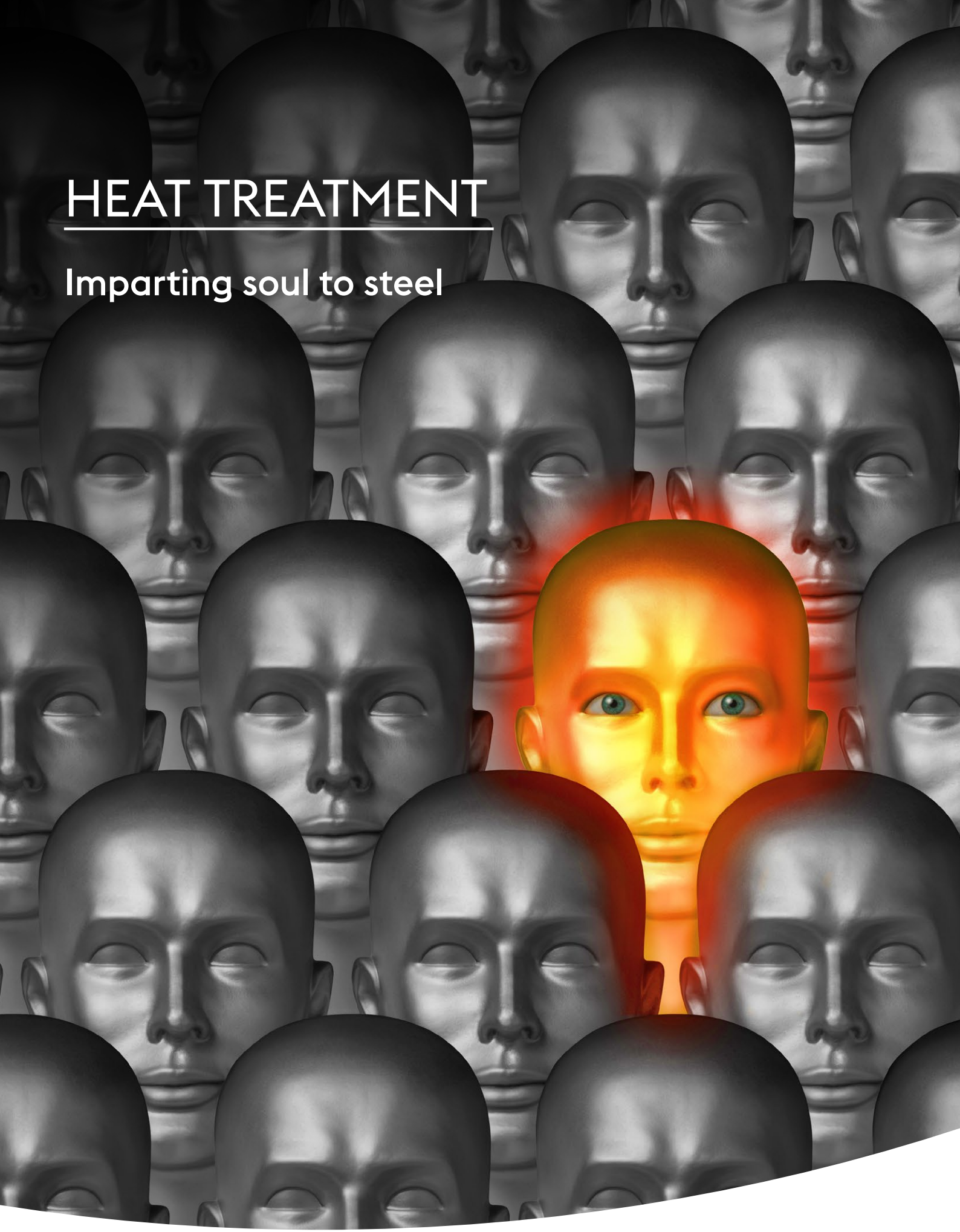


HEAT TREATMENT

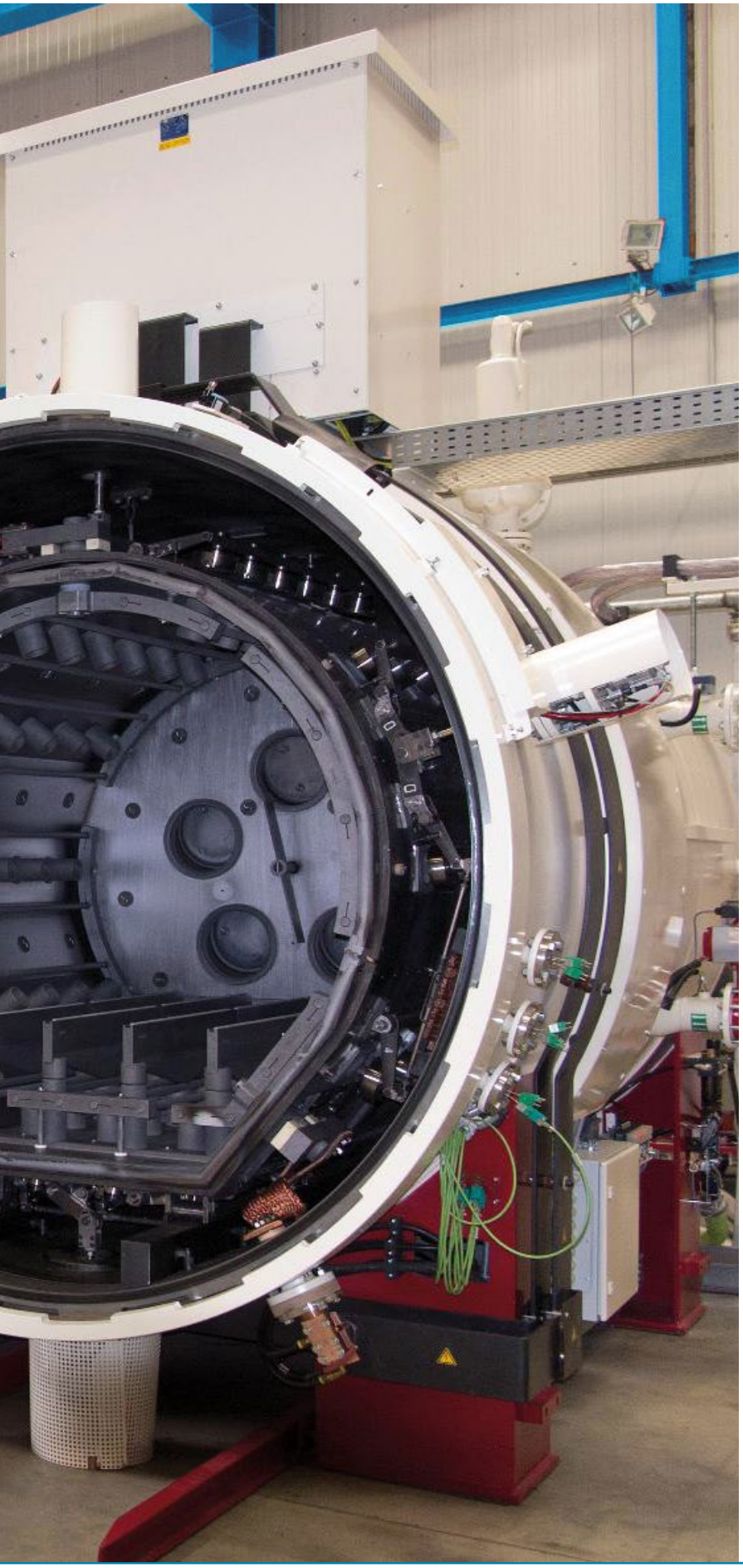
Imparting soul to steel

voestalpine High Performance Metals India Pvt. Ltd.
www.voestalpine.com/highperformancemetals/india

voestalpine
ONE STEP AHEAD.

