LIBERTY

CORPORATE PRESENTATION EQUIPMENT

Saint-Saulve

OCTOBER 2020

MEMBER OF GFG ALLIANCE

LIBERTY ASCOVAL

Libertysteelgroup.com

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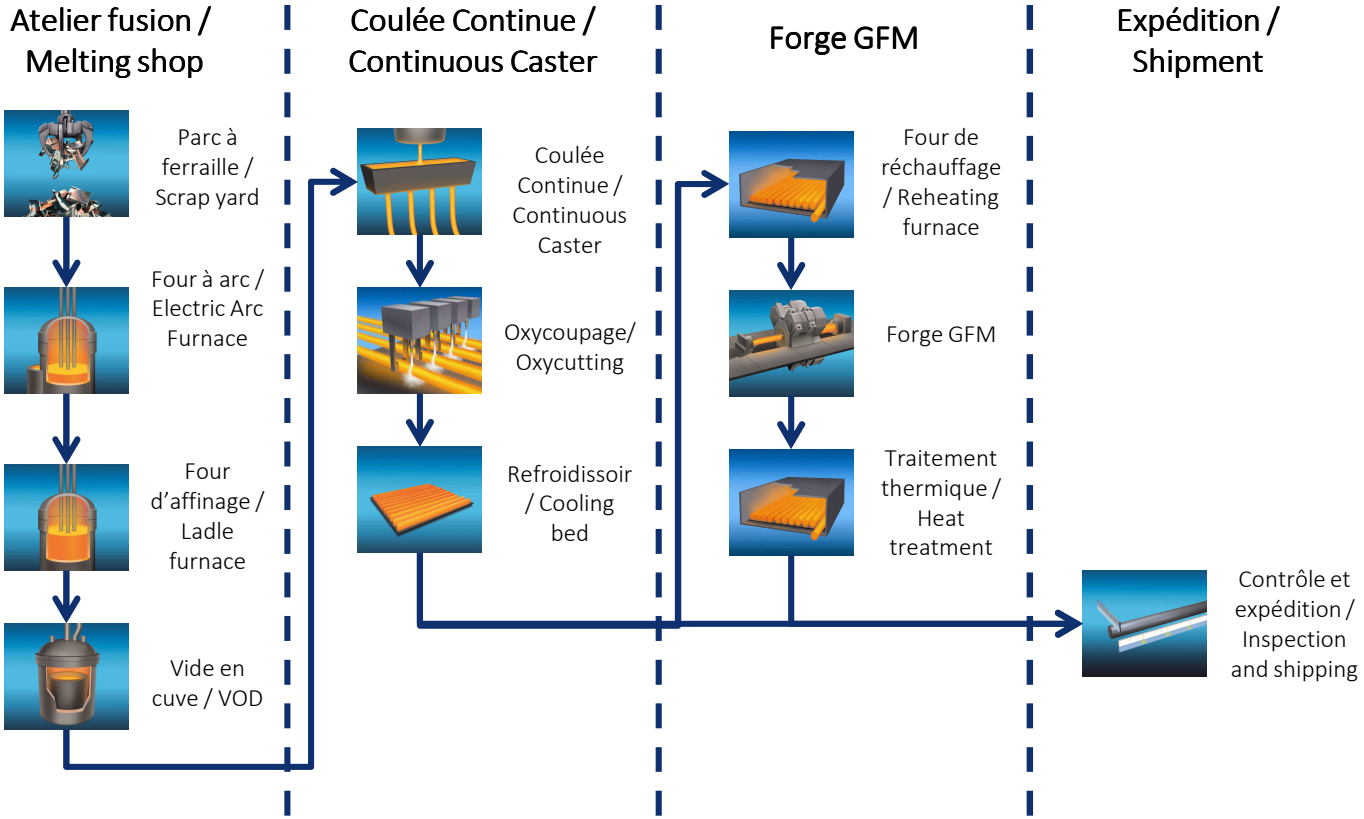
State-of-the-art Assets

- The plant consists of :
  - 90 t / 115 MVA SMS Concast Electric Arc Furnace
  - 15 MVA Ladle Furnace
  - Vacuum Oxygen Degassing unit (VOD) – twin tanks
  - 4 strands caster Danieli – bow type ; 12 m radius
  - Forging shop GFM with heat treatment (including variable diameters for axels)
- The plant produces continuous cast rounds rounds blooms (round, square and rectangular profiles) in carbon and alloy steel (up to 13% Cr). It also produces forged products (from Ø110 to Ø250 mm).
- The plant is connected to railway network and Escaut river.
- The plant has all necessary ancillary equipment (from scrap yard to logistics) to be totally autonomous in its operations.
- The equipment is in excellent condition ; 150 m€ have been invested in the last 15 years.
- One of the most modern steel shop equipment in Europe.

