



LADLE FURNACES (LF)

THE QUALITY LINK BETWEEN MELTING AND CASTING

Being the inventor and market leader of the ladle furnace technology, Primetals Technologies always finds the best suitable solution for every steel works.

Ladle furnaces are available as single or twin ladle furnace, depending on productivity demand and cycle time of downstream equipment.

DESIGN FEATURES

The compact design guarantees minimum space requirement while offering easy access to the roof and auxiliary equipment. The main features comprise:

- Water cooled roof (supported by single or three point lifting system) or optional copper clad roof for reduced skull formation at roof.
- Current conducting electrode arms made of copper.
- Automatic lance manipulators for temperature measuring and sampling.
- Lance manipulator with concrete lance for stirring
- Lance manipulator for powder injection (deep desulphurization, lime and/or carbon addition).
- Alloy flap and funnel as interface to the alloy system
- Wire feeding for deoxidation and micro alloying.
- Automatic coupling system for stirring gas.

- Inert gas stirring (porous plugs and/or lance) for homogenization.
- Modern electrode regulation with advanced functionalities, ease of use and reporting.
- Dedusting system for exhaust fumes.
- Level 1 system with Field bus (Profibus or Profinet) and Safety PLC (Emergency stop function)
- Redundant HMI system for display of Status, Interlocks, Trends, Events and Alarms and complete system operation
- Level 2 system for full process control
- EU safety regulations fulfilled for all of our equipment.
- Optional features available (ladle rim suction, water cooled copper roof, robot for temperature measurement and sampling...)

LAYOUT ARRANGEMENTS

- **Single ladle furnace:**
Fixed or swiveling gantry (with water cooled roof)
Ladle car(s) or turret
- **Twin ladle furnace:**
Swiveling gantry (standing or suspended)
Two water cooled roofs
Ladle car(s) for each treatment position



180t Twin LF, Taiyuan Iron & Steel. Co. TISCO, Taiyuan, China

LIFECYCLE SERVICES

Primetals Technologies provides competitive performance for plants at every phase of their lifecycle. Reliable technical support, efficient maintenance solutions, and permanent plant improvements are the basics to operate safe and cost-efficient.

To guarantee a long lifespan of metallurgical plants, we offer a wide selection of spare parts in OEM quality.

SELECTED REFERENCES

• Single ladle furnace:

- 50t, Baku steel, Baku, Aserbajdschan
- 150t, voestalpine Stahl, Linz, Austria
- 175t, MMK, Magnitogorsk, Russia
- 210t, Salzgitter Flachstahl, Salzgitter, Germany
- 345t, Posco Steel, Pohang, South Korea

• Twin ladle furnace:

- PAO Severstal, Cherepovets, Russia
- 100t, Tyasa, Ixtaczoquitlan, Mexico
- 150t, Ahmsa, Monclova, Mexico
- 250t, HISCO, Handan, China
- 300t, Azovstal, Mariupol, Ukraine
- 370t, Seveerstal, Cherepovets, Russia

OPERATIONAL FEATURES AND BENEFITS

- Operation with submerged arc under synthetic slag
- Efficient energy input with high active power and efficient heat transfer
- Reduced nitrogen and carbon pick up as well electrode consumption thanks to roof and de-dusting design and optimum electrode regulation.
- Inert gas stirring into the steel to improve fast slag reactions and heat transfer
- Treatment times of less than 20 min (twin LF)
- Buffer function between melt shop and caster
- Decrease tapping temperature at the EAF/BOF
- Exact temperature adjustment for continuous casting
- Exact adjustment of steel composition (metