



Severstal Steel Mill at Balakovo site

## Technical Assessment of Meltshop

Specialists supporting the plant management team to improve the operation

**Customer:**

SEVERSTAL / BALAKOVO / RUSSIA

**Plant data:**

Plant is designed for 1.000.000 t/y  
EAF Finger-Shaft Type, 125t tap weight with 85 MVA transformer  
LF 125t with 21MVA transformer  
Billet Caster 5 Strand, 150x150mm<sup>2</sup>, 12m billets, 2,6-2,8m/min.  
casting speed  
Rolling Mill for rounds and re-bars, 34m/s, 135t/h

**Objective / Challenge:**

HWC was asked by Severstal to investigate in the existing meltshop and rolling mill operation and equipment with the goals to:

- Improvement of meltshop productivity and consumptions
- Drastic improve of the rolling mill productivity which is far below expectations

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## Project description:

### Tasks of the assessments and services:

- Comparison of operational aspects: Currently used operation against HWC proposal covering mechanical design aspects, chemical packages as well the electrical settings
- Detecting of bottleneck's for steel production (EAF Charging orders, no use of L2 models, problems on scrap yard and dedusting system)
- Preparing of benchmark figures for productivity and consumptions of +/- comparable plants
- Investigations in:
  - Why several aux. machines and equipment is not used
  - High refractory wear
  - RCB Burner settings and Laval nozzle design since the used nozzle is too big for the requested Oxygen flow and pressure
  - High carbon level at the end of operation
  - Too high side oxidation of LF electrodes
  - Reasons for working with short electrodes
  - Reasons for too many RM stoppages (product changes very often)
  - Limiting factors for RM speed increase
  - Reasons for low hot-charging rate
- Estimation of saving potentials in terms of energy cost as well as production increase
- Defining short-, medium- and long term measures for plant improvement

## Customer benefit:

- The customers team members were guided in a professional way to improve the operational management of major tasks.
- Action plans for Steel Making Plant and Rolling Mill was provided with technical and organizational recommendation of required SOP's (standard operation practices), as well as technical modifications to improve consumptions, productivity and quality.
- Identified saving potentials:
  - Meltshop: 5% Energy cost + 10% higher productivity
  - Rolling Mill: Productivity increase of 230.000 t/y
- Supported by experienced and professional specialists in the field of Electric Steelmaking and Rolling Mill processes, to investigate in current problems in terms of operation and quality.

### Contact: