SAARLOHA

SAARLOHA ADVANCED MATERIALS PVT. LTD.

(Formerly Kalyani Carpenter Special Steels Pvt. Ltd.)

www.saarloha.com

PHILOSOPHY

" To use our specialized skills and innovative technology to contribute to the welfare of society. It is our intention to grow along with our employees and to aid and encourage them to participate in our goals in order that they realize their full potential. "

B. N. Kalyani
Group Chairman

Kalyani Group

With five decades of experience in Alloy Steels, we have acquired for ourselves, the status of preferred supplier for leading national and international OEMs in the space of Automotive, Engineering, Energy, Aluminium Smelting, Defence and so on.

Kalyani Group, established in mid 1960s, now stands strong and diversified across Speciality Steels, Automotive & Engineering Forgings, Urban Infrastructure, Renewable Energy and Speciality Chemicals with end-to-end capabilities and manufacturing footprint across India, Germany, Sweden, France and USA.

KALYANI GROUP

◆ Kalyani Group Highlights

Turnover & Market Capitalization	• Group turnover ~US $3 Bn (in FY19) • Market capitalization of listed entities ~ US $4.5 Bn (at the end of FY19)
End-to-End product & service offering	• Complete integrated chain from iron ore to steel to finished component supplier with strong R&D support
Leading Special Steels Manufacturer	• India's leading producer of engineering steel long products
Largest single location forging facility	• Bharat Forge has the world's largest single location forging facility with a capacity of ~0.36 MTPA
Largest Exporter	• Largest exporter of auto-components from India • *"Every 2nd heavy truck in US carries a Front Axle manufactured by Bharat Forge India"*
Global Leader in Powertrain & Chassis	• Bharat Forge is the global leader in Powertrain and Chassis components
Skilled Workforce	• Global workforce of 10,000+ with best skills in Quality, R&D, Operations, Technology and so on

◆ Global Footprint

Segment	India	Europe	North America
Engineering Steel	• **Saarloha** (formerly Kalyani Carpenter Special Steels) • **Baramati Speciality Steels** • **Kalyani Steels**		
Forgings	• **Bharat Forge** • **Kalyani Technoforge**	• **BF CDP, Germany** • **BF Daun, Germany** • **BF Aluminumtechnik, Germany** • **Mecanique Generale Langroise, France** • **BF Kilsta AB, Sweden**	• **Walker Forge, Tennessee, USA**
Auto Components	• **Automotive Axles** • **Maxion Wheels**		
Energy & Infrastructure	• **BF Utilities** • **Khed Earth (SEZ)**		
Specialty Chemicals	• **Hikal Chemicals**		

SAARLOHA

Product Range

- **Carbon & Alloy Steels** for forgings & engineering applications
- **Tool & Die Steels** – H11, H13, A2, SXI 99, S1, S7, O1, etc.
- **Valve Steels** – EN52, SUH3, SUH11, etc.
- **Stainless Steels** – AISI 304/304L, 316/316L, 321, 403, 410, 17-4PH,15-5PH, Custom 450, etc.
- **Micro-alloyed Steels**
- **Customized Steel as per requirement**
- ESR & VAR route steels