HEAT TREATMENT

HEAT TREATING IS THE CONTROLLED HEATING AND COOLING OF STEELS FOR PRIMARY PURPOSE OF ALTERING THEIR PROPERTIES (I.E. STRENGTH DUCTILITY, HARDNESS, TOUGHNESS, MACHINABILITY ETC.) FOR A GIVEN APPLICATION.



Heat Treatment is done either to achieve a higher strength of the material (Changing structure to martensite) or for softening & conditioning purpose (annealing,tempering etc.)

It is an operation or combination of operations involving heating at a specific rate, soaking at a temperature for a period of time & cooling at some specified rate. The aim of this process is to achieve a higher strength of the material, better wear resistance or to improve the corrosion behavior of the components.

We provide Heat Treatment process like

- Vacuum Heat Treatment
- Cryogenic Treatment (Liquid Nitrogen)
- Stress Relieving (Vacuum & Atmosphere)
- Vacuum Annealing

VACUUM HEAT TREATMENT

OUR VACUUM HEAT TREATMENT PROCESS HELPS YOU TO ACHIEVE HIGHER STRENGTH OF MATERIAL AND OPTIMUM MECHANICAL PROPERTIES OF TOOLS/COMPONENTS.

WE ARE CAPABLE OF SUPPORTING YOU WITH :

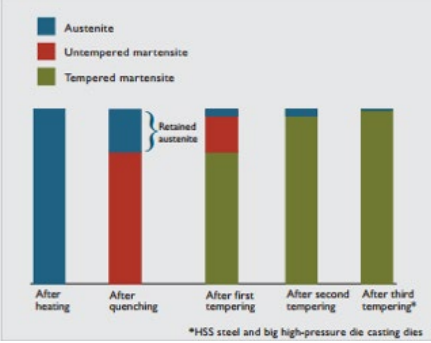
» **High Pressure Vacuum Hardening (12, 10, 6, 5, 2 Bars)**
High pressure vacuum hardening is the highest standard technology when it gets to hardening of tool steel, high speed steel and special steel. It is environment friendly and cost effective due to modern program controllers which ensure complete reproducibility and excellent process control.

» **Tempering (Vacuum / Atmosphere)**
The part undergoes tempering treatment after hardening in order to obtain high ductility and toughness.

Two tempering is generally recommended for tool steel with simple geometry. In case tools with large cross section, complex geometries, high dimensional stability a third tempering is a must.

How many Tempering Needed?

Three tempering are carried out for all the tools which improves the microstructural, mechanical and dimensional properties of tool steel.



Advantages of Vacuum Heat Treatment

Our process is designed for attaining the best microstructure and not hardness alone, with no oxidation or decarb bright surface after Heat Treatment

» Least distortion due to controlled rate of heating, ensuring uniformity of temperature resulting in better toughness & dense microstructure resulting in enhanced tool life.

» No residual salt deposits in the tool internals

Controlling of job temperature in the furnace for austenizing, quenching & tempering

» Excellent PLC control of the process for reliability and repeatability

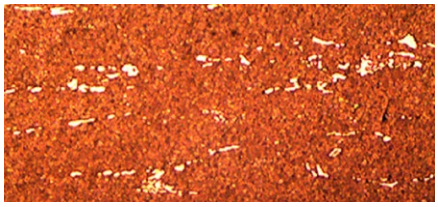
» Based on the tool material, geometry & applications design of heat treatment

The entire furnace operation is automated and the actual process parameters are well documented for reference and check

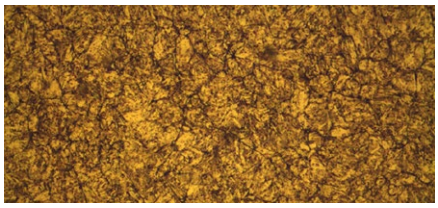
» Based on the tool material, geometry & applications design of heat treatment

» Parameters for achieving the desired properties

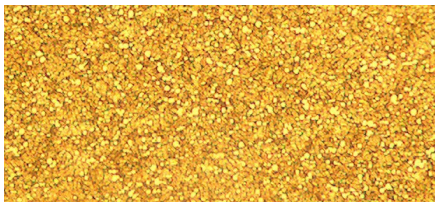
METALLURGICAL LABORATORY



Cold Work Tool steel



Hot Work Tool steel



Powder Metallurgical High Speed Steel

High Speed Steel

We are able to identify and address your metallurgical problems by root cause analysis through metallography, other technical testing such as Charpy Impact tests, Spectro analysis, EDX SEM at NABL accredited laboratories and Educational institutions.

Our Metallurgical Laboratory team supports you with on failure analysis by carrying out detailed field failure investigations, there by suggesting corrective actions based on Evidence-Based Approach.

VARIOUS METALLURGICAL INSPECTION CARRIED OUT ARE:

- Conducting regular metallographic Inspection for Tool Steels / HSS taken up for heat treatment. Providing metallographic structure with reports for samples given by customers as a specific requirement.
- Providing micro graphs for microstructure study, decarb layer measurements, grain size measurements, macro examinations and inclusion ratings.
- Field technical complaints will be taken up to the investigation of steel / HSS having more focused on delivering application based solutions carried out with the state of the art equipment in our technical services.

Metallurgical Microscope

Stereo Microscope

All metallurgical measuring equipment is backed up with standard certification sample of cross verification for the specific grades.

The metallurgical measuring equipment is an annual maintenance to fulfill the Quality Management System requirements.

LAB PROFILE :

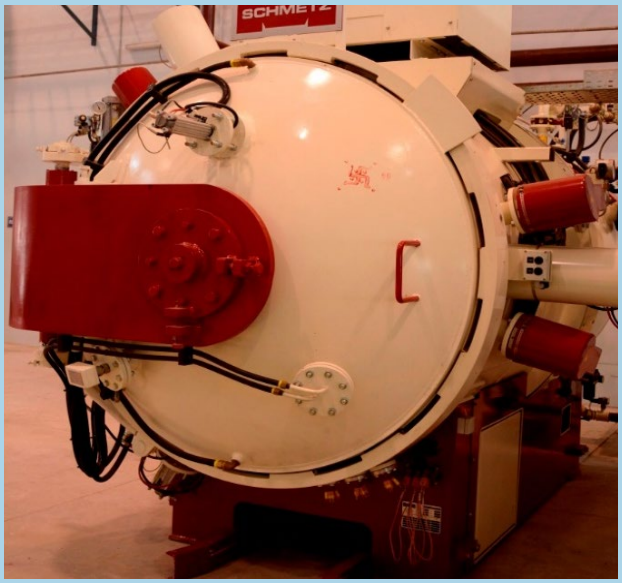
- General Structure Study
- Inclusion Rating
- Decarb Layer
- Grain Size Measurements
- Macro Examination

OUR CAPABILITIES

NORTH INDIA (GREATER NOIDA) FACILITY

Tempering Furnaces

Particulars	Specification
Furnace manufacturer / type of furnace	Schmetz GmbH
Size of retort (L x W x H in mm)	900 x 600 x 600
Year of installation	2015
Type of control system	DEMIG&PROSYS2
Power supply (Kw)	140 kW / 415-440 v 3 Phase
Maximum vacuum (mbar)	5 X 10 -2
Maximum quenching pressure (bar)	10
Maximum weight per cycle (kg) - net	800 including charging grid
Martempering / interruption quenching possible (Yes / No)	Yes
Type of heating	Convective & radiative



