

Plant Visit to Star Wire India Ltd, Ballabgarh on 6th April 2019 – 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 India Ltd** (SWIL) at its location on Mathura Road **Ballabgarh** on 06 April 2019, on personal initiative taken by Mr. S K Bhatnagar, Dy. Industrial Adviser, Ministry of Steel and Mr. A C R Das, formerly in Ministry of Steel.

Mr. M K Pundir Jt.GM (Marketing-Foundary) made a presentation to IIM-DC members. He showed a brief video highlighting the activities of SWIL. The Company has its Registered Office in Lajpat Nagar, N.Delhi. ~ 1,600 employees are engaged in manufacture of various types of Special steels in 3 Units of The Company (1st and oldest at Mathura Road, Ballabgarh on 17 acre plot, 2nd at Village Chhainsa, Mohana Road Ballabgarh ~ 19 kms away with additional modern facilities spread over an area of 70 acres and 3rd in Sector 58, Faridabad). *Dr. S K Goel, Executive Director* of Company joined the Presentation and had interesting interactions with IIM-DC members. During his interaction with IIM DC members, Dr. S K Goel talked about possibility of indigenous manufacture of some steel grades which are presently being imported by India. He mentioned that he can give a list of some steel grades which can be produced in India but the same are presently being imported. He traced the History of Company, which was founded in 1959 and went under liquidation in 1977. In 1981, present Management took over and has expanded the original plant to 3 venues. It is basically a Family owned Company.



IIM-DC members with officials of SWIL

SWIL, one of the leading Mini Steel Plants, is engaged in the manufacturing of Alloy Steels, Stainless Steel and Special Steels for diversified engineering applications in shape of castings, forging and rolled products. The plant is fully equipped with modern equipment and testing facilities which have created confidence and ability for manufacturing various sophisticated grades of steel conforming to international and National standards. Various kinds of Special steels cater to requirements of Indian consumers, and the products are also exported to ~ 20 countries. SWIL has its own research and development centre to facilitate the

manufacturing activities and is also catering to engineering and manufacturing industries for failure analysis and other analytical activities.

MANUFACTURING PROCESSES

The major Manufacturing facilities at different units/locations are:

