B 637   |   | DIN 17742                       |
| ALLOY 263                      | SUPERNI 263              | UNS N07263                                 |  | AMS 5872  | DIN 17744, 17750-17754          |
| ALLOY 105                      | SUPERNI 105              |  |  |   | BS 4HR 100                      |
| ALLOY 75                       | SUPERNI 75               | UNS N06075                                 |  |   | BS HR5, HR203, HR403, HR504     |
| ALLOY 90                       | SUPERNI 90               | UNS N07090                                 |  |   | BS HR2, HR202, HR402, HR501-503 |
| ALLOY 247                      | SUPERCAST 247            |  |  | AMS 2280  | BSA-4                           |
| ALLOY V                        | SUPERNI 8020             | UNS N06003                                 |  |   |                                 |
| ALLOY C276                     | SUPERNI 276              | UNS N10276                                 | ASTM B 366, B 462, B 564, B 574, B 575, B 619, B 622, B 626, B 751, B 775, B 829       |   | DIN 17744, 17750-17754          |

## KEY RUSSIAN ALLOYS

| International Superalloy Grade | Equivalent Midhani Grade                 | Conformity to International Specifications                        |
|--------------------------------|--|---|
| AE 435                         | SUPERNI 435                              | ASTMB473, TY14-1-1671-76 & GOST 2590-71                           |
| AE 868                         | SUPERNI 868                              | TY 14-1-1741-76   |
| AE 602                         | SUPERNI 602                              | ASME SB 166, ASME SB 168, ASTM B 166, ASTM B 168                  |
| AE 437                         | SUPERNI 437                              | TY 14-1-168-73, TY 14-1-75-71, TY14-1-402-72 & TY 14-1-1747-76    |
| ZC6YBE / ZC6KP / ZS6YVI        | ALLOY ZC6YBE / ALLOY ZC6KP /ALLOY ZS6YVI | OCT 1-90126-85, OCT 1-90126-85                                    |
| AE 696                         | SUPERNI 696                              | ASTM A240   |
| KC20WN                         | SUPERCO 605                              | BS 4HR 100  |
| XH67MBT10                      | SUPERNI 750MW                            | Custom Specifications   |
| XH35BT                         | SUPERFER 612                             | GOST 19904-90, TU 108.02.118-86, TU 14-1-1530-75/1528-76/ 1665-76 |
| XHM-1                          | SUPERNI 42N                              | Custom Specifications   |
| XH55MBU                        | ICNI 718                                 | TY 14-1-319-81/ TY 14-1-1567-76                                   |
| MP35N                          | SUPERCO 35N                              | ASTM F562 / AMS 5844, 5845, 5758                                  |

## QUALITY ASSURANCE

Quality Systems of MIDHANI are certified with ISO 9001:2015 and AS9100-2016. Chemical and Mechanical testing laboratories are accredited by NABL in accordance with ISO/IEC 17025:2005.

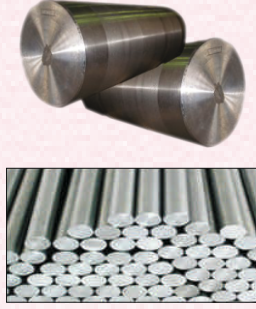
MIDHANI's quality systems are also approved by more stringent standards of Director General of Aeronautical Quality Assurance, Director General of Civil Aviation, Director General of Quality Assurance, Department of Space and Department of Atomic Energy.

Midhani has testing facilities for evaluation of Chemical properties, Mechanical properties, Non-destructive testing, Metallography and Physical properties.

## SUPERALLOY PRODUCTS

### INGOTS / CAST STICKS

Equipment –  
Electric Arc furnace /  
Vacuum Induction Melting /  
Vacuum Arc Remelting  
Size (dia) – 60mm to 1050mm  
Weight – 0.6T to 20T



### BARS & WIRES

Equipment – Hot Rolling /  
Cold Drawing /  
Hot Swaging  
Size (dia) – 0.8mm and above  
Shape – Round and Square  
Supply form – Spools, Rods and Bars



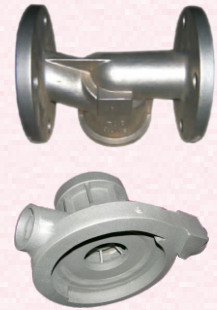
### FORGINGS

Equipment – 6000T / 1500T  
Hydraulic Forge press  
Size (dia) – 100mm to  
1500mm  
Weight – Upto 4.5T



### INVESTMENT CASTINGS

Equipment – Vacuum Melting  
Furnace  
Weight – Upto 300Kgs



### RINGS

Equipment – Radial Axial Ring  
Rolling Mill  
Size (OD) – 320mm to  
3540mm  
Height – 50mm to 635mm  
Weight – Upto 3.5T



### SEAMLESS TUBES

Equipment – Tube Extrusion Mill  
Size (OD) – 27mm to 90mm  
Wall thickness – 3mm to 10mm  
Max. Length – 12000mm



### PLATES / SHEETS

Equipment – Wide Plate Mill  
Thickness – 5mm and above  
Width – Upto 2000mm  
Weight – Upto 6500Kgs  
Equipment – Cold Sheet mill  
Thickness – 0.8mm and above  
Width – Upto 1000mm



### FASTENERS

- Hexagonal bolts
- Hexagonal socket
- Head cap screws
- Cheese Head screws
- Countersunk screws
- Locking washers and plates
- Wire locking screws and Nuts
- Studs
- Specialized and Custom made fasteners  
Lock nuts and Split bushes



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