WEST INDIA (KHOPOLI) FACILITY

Particulars	Furnace 1	Furnace 2
Furnace manufacturer / type of furnace	Schmetz GmbH	Dynatech Furnace Mumbai
Size of retort (L x W x H in mm)	1200 x 1000 x 1000	1000 x 800 x 800
Year of installation	2010	2006
Type of control system	DEMIG & PROSYS - 2	Scada SW of intellution fix Mitsubishi PLC with all control cards
Power supply (Kw)	210 kW / 415 - 440 v 3 Phase	210 kW / 415 - 440 v 3 Phase
Maximum vacuum (mbar)	4 x 10 -2	4 x 10 -2
Maximum quenching pressure (bar)	10	10
Maximum weight per cycle (kg) - net	1500 including charging grid	600 including charging grid
Martempering / interruption quenching possible	Yes	Yes
Type of heating	Convective & radiative	Convective & radiative

Tempering Furnaces

SOUTH INDIA (CHENNAI) FACILITY

Particular	Furnace 1	Furnace 2	Furnace 3
Furnace manufacturer / type of furnace	Dynatech Furnace Mumbai	Rubic Furnace Austria	Schmetz / RD+ (360deg Nozzle Type Quench)
Size of retort (L x W x H in mm)	600 x 400 x 400	900 x 600 x 600	1200 x 900 x 900 – Round hot zone
Year of installation	2004	2008	2020
Type of control system	Scada SW of intellution fix Mitsubishi PLC with all control cards	DEMIG & PROSYS - 2	DEMIG PROCESS
Power supply (Kw)	120 kW/415-440 v 3 Phase	150 kW/415-440 v 3 Phase	480 kW
Maximum vacuum (mbar)	7 x 10 -5	4 x 10 -2	10-2
Maximum quenching pressure (bar)	10	10	13
Maximum weight per cycle (kg) - net	300 including charging grid	500 including charging grid	2500 including charging grid
Martempering / interruption quenching possible	Yes	Yes	Yes
Type of heating	Convective & radiative	Convective & radiative	Convective & radiative

Tempering Furnaces

CRYOGENIC TREATMENT
(Liquid Nitrogen)

Cryogenic treatment is the ultra low temperature processing of materials to enhance their desired Metallurgical and Mechanical properties.

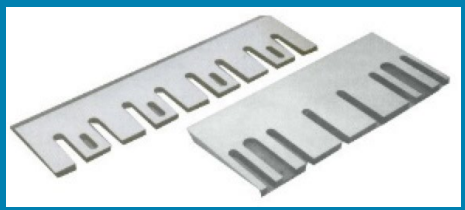
Ultra cold temperatures are achieved using computer controls, a well-insulated treatment chamber and liquid nitrogen (LN2).

BENEFITS OF CRYOGENICS :

- Promotes a more uniform micro-structure
- Reduces abrasive and adhesive wear
- Permanently changes the structure of the metal resulting in improved machining properties
- Reduced coefficient of friction
- Easier machining, polishing and grinding for better edges and finishes
- Reduces catastrophic tool failures due to stress fracture
- Stress relieves to reduce inherent/residual stress caused by manufacture
- Reduce the frequency and cost of tool remanufacture
- Increases the overall durability of the treated product

Application :

