

Plant Visit to Star Wire Industries, Ballabgarh on 14 February 2015 – A Brief Review

The Indian Institute of Metals – Delhi Chapter regularly organizes visits to eminent industries in and around NCR, for benefit of its members. In this series, a team of IIM-DC members visited **Star Wire Industries** at **Ballabgarh** on 14th February 2015, on personal initiative taken by Mr.O.P.Gupta, Member Executive Committee IIM-DC Chapter. The Visiting Team went around modern facilities of this Unit and had extensive deliberations with the senior officials.

Mr. Girish Sharma, AGM (Marketing) made a video presentation to IIM-DC members. Mr. Amarendra Jha, Sr.GM (Vertical Head - SMS, ESR, Hot Forge & BPS) discussed the various technical issues and took the Team around the Plant facilities and explained working of different Units.

Star Wire (India) Ltd. (SWIL) is one of the reputed mini steel plants in India. The company was taken over in 1981 by the present management and has progressed steadily to achieve excellence in its field.

SWIL is a manufacturer of Special Steels and is engaged in the development of Manufacturing Technologies for commercial production of very Special Steels indigenously. Steel Manufacturing activities involve melting of high quality steels through Electric Arc furnaces/ Electric Induction furnaces, followed by secondary refining processes at AOD/ VOD, Ladle Refining Furnaces, Vacuum degassing to produce high Quality Special Steel Ingots, which are further processed through Electro Slag Refining if required. These Ingots are used for manufacturing of forging, casting and rolled products for various industrial applications. SWIL is today recognized as one of the top producers of Special Steels in the Country and is well known for Quality, Reliability & Commitment to its Customers apart from its Innovative approach which has resulted in development of numerous Steel Products & contribute significantly towards Import Substitution in critical applications of Steel.

The plant is situated in 17 acres plot in Ballabgarh, about 37 kms from Delhi. A second plant at Chhainsa (~ 19 kms away) has additional modern facilities, spread over an area of 70 acres

MANUFACTURING PROCESSES

The major Manufacturing Processes at its 2 Units at Ballabgarh and Chhainsa are as follows:

- ✓ Steel Melting, Refining and Casting Ingots using Electric Arc Furnaces, Induction Furnaces, Ladle Refining Furnaces, AOD Convertor, VD/ VOD processes for Heat Sizes which can go up to 25/ 28 MT
- ✓ Electro Slag Refining Process using State of the Art Technology from ALD, Germany to produce ESR Ingots for very special applications.



- ✓ Casting Liquid Steel into Heavy Castings (Foundry Operations) weighing upto 100 MT single piece, for Power Sector & other Engineering Applications.
- ✓ Hot Forging of High Quality Ingots into Forged products, Semis through a 2000 MT Press as well as a pneumatic Hammer.
- ✓ Hot Rolling of Ingots/ Semis on various Mills: 20 Inch Mill, 18 + 14 + 10 Inches Mills, and 18 + 12 Inch Mills.
- ✓ Extensive facilities for Ingot/ Forged Product/ Rolled Product Conditioning & Finishing are available, e.g. Swing frame grinders for Surface Conditioning, Hydraulic Presses for Straightening, Roller Straightening Machines, High Speed Band Saw machines for Cutting using HSS & Carbide blades, etc.
- ✓ Heat Treatment of Forged and Rolled Products (hardening, tempering, solutionising, annealing, spheroidising etc.) in Batch type Bogey Hearth furnaces to do heat treatment of 10 meter long rolled product, as well as Continuous Hardening and Tempering Operations.
- ✓ Bright bar finishing operations including Straightening, Centreless Grinding, Peeling (more than 100 Centreless Grinders and Peeling machines) to produce Engine Valve Steels and other Bright Bar Grades of steel.
- ✓ Advanced Research and Development facilities where Steels and Materials can be tested for Mechanical, Physical, Chemical and Metallurgical properties. The laboratory is NABL approved.



PRODUCTS

Products manufactured by SWIL cater to the demands of a wide spectrum of industries like Power Equipment Manufactures, Steel Plants, Cement Industry, Petro-Chemical Industry, Earthmovers, Thermal Power Stations, Engine valve manufacturers, Railways, Ordnance factories, Defence, Aerospace, Para Military Forces and other Engineering Industries.

