



PRODUCT ENHANCEMENT - CAPACITY UPGRADE

2013/2016 – Arcelor Mittal
Eisehuettenstadt (Germany)
– Strip annealing furnace

Equipment revamping – Low Investment
Cost and High Benefits

PROJECT

400.000 t/y HDGL horizontal furnace, 1600mm strip width

- RR section: length extension and new sealing roll installation
- DFF section: 9MW boosted by new burners, combustion air and waste gas system
- TT section: no.40 new radiant tubes with self-recuperative burners, exhauster fan and waste gas system
- Additional RJC section with no.6 jumbo blowers on a dedicated side platform due to layout constrains
- New powerful pre-cooler to stabilize thick material
- Increased cooling tower capacity, temperature on top roll decreased from 270°C to 220°C by new up-leg fixed fan

HIGHLIGHTS

- Wider product range for automotive grades, DP 780 up to 2mm thickness
- 17% production increase for thicker material over 0,8mm
- Multiple modernization steps on turnkey basis granting the shortest cumulative shut down time

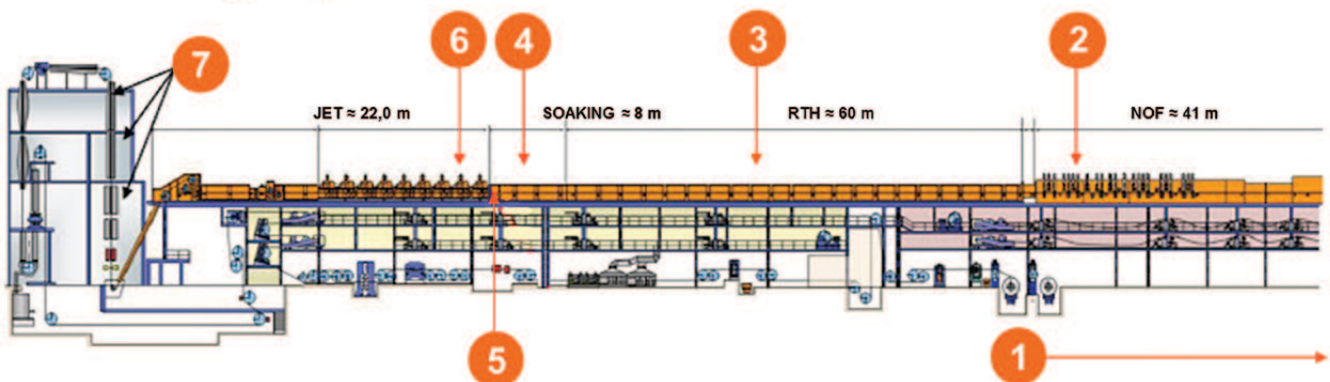
ACTIVITIES

Mechanics, refractory, process, electrics and automation



- 1 - Extension of DFF of about 6 m and new entry lock
- 2 - Additional burners in addition to the existing burners
- 3 - Extension of heating section of about 13 m
- 4 - New shortening holding section

- 5 - New additional sluice
- 6 - New shortening cooling zone with N. 6 jet cooler units
- 7 - N.3 new highly efficient APC coolers





Proven Track records

BENEFITS

Performance improvement
Revamping and relocation
Replacement of obsolete equipment
Fuel conversion and/or combustion system enhancement
Capacity upgrade
Scale reduction
Energy saving
Product enhancement
Safety update and Regulation compliance
Environmental responsibility

SCORE

Total revampings carried out on reheating & heat treatment furnaces for flat, long and pipe products	#51
All Information refers up to 2015	

TECHNOLOGICAL PACKAGES

Ultra-low NOx[®] flameless burners	Patented burners operating in both staged combustion and in flameless mode to guarantee reductions in NOx emissions
TFB-REK[®]	Patented TFB-REK [®] self-recuperative burners providing internal high efficiency air preheating without a central heat recovery unit
2P-type RTS + TFB-REK[®]	2P-type Radiant Tube Shape combined with self-recuperative TFB-REK [®] burners guarantees state-of-the-art strip temperature uniformity
Eco-wet rolls[®]	Patented rolls for tunnel furnaces minimizing cooling water thermal exchange to improve energy efficiency
Multi-variable Process Control	A plug-in hardware/software tool noteworthy saves fuel and reduces scale by predicting control loop behaviour
Hybrid reheating	Stocks preheated inside the furnace achieve the required rolling temperature passing through electrical inductors, to enhance efficiency and to reduce scale considerably
Pre-fabricated solutions	Solutions from simple skid to complete furnace pre-assembly to minimise erection/outage time

e - SERVICES

e-Spare	Online spare parts services
Teleservice	Worldwide remote assistance and troubleshooting
e-Maintenance	From periodical technical advising up to complete predictive maintenance solutions
e-Training	Customized training services available in remote video connection in addition to on-the-job training or training at Danieli facilities
Asset Management System	Umbrella services covering improvements on production, operations, maintenance and revampings