

2.4-MTPY JUMBO WALKING-BEAM FURNACE

at ArcelorMittal Krakow, Poland

Danieli Centro Combustion will supply the furnace for Europe's most recent hot strip mill, working on a turnkey basis, from contract date to first hot slab in just 17 months.



Civil works, and auxiliaries -such as a hydraulics station, water treatment plant, charging and discharging roller ways to connect the new furnace to the furnaces already in operation, electrics and integrated Level 1 and Level 2 automation systems- are an integral part of the turnkey supply.

The furnace will be properly sized to handle the wide range of steel qualities and sizes (i.e. low carbon steel, low alloy steel, stainless steel, silicon, and electrical steel). The combustion system was designed to maximize the use of coke oven gas (COG), balanced

with natural gas. A separate and dedicated line for natural gas and coke oven gas is foreseen for all furnace zones, excluding preheating and first heating where only natural gas will be employed.

Two separate fuel lines (equipped with orifice plates, flow control valves, shut-off valves for zones, and for on-off on each side burner) have been considered to provide maximum flexibility in furnace management. The system will be fully automatic in fuel selection according to availability. Furthermore, the operator will be able to manage the fuels manually, if required.

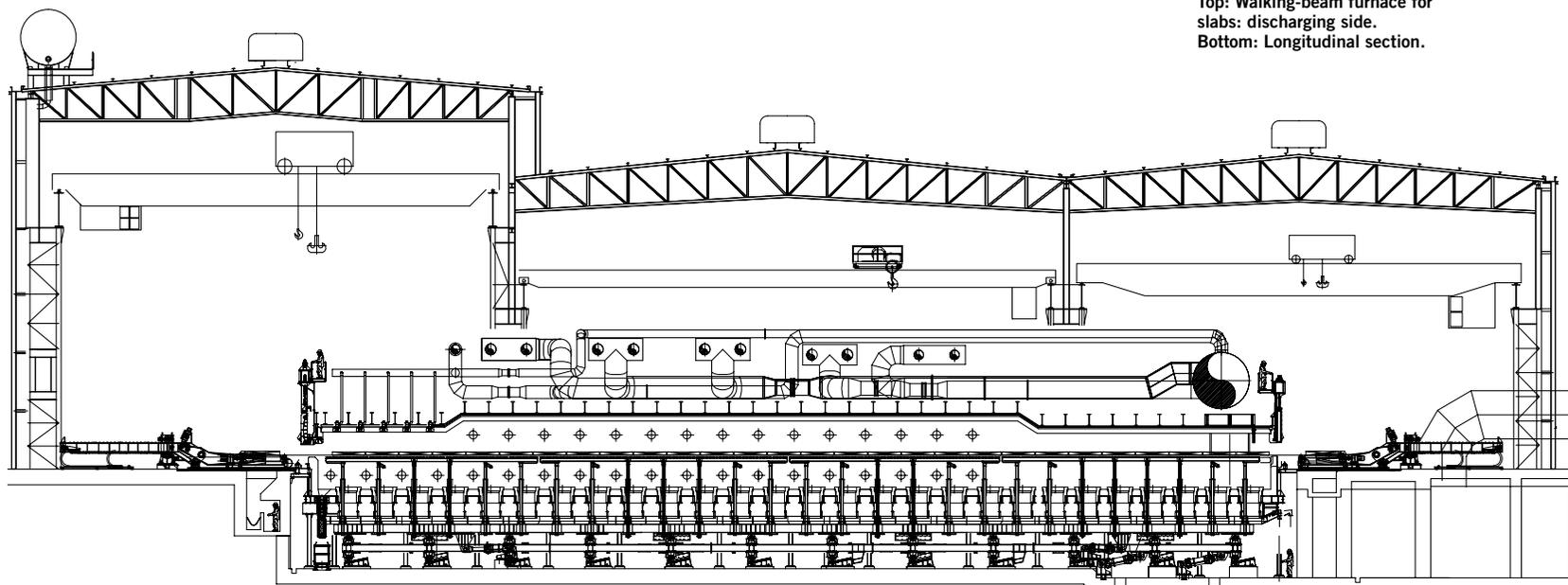
The top part of the furnace is designed with pre-heating, heating and pre-soaking zones equipped with sidewall burners; the soaking zones are equipped with radiant roof burners; the bottom part of the furnace also is equipped with sidewall burners.

This furnace design provides the best performance in terms of achievable heating, thermal uniformity at discharging, and scale formation.

All side-fired zones will be controlled by modulated On-Off PHL (Proportional High Low) firing logic. Combined with the use of in-house flameless type burners (MAB-FLT), this guarantees that the

burners function as close as possible to the design conditions, thus providing the best performance in terms of flame shape and flame length, and also ensuring reduced pollutant emissions.

An integrated automation platform supervises the combustion system, the charge handling system, and the water system through advanced control algorithms that offer all the required process information to the operator in real-time. A process control system with an on-line mathematical model optimizes combustion system management, considering all production parameters involved ■



Top: Walking-beam furnace for slabs: discharging side.
Bottom: Longitudinal section.