Some of the Product Segments are:

- ✓ *Rolled & Forged Materials (ESR & Non ESR Grades) for Power Sector*
 - Turbine Blade Steel for Steam / Compressor / Gas Turbines.
 - Blade Steel Material Grades such as: X12CrMoWVNb-N10-1-1, X22CrMoV121, X20Cr13 (approved by NTPC)
 - Steel for Steam Turbine Bolts, nuts, studs, spindles, bushes and other components in the operating range of 480 – 565°C.
 - Non Magnetic Steel flats and bars for manufacturing of Tension bolts, Press fingers for turbo and hydro generators.
 - Creep Resistant Steel for Armature Clamping Ring, Spring Forging and Winding Support Rings for generators.
 - Stainless steel for Shroud Segments for Gas Turbines
- ✓ *Engine Valve Steels*



- High Alloy Creep Corrosion Resistant steel (21% Cr, 8%Mn, 0.4% N, 3-5% Ni) used for Exhaust Valve in IC Engines
- Martensitic Inlet Valve Steels for eg. EN52, SUH 11, SUH 3
- ✓ *Bullet proof Steel patented as 'Phantom Steel'*
 - Bullet proof Jackets
 - Bullet proof Cars/ Personnel Carrier-TATA 713
 - Bullet proof Helmets/Patka
 - Bullet proof Mobile Posts
 - Bullet proof Election Podium
 - Bullet proof Sentry Post
 - Bulb Bars & Welding Wire for Naval Ship Building
 - Steel for Cartridge Case & Gun Barrel
- ✓ *Forged products: (Dia 100 mm to 450 mm) for the following sectors:*
 - Energy Sector
 - Aerospace Sector
 - Tool & Die Steels
 - General Engg: Industry
- ✓ *Steel Castings up to 65 MT single pc*
 - Focus on Large Weight Castings for Thermal Turbines
 - Exports: *Alstom, Ansaldo, Siemens, Skoda, Toshiba and Fuji* etc.
 - Developed Critical castings for 250, 500 & 660 MW Steam Turbine for BHEL/NTPC Projects.
 - Manufactured Castings for *Super Critical Parameter Turbines* up to 35 MT/each
- ✓ *Ingots: for Nuclear & Aerospace sector, Tool & Die Steel, Power Sector, Engineering Sector*
 - Polygonal Single Piece weight 200 Kg – 22500 Kg
 - Round Ingot (Dia 540 mm & 610 mm x 3300 mm length)



Some of the products are shown below:



Valves

Forged Product



Special Steels



Forged Ingots

Some of their domestic clients are – *Valve Steel* (Rane Engine Valve Ltd. Chennai; Sriram Piston & Rings Ghaziabad; Kirloskar Oil Engines, Nashik; Vikram Valves & General Industries, Rajkot; etc.), *Special Steel* (MICO Bangalore & Jaipur; Sriram Fuel Injection Industries Hyderabad; Atlas Copco India Ltd. Pune; etc.), *High Speed Steels* (Miranda Tools Ankleshwar; Forbes Gohak Ltd. Mumbai; Zenith Ltd. Mumbai etc.), *Forged products* (Manugraph India; Triveni Engineering Mysore; Eleon etc.), *Super Critical Material Grade Castings* (BHEL ,TOSHIBA, L&T-MHI etc.)

Some of their Global Customers are – Toshiba Japan, Siemens Germany, Alstom Germany, Skoda Czech Republic, Technistar S.r.l.Italy, Ivam S.r.l.Italy, Paradowsay AMP S.J.Poland, Federal Moghul Valves South Africa, Edival S.A.Argentina, etc.

INTERACTIONS WITH SENIOR OFFICIALS

Activities of IIM Delhi Chapter were discussed with Mr. Amarendra Jha. Copies of IIM-DC Monthly Newsletter and IIM-DC Brochure were handed over. They were requested to participate regularly in all activities of IIM Delhi Chapter



The visit to Star Wire Industries, Ballabgarh, ended with thanks to their senior officials for facilitating this visit.