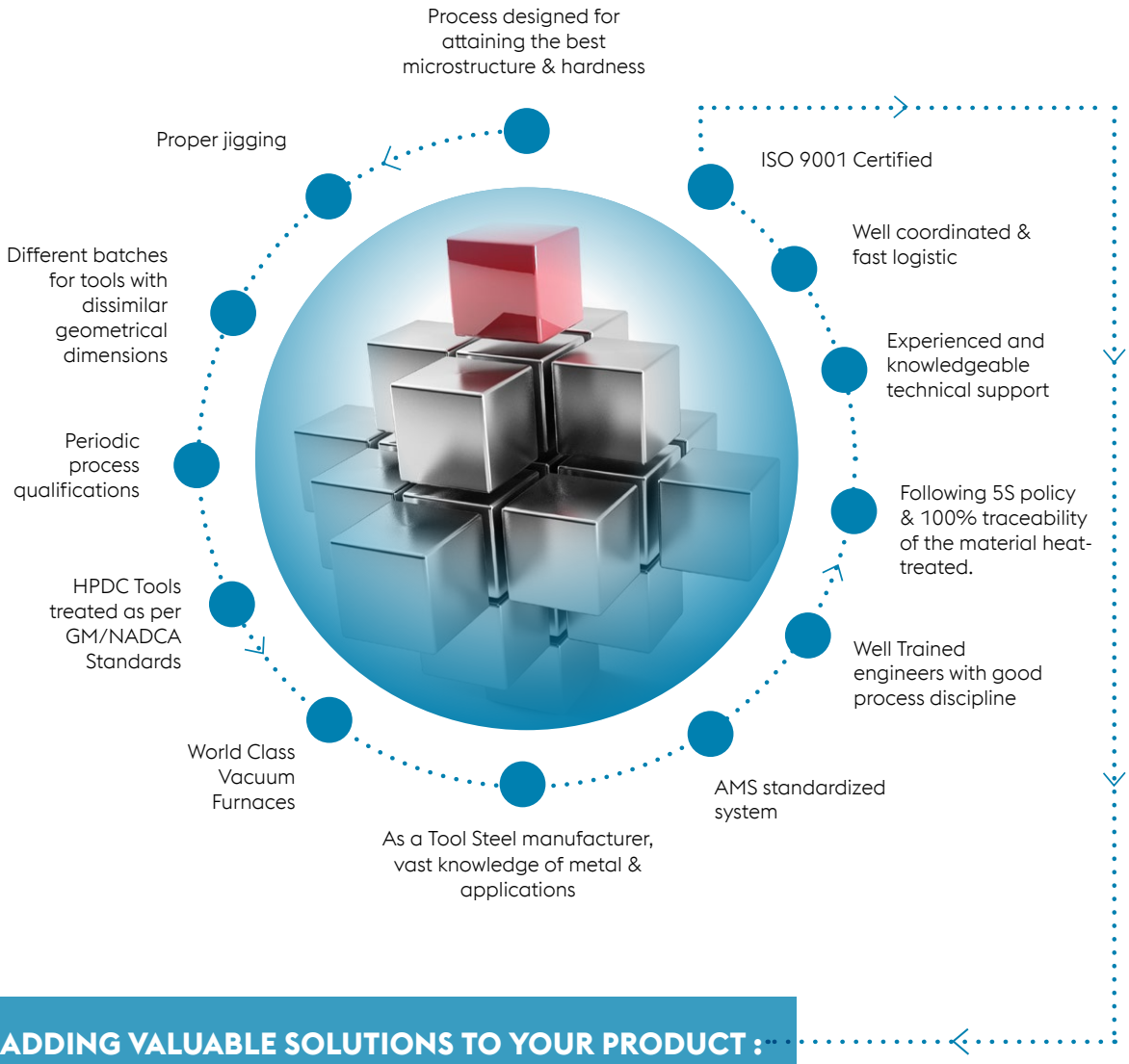
Knives for plastic industries



Punches / Tablet tooling


Stacker
Size : Max. Safe Height 3.5 M
Capacity : 1500 kg

We are different because...



