



# **Corporate Presentation – Equipment**

**Saint-Saulve, February, 11th 2019**

# State-of-the-art Assets

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- 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 bars (“RCC”) in various diameters (from Ø180 to Ø325 mm) 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 10 years.
- One of the most modern and state-of-the-art steel shop in Europe

## Plant map and overview



# Main figures

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- 400 grades (too many !)
- 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
- 281 employees (31/12/2018)
- 245.000 m<sup>2</sup> - 61.000 m<sup>2</sup> covered
- Very short leadtime : from 1 to 2 weeks
- Less than 3 quality claim/year

# Production Route – Scrap Yard



## Objectives :

- ❑ Supply the EAF in scrap adapted to the grade to produce

## Scrap yards :

- 13.000 m<sup>2</sup>, 80.000 tons
- Origin = automotive industry, scrap collecting, recycling VALLOUREC & Asco , etc...

## Supplies :

- 65 % by trucks (50 to 80 / day)
- 30 % 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 – EAF

## Objectives :

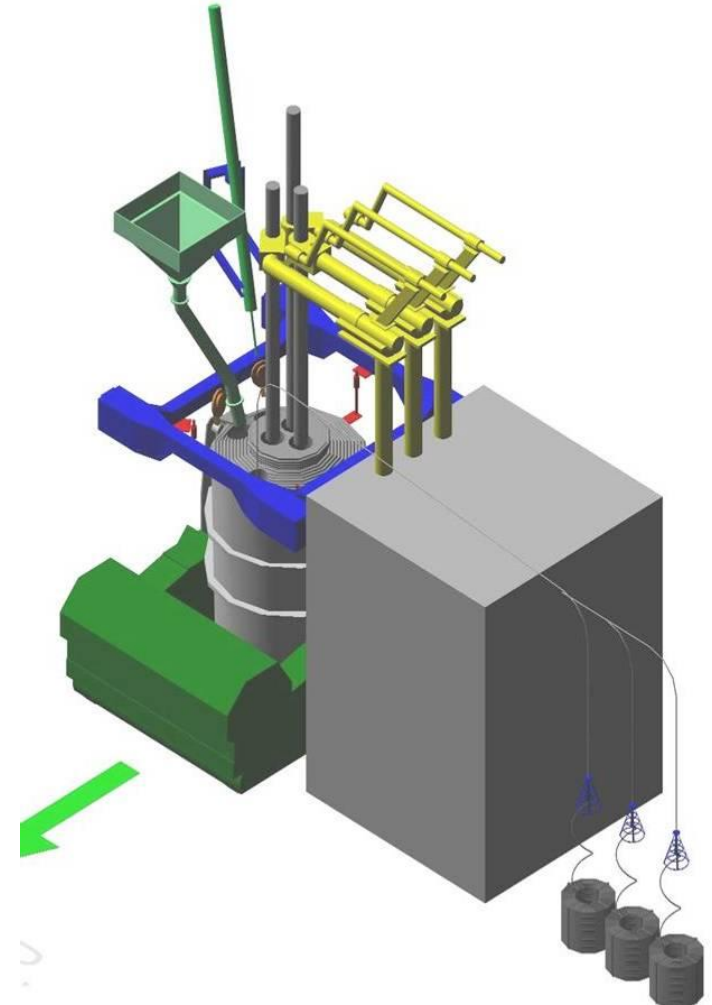
- ❑ Mastering fillings to prepare the final metallurgical analysis
- ❑ Melt the scrap and bring the temperature to 1,680° C
  - Electrical power : 115 MVA – 930 V – 55 000 A
  - 3 coherent jets for injection of oxygen, gas and coal
  - Diameter of the tank : 5,90 m
  - 3 electrodes Ø 600 mm ( 24'' )
  - Water cooled walls and roof (1 500 m<sup>3</sup> / 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 '' )

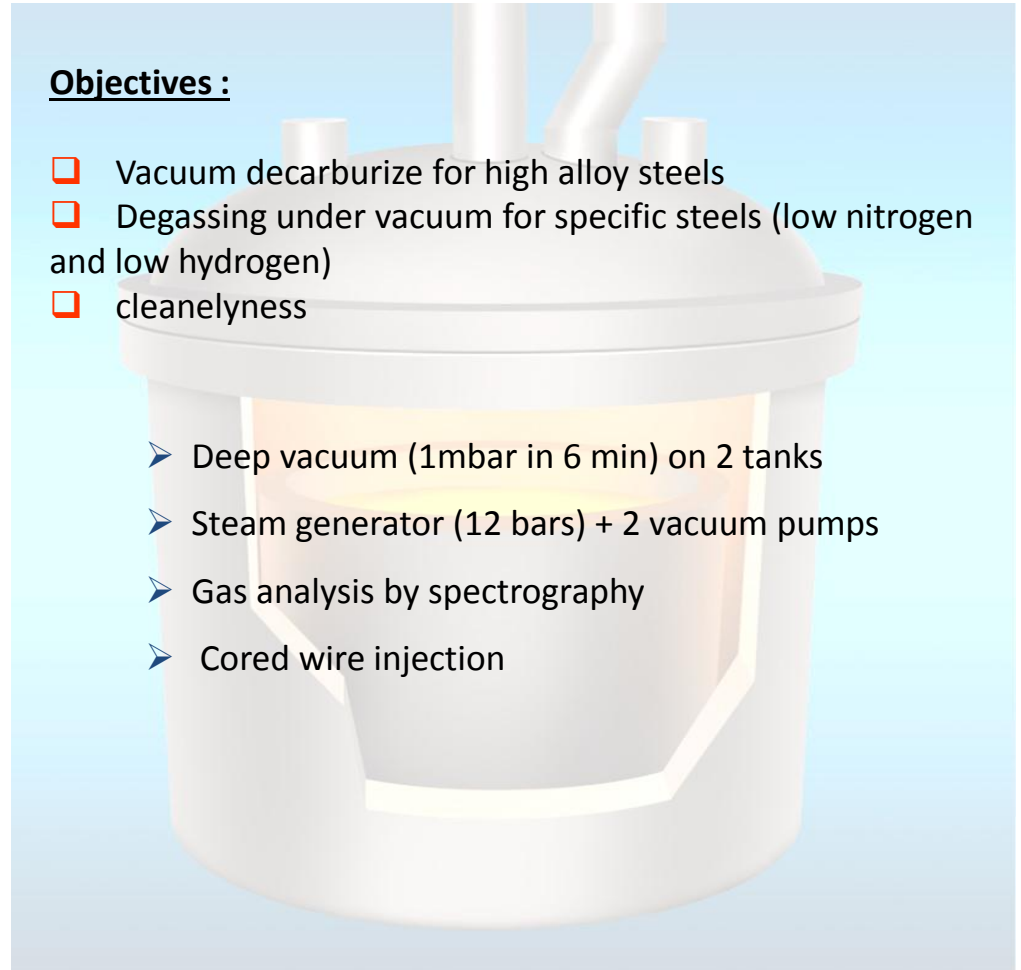


# Production Route – VOD



## Objectives :

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

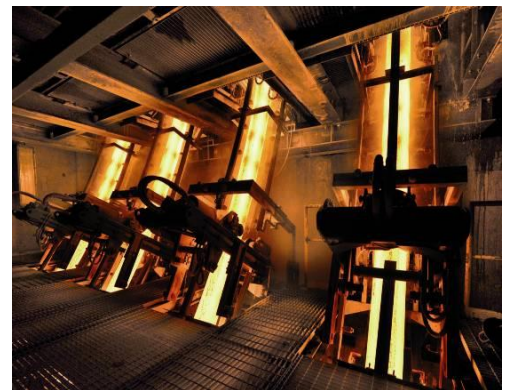




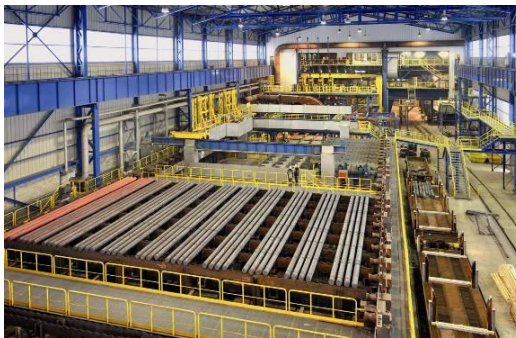
# Production Route – Continuous Caster

## 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 rectified and cutted to length by oxy-gaz torches
  
- Tundish Sequence from 1 to 12 heats
- 6 diameters changes per week
- About 100 grades per month
  
- $\varnothing$  bars = 180, 220, 250, 270, 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 according 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 labelling
- 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 internal quality 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 Ø 110 to Ø 250 in final diameter
  - Heat treatment if necessary