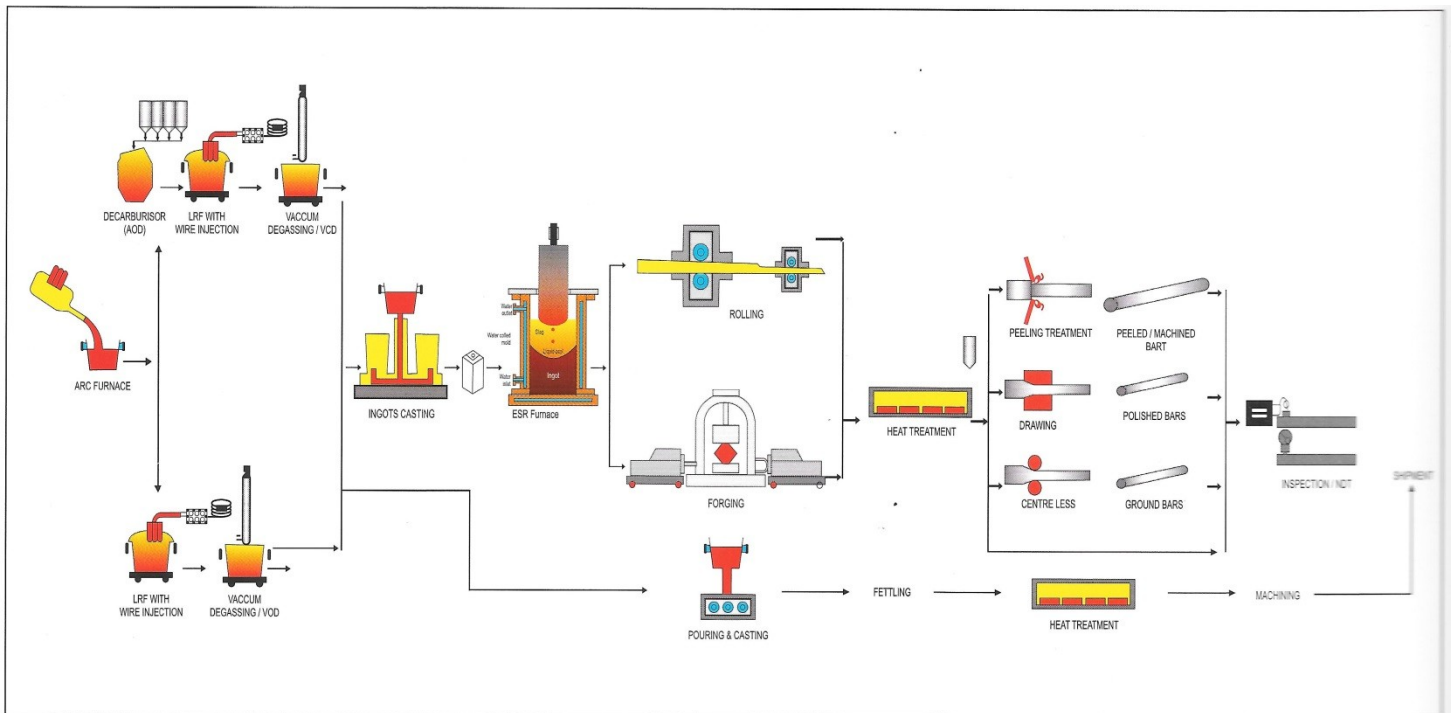
- Steel Melting, Refining and Casting Ingots using Electric Arc Furnaces, Induction Furnaces, Ladle Refining Furnaces, AOD Convertor, VD/ VOD processes for Heat Sizes which can go up to 25/ 28 MT
- Electro Slag Refining Process using State of the Art Technology from ALD, Germany to produce ESR Ingots for very special applications.
- Casting Liquid Steel into Heavy Castings (Foundry Operations) weighing up to 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, spherodising 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 & Development facilities where Steels and Materials can be tested for Mechanical, Physical, Chemical and Metallurgical properties. The laboratory is NABL approved.

Plant has extensive facilities for handling large ingots as shown below:



PRODUCTS

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



Product Segments of SWIL are:

Energy Sector Steels

- Complex Alloys for extreme applications such as
 - Super & Ultra Super Critical Parameter stream & Gas Turbines
 - High Corrosion & wear conditions for Hydro turbines (Nitonic Steel)
 - Low temperature (cryogenic) conditions for valves
- Steel Castings for Power Sector (upto 65 MT single piece)
 - Steam turbine castings & valves for sub & super critical parameter applications
 - Hydro turbine & pump castings for medium & large projects
- Blade Steel & Rolled/Forged materials (ESR & non-ESR process)

Special Steels for Defence Nuclear & Aerospace

- PINAKA Pre-forms
- End Fitting Billets
- Critical Forgings for Nuclear power projects
- Weld consumables
- Forgings for fuel handling machines
- Plates & Sheets
- Bulb bars for Navy

High Speed Steels

- AISI Specs. M2 for Milling Cutters, drills, reamers, taps, broaches etc.
- AISI Specs. M3-2 for Dies, punches, hacksaws, taps etc.
- AISI Specs. M35 for Hobs, Milling cutters, hacksaws, broaches, reamers, etc.
- AISI Specs. M42 for Bi-metallic bandsaw blades, milling cutters, drills etc.
- AISI Specs. T1 for Knives, taps, drills, cutters, wood quality tools etc.

Die Steels

- AISI Specs. D2 for Cutting, punching stamping tools; Shear blades, thread rolling dies, etc.

- AISI Specs. H11 for Punches, Mandrels, Die Inserts, Hot shear blades, Moulds for plastic materials, etc.
- AISI Specs. H12 for Die casting dies, Forgings dies, hot shear blades, extrusion tooling, etc.
- AISI Specs. H13 for Mandrels, pressure pads, bolsters, die cases, die holders and adaptor rings, etc.
- AISI Specs. L6 for Rams, bolsters, mandrels, plunger sleeves, chipping beds, press & hammer dies, etc.
- AISI Specs. P20 for Die holders, zinc die casting dies, backers, bolsters and injection moulds, etc.
- AISI Specs. P20S for Die holders, zinc die casting dies, bolsters and injection moulds, etc.

Engine Valve Steels

- These high Alloyed (Mn-Ni-Cr-Mo-N) magnetic and non-magnetic steels are used for Inlet & Exhaust Valves for IC engines, which work under extreme conditions of severe heat & corrosion stress. These steels retain their properties at elevated temperatures. Specific Customer requirements are met as per India/International (IS/DIN/DS/SAE/JIS) standards

Bullet-proof Steel patented as `Phantom Steel`

- Bullet proof Jackets
- Bullet proof Cars/ Personnel Carrier
- Bullet proof Helmets/Patka
- Bullet Proof Mobile Posts
- Bullet proof Election Podium
- Bullet proof Sentry Post
- Steel for Cartridge Case & Gun Barrel

Some of the products of SWIL are shown below:



Outer Casting for 250 MW Stream Turbine



Forged Product for Printing/Gear Industries



Some of domestic clients of SWIL are – *Valve Steel* (Rane Engine Valve; Sriram Piston Rings; Eaton Industrial Systems; Varroc Engineering; AVR valves; Automotive Valves; SSV valves; Toshiba; Nextech Engineering; etc.), *Forged Quality Ingots* (Bay Forge; Bharat Forge; Rajkumar Forge; Choudhry Hammer; Eschjay Forgings, Pushman Forgings; Achme Forgings; etc.), *Forged products* (Manugraph India; Printer House; Triveni Engineering; Fender; Eleon etc.)

Some of Global Customers of SWIL are – FM Global, Technostar SRL Italy, Mahle Global; Eaton Global; Shinhan Valves, Supar Supap Ve Parca Sanayi Ticaret A.S., Turkey; Federal Mogul Valves (Pty) Ltd, South Africa; Supsan Motor, Turkey; Siemens Germany, Alstom Germany, Skoda Czech Republic, Technistar S.r.l.Italy, Ivam S.r.l.Italy, Paradowsay AMP S.J.Poland, Goons Motor; Nittan Italy etc.

Total Productive Maintenance (TPM)

SWIL has extensively adopted TPM practices to adhere to strict process/product quality of International standards. An Interactive presentation on TPM was made to IIM-DC members by *Mr S K Sinha, Advisor (TPM)* focussing on various related activities.

Testing Division

SWIL Testing Division was established in the year 1994 to undertake testing the quality in the fields of Ferrous & Non-ferrous Alloys, Water and Building materials. Over the decades, it has expanded into further fields such as Air, Oil and other testings. "Quality Centered" team approach accompanied by NABL Accreditation ensures testing of the finest quality. Keeping in mind the growing markets, they have now expanded into Electronic Testing which is NABL and BIS Certified. A number of Outside agencies avail the facilities of Testing Division. Some of the equipment available are shown below:



Building & Ceramics

Petroleum

Environmental



The Visiting Team went around modern facilities of the Unit and had extensive deliberations with the senior officials.

INTERACTIONS WITH SENIOR OFFICIALS

Activities of IIM Delhi Chapter were discussed with Dr. S K Goel. 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 as well as in the **MMMM2020 exhibition**, planned in Pragati Maidan during Aug.2020

The visit to Star Wire Industries, Ballabhgarh, ended with thanks to their senior officials for facilitating this visit as well as excellent hospitality.