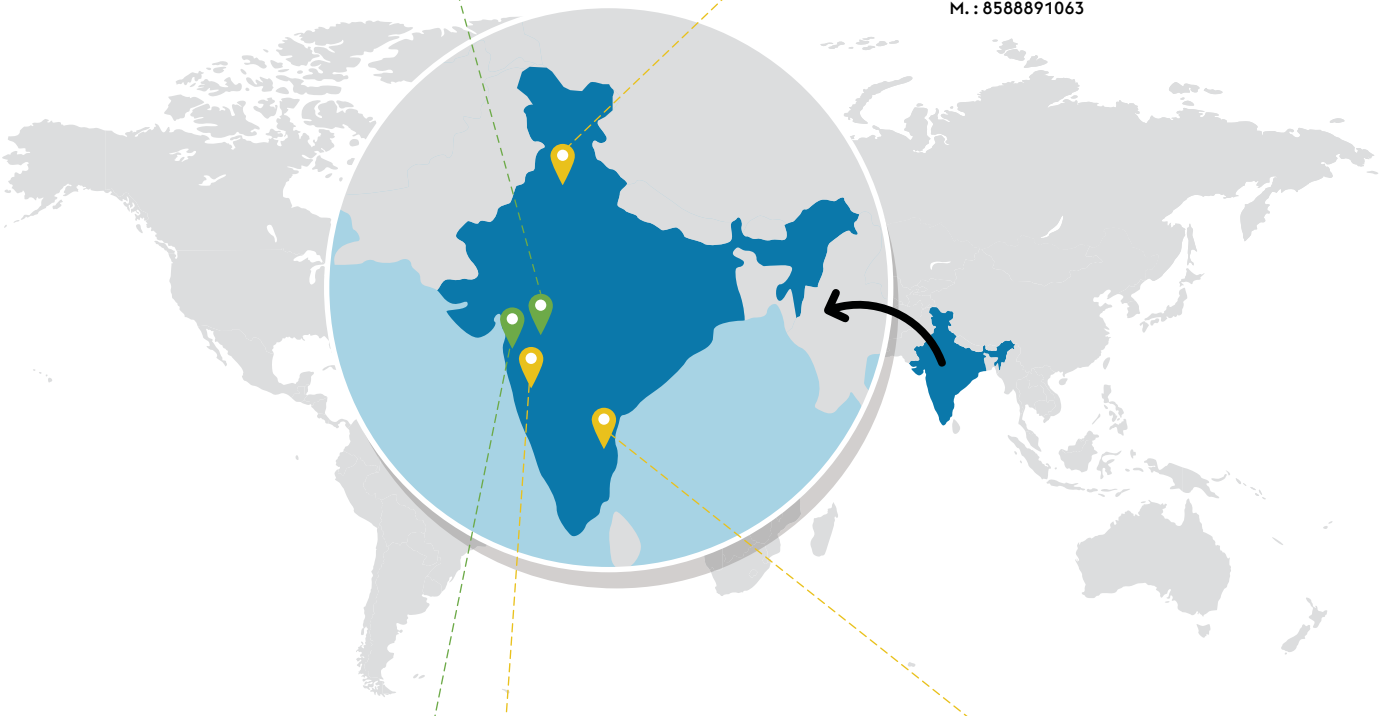
ADDING VALUABLE SOLUTIONS TO YOUR PRODUCT :

- Enhanced tool life and better performance
- Less distortion and uniform hardness
- Good microstructure, grain size and better mechanical properties
- Enhanced tool performance and tool life
- Quality and performance as per GM/NADCA acceptance criteria
- Understanding customer needs and applications for better tool life
- Reliability of process
- Right Heat Treatment suggestions according to the application
- Correct solution for every customer

ABOUT voestalpine HIGH PERFORMANCE METALS INDIA

Incorported in 2008, voestalpine High Perfomance Metals India Pvt. Ltd. was formerly known as BÖhler-Uddeholm India Pvt. Ltd. It is now a 100% subsidiary of voestalpine High Perfomance Metals GmbH, which is part of voestalpine AG, a leading technology and capital goods group.

voestalpine High Perfomance Metals India is the market leader for supplying tool steel & high speed steel of premium quality and providing value added services to automotive, medical, electronics, home appliance, packaging and construction industry sector. To meet the demand of tooling perfomance, we have a wide range of special steel in our product portfolio which covers cold work, plastic mold , hot work and cutting tool applications along with the Value Added Services like Vacuum, Heat, Treatment, Cryogenic Process, ABP process, Components and PVD Coating Services.



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