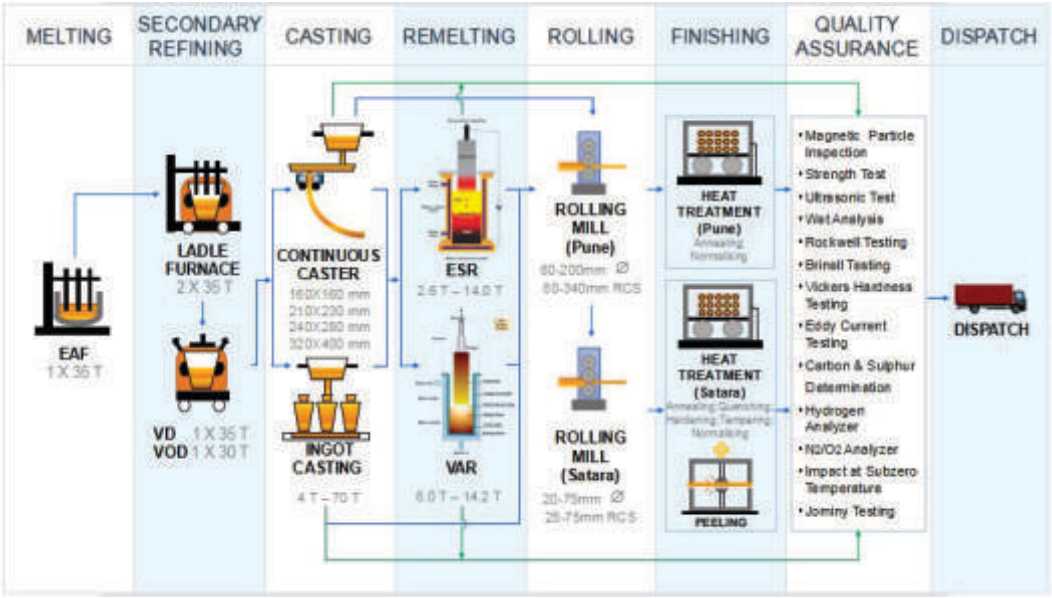
Note: Grade list not exhaustive

Specialities

- Manufacturing Flexibility – *In terms of raw material use & product routes*
- Customized Product Development
- Clean Steel Technology – *By virtue of re-melting facilities*
- Wide Range of Grades
- Wide Range of Sizes
- In-House Research & Development team and facility
- Expertise in understanding customer needs and hence offering best solutions

Process Flow

PROCESS FLOW AT SAARLOHA



SAARLOHA

Facilities

Electric Arc Furnace (EAF)

- **35 MT Capacity (ABB)**
- Transformer capacity – 20/22 MVA
- Slide gate assembly for slag free tapping
- Virtual Lance Burners (VLB) for oxygen injection

Ladle Furnace

- **35 MT Capacity - 2 Nos. (ABB)**
- Wire feeding capability
- Continuous argon purging
- Automatic ferro alloy addition system

VD & VOD

- **VD : 1 x 35T** (Technometal, Germany)
- **VOD : 1 x 30T** (Primetals)
- Vacuum less than 1 mbar
- Continuous argon purging
- Tank degassing type with 6 ejectors and 3 boilers

Bloom Caster

- **Twin Strand Caster** (Concast Technology & Automation by L&T)
- **Casting Radius 12 / 18 m**
- Ceramic shroud from ladle to tundish
- Tundish capacity 7 MT
- Alumina graphite 4 port upward angled Sub Entry Nozzle (SEN) from tundish to mould
- Argon shrouding of tundish stream
- Turbo stopper in tundish

Bloom sizes (mm x mm)
C1-160x160, C2-210x230
C3-240x280, C4-320x400

Ingot Casting Facilities

- **Ingot Weight 4 MT to 70 MT (Inteco)**
- **Shapes:** Round, Rectangular, Polygonal
- Cast iron and spheroidal graphite iron moulds
- Bottom pouring and uphill teeming
- Wide end up moulds
- Load cell to monitor rate of liquid metal flow
- Argon / Nitrogen shrouding to avoid gas pickup

SAARLOHA

Rolling Facilities

Reheating Furnaces

- Soaking Pit furnace (For up to 4.3 MT ingots) 32 MT / Batch (Olson)
- Walking Beam furnace of 35 MT/ Hr (Hypertherm)

Blooming Mill

- **925 mm 2 High Reversible Mill**, Morgardshamer (MH, Sweden)
- Continuous oxygen monitoring system in the reheating furnaces

Rolling Mill (22")

- **550 mm Dia 3 High Twin stand** Rolling Mill
- Continuous oxygen monitoring system in reheating furnace

Sizes:	
Rounds	**: 80 mm to 200 mm**
RCS	**: 80 mm to 340 mm**

Finishing Facilities

Bogie hearth **Oil Fired Annealing Furnaces**

- 1 no - 15 MT batch size
- 1 no - 30 MT batch size

Bogie hearth **Electric Annealing Furnaces**

- 1 no - 15 MT batch size

Conditioning Facilities

- Shot Blasting Machine
- Swing Frame Grinders
- Band Saw – 10 nos (20 mm to 400 mm dia)
- Roller Straightening Machine – 2 nos (Up to 125 mm dia)
- Press Straightening Machine – 1 no (Sizes above 125 dia)
- Magnetic Particle Inspection Equipment – 5 nos.

Quality Assurance Facilities (NABL Accredited Lab)

- 02 nos. direct reading emission spectrometers (48 channels)
- 03 nos. mobile spectrometers
- 05 nos. MPI machines
- Carbon & Sulphur determinator (LECO)
- Hydrogen analyzer & Nitrogen/Oxygen analyzer (LECO)
- Structures metallographic polishing machines
- Metallurgical microscopes with image capturing capability
- Carl Zeiss microscope (HD-100) with image projection facility
- Ultrasonic portable flaw detectors
- Universal tensile testing machine (250 kN)
- Impact at subzero temperature
- Jominy end quench equipment
- Wet analysis lab
- Rockwell, Brinell and Vickers hardness testing machines