Plant map overview

Production Route



Main figures
2019

- 400 existing grades, possibility to design very specific grades to meet customer needs
- ENS (mix of steel grades in sequence) and Flying Tundish (on main diameters) capabilities. Capacity depends on the sequence ratio
- At current mix (seq. ratio @ 3.0) : 275 kt/yr at 3 shifts
- Evolution function of number shifts, progress plan, and sequence ratio (up to 4,5)
    - 400 - 435 kt/yr at 4 shifts
    - 450 - 600 kt/yr at 5 shifts
- Forging capacity at 60 – 80 kt/yr
- 266 employees (31/12/2019)
- 245.000 m2 - 61.000 m2 covered
- Very short leadtime : from 1 to 2 weeks
- Claims : 0,7%

Production route

Scrap Yard

Objectives : Supply the EAF in scrap adapted to the grade to produce

Scrap yards :

- 13.000 m2, 80.000 tons
- Origin = automotive industry, scrap collecting, recycling VALLOUREC and ASCOMETAL, etc…

Supplies :

- 70 % by trucks (50 to 80 / day)
- 25 % by barges (5 / week)
- 5 % by train

Receiving controls

Quality and radioactivity

Loading 50 buckets per day

- Radio connection with the EAF
- Loading scrap metal adapted to each grade

Production route

Electric Arc Furnace (EAF)

Objectives :

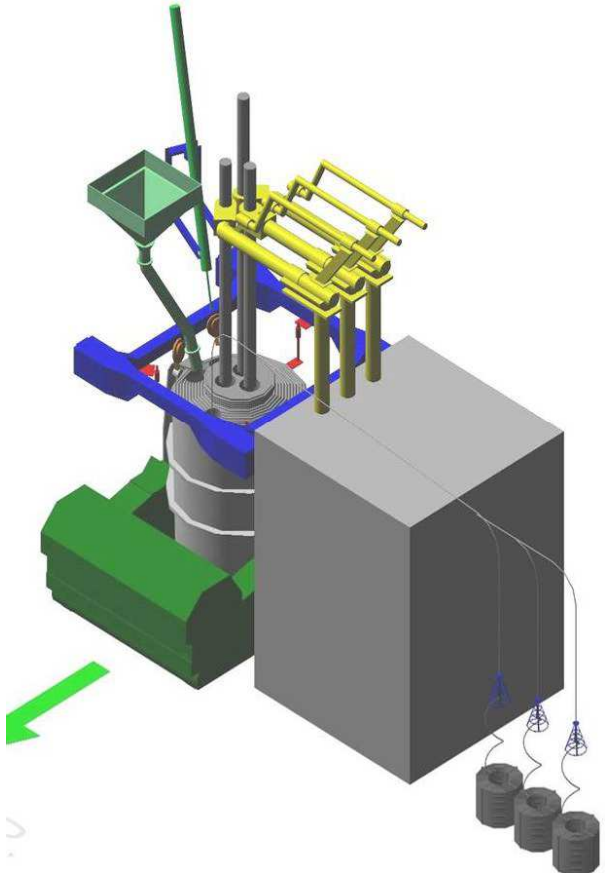
- Mastering fillings to prepare the final metallurgical analysis
- Melt the scrap and bring the temperature to 1,680° C
  - Electrical power : 115 MVA – 930 V – 55 000 A
  - 3 jets for injection of oxygen, gas and coal
  - Shell diameter : 5,90 m
  - 3 electrodes Ø 600 mm (24'')
  - Water cooled walls and roof (1 500 m3 / h)
  - Production capacity : 23 casts per day (2 000 tons / day)

Production route

Ladle furnace

Objectives :

- Adjust steel analysis to meet customer’s needs
- Adjust delivery temperature for continuous casting
  - Mineral and metal additions, in bulk by hoppers or by injection of cored wire
  - Argon & Nitrogen bubbling
  - Power 15 MVA
  - 3 electrodes Ø 350 mm (14 ’’)



Production route

Vaccum Oxygen Degazing (VOD)

