



PRODUCT ENHANCEMENT - CAPACITY UPGRADE

2013 – Marcegaglia (Italy)
– Strip Annealing Furnace

Equipment revamping – Low Investment
Cost and High Benefits

PROJECT

500.000 t/y HDGL horizontal furnace, 1550mm strip width

- Horizontal configuration modified to “L shape”
- Extension of radiant tube and vertical soaking section for longer soaking time up to 160sec
- Additional hot bridle, tensiometric roll and steering system
- New vertical rapid cooling section for faster cooling rate over 50°C/sec
- Additional movable cooler
- Upgrade of electrical panels and automation hardware and software

HIGHLIGHTS

- Enhanced production from LCS and HSLA to AHSS and critical HSS
- 20% production increase to 600.000 t/y
- 56-day plant shut down, on turnkey basis, thanks to the high level of preassembled equipment
- Zero impact on the overall line length with no building extension and civil works

ACTIVITIES

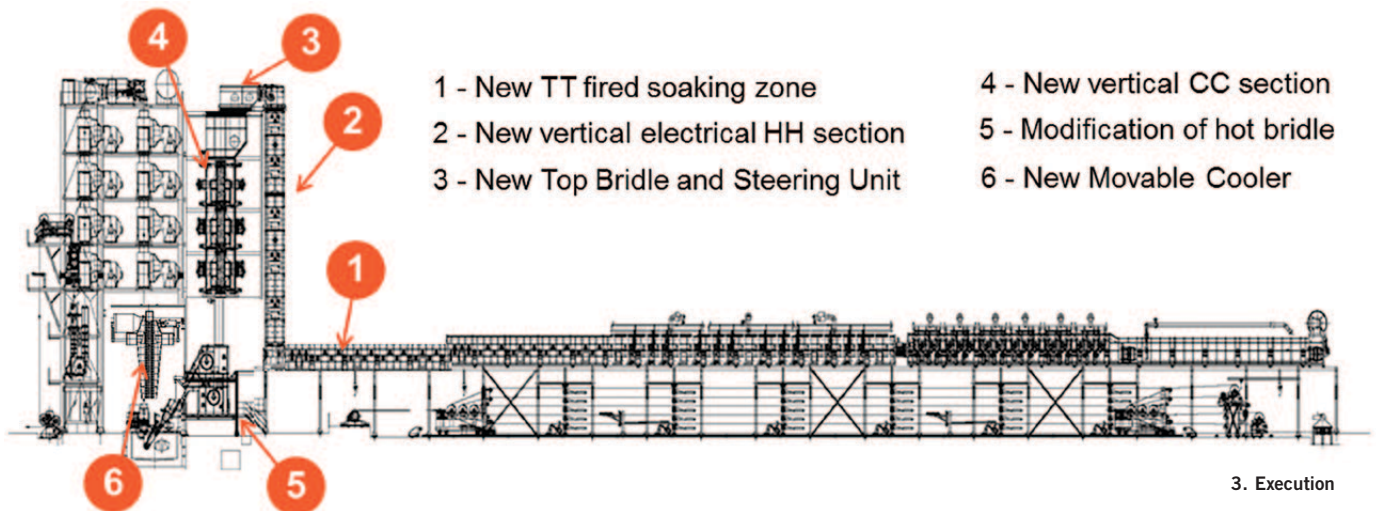
Mechanics, refractory, process, electrics and automation



1. Before



2. After



3. Execution



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