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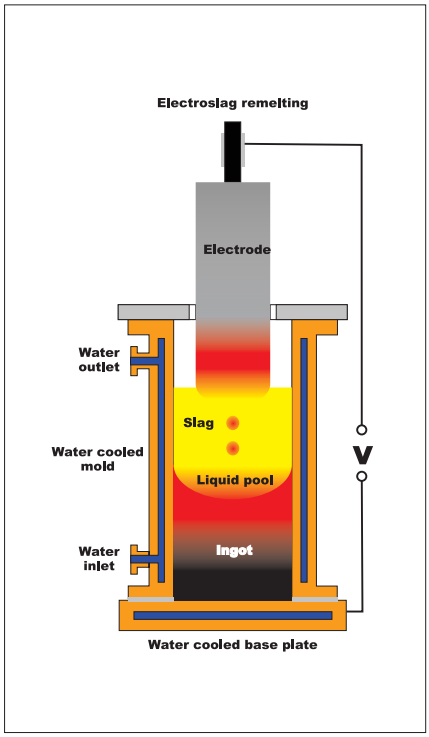
Inert-ESR Features

- One furnace head & two melt stations
- Fully computerized auto melt control system
- Inert atmosphere: No gas pick up from atmosphere
- ESR input and output gas level is same
- Highly accurate and precise load cells for better melt rate control
- Auto slag addition facility
- Start up and hot topping fully computer controlled
- Provision for furnace design as per industry 4.0 Standards

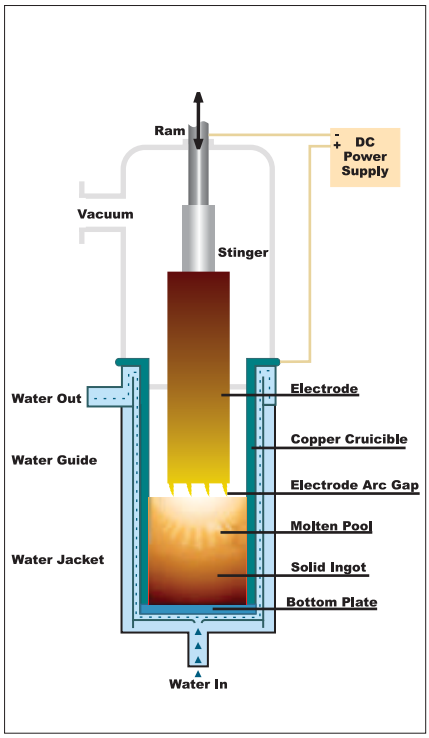
Inert-ESR	
Ingot Size (mm) (Approx.)	Ingot Weight (MT) (Approx.)
883 Dia.	15.4
630 Dia.	7.50
305 x 360	2.7



VAR Features

- One furnace head & two melt stations
- Fully computerized auto melt control system
- Capable of achieving 1 x 10^{-3} mbar vacuum level
- Arc voltage control
- Start up and hot topping fully computer controlled
- Provision for furnace design as per industry 4.0 Standards

VAR	
Ingot Size (mm) (Approx.)	Ingot Weight (MT) (Approx.)
897 Dia.	14.5
670 Dia.	8.5



State-of-the-art R&D Facilities

- Saarloha has access to KCTI (Kalyani Center for Technological Innovation) & KCMI (Kalyani Center for Manufacturing Innovation) which provide cutting edge R&D and testing services

BSSL
Baramati Speciality Steels Ltd.
(120 Kms. from Pune)

Rolling - Rounds & Squares

- Pusher type furnace 10 MT/Hr (Technotherma)
- 510 mm Dia Roughing Mill: Reversible
- 380 mm Dia Stand Finishing Mills
- 310 mm Dia Stand Continuous Mills

Rolled sizes:

Rounds: 20 mm to 75 mm

RCS: 25 mm to 80 mm

Heat Treatment

- Furnace (Size 6m X 750mm – 5 MT per batch): Electrically operated
- SCADA Controlled real time TT monitoring with water/ polymer/oil quenching & auto load-unload facility

Heat Treatment Processes

- Hardening & Tempering
- Annealing – ISO & Solution
- Normalising
- Furnaces: 5 for hardening / normalising & 7 for tempering / annealing. Max Temp. 1100°C

Bright Bar Products

1" Peeling Line

- Straightener, Burnisher, Centreless Grinder
- Capability: Tolerance -H9/H11
- Surface Finish: RA 0.8 µm or better, straightness 0.75 mm/m

Peeled sizes:

Rounds: 16 mm to 200 mm Dia

8" Peeling Line

- Burnisher
- Centreless Grinding 20-50 mm Dia.
- Belt Polishing upto 90 mm Dia.
- Capability: Tolerance -H9/H11
- Surface Finish: RA 0.8 µm or better, straightness 1.0 mm/m

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Testing Lab and Quality Control

- MPI Testing Machine
- Ultrasonic Testing
- Rockwell Hardness Tester
- Brinell Hardness Tester
- Profile Projector
- Impact Testing Machine
- Universal Testing Machine
- Microscope with Image Analyser
- Mobile Spectrometer

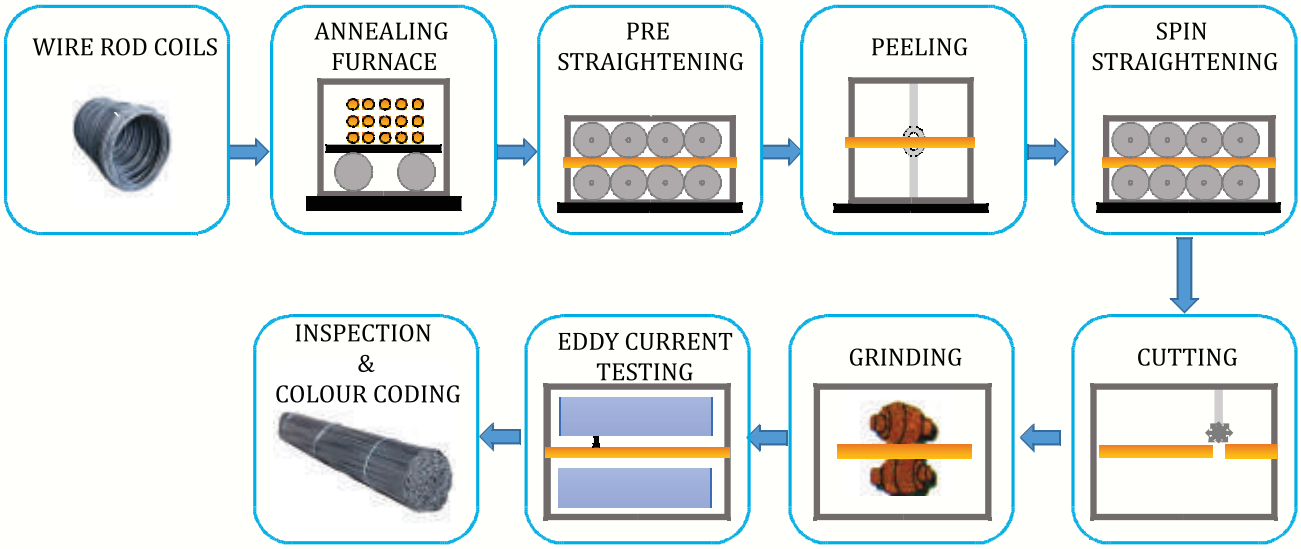
Wire Drawing and Peeling Facility

(Ranjangaon Unit, Pune)

Valve Steel Facilities

- 04 nos. Coil Annealing Furnaces with inert atmosphere
- 01 no. Hardening & Tempering (H&T) Furnace (Oil quench)
- 06 nos. Coil to Coil Peeling / Coil to Bar Peeling
- Input Range: 6 mm to 20 mm Dia Wire Rod
- Finish Product: 4.8 mm to 16.5 mm Dia
- Coil to Bar Line: Peeling, Cold Drawing, Burnishing, Belt Polishing
- 09 nos. Centreless Grinders
- Drawing Line: Cold Drawing
- Surface Inspection: Eddy Current Testing (ECT) / Magnetic Particle Inspection (MPI)

Wire Drawing and Peeling Facility (Ranjangaon Unit)



Certifications

Steel making semifinished products and bars	Certificate of approval of manufacturers of materials	Approval of manufacturing process	Certificate for manufacturing process
Certification for work approval	ISO 9001: 2015	Approval of manufacturing	Verified material manufacturing according to Ad2000- Merkblattw WO
IATF 16949: 2016	Steel casting components for marine applications	IS 9550: 2001 IS 1875: 1992	Saarloha is approved by Ordnance Factory Ambajhari (OFAJ)
Bureau of Indian Standards The National Standards Body of India	EN 9100 (Equivalent to As 9100 D)	Bureau VERITAS approval certificate for materials	Bureau VERITAS Recognition for BV Mode II Scheme
Russian Maritime Register of shipping	NADCAP (Material Testing Laboratories)	NABL (Testing Laboratories)	Indian Register Of Shipping (Work Approval Certificate)

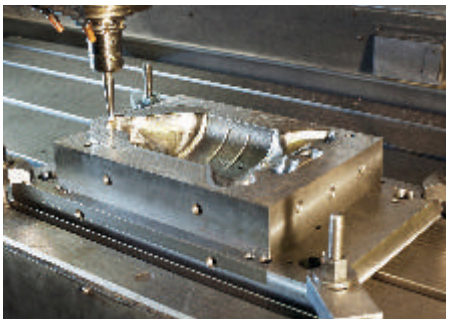
- Govt.of India
  (Well known steel maker)
- ISO 14001
- ISO 45001

Special Steels for:

Aerospace

Defence

Nuclear



Tool & Die

Engineering

Automotive

SAARLOHA

Registered & Marketing Office:

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