Objectives :

- Vacuum decarburizing for high alloy steels
- Degassing under vacuum for specific steels (low nitrogen and low hydrogen)
- Cleanliness
  - Tapping
  - Deep vacuum (1mbar in 6 min) on 2 tanks
  - Steam generator (12 bars) + 2 vacuum pumps
  - Gas analysis by spectrography
  - Cored wire injection

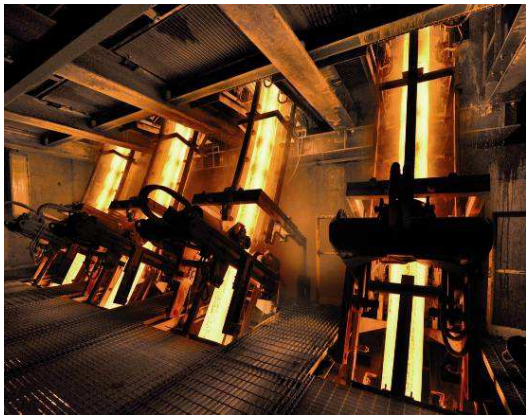
Production route

Continuous Caster

Objectives :

Solidify liquid steel into round bars Turret with 2 positions

- 4 lines fed via a tundish
- 4 water-cooled copper molds (lg 780 mm)
- The bars are straightened and cut to length by oxy-gaz torches
- Tundish Sequence from 1 to 12 heats
- 6 diameters changes per week
- About 100 grades per month
- Ø bars = 180, 200, 220, 250, 260, 270, 280, 310, 325 mm
- Max. length = 12,4 m
- Metallurgical height = 32 m
- Radius of the curve = 12 m
- Extraction speed from 0.65 to 2.6 m/min
- Capacity of 100 to 125 tons/h acc. to the diameter and the grade

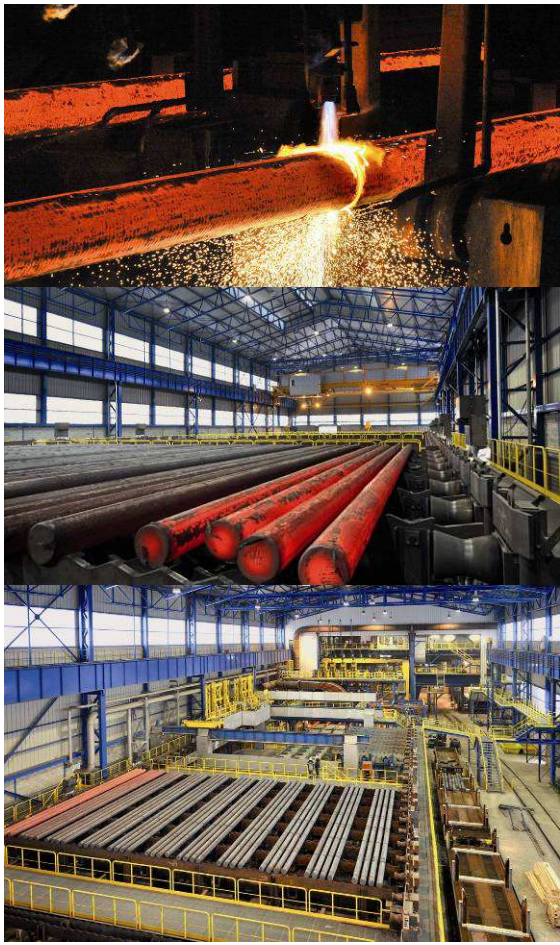


Production Route

The Bar Hall

Objectives :

- Cutting bars to customer length
- Marking for traceability
- Natural cooling of bars and straightness
- Visual inspection
- Packaging and shipping
    - 80m cooling bed (900° C to 150° C in 8 hours)
    - Traceability by punching and labeling
    - 1000 tons of outstanding
    - Capacity 15 wagons
    - 2 electromagnet cranes



Production Route

Forge

Objectives :

- Reduce the section of the bar by forging to improve the internalquality of the bars (10% of the booklet)
- Obtain small diameters not produced at CCC
    - Reheating furnace : 1 250° C
    - Forge with 4 hammers, nominal power : 1200 tons
    - 250 rpm
    - Current notebook Reduction
    - Ø 270 → 220 or 180
    - Ø 250 or 220 or 180 → 140
    - Technical feasibility from O 110 to O 250 in final diameter
    - Heat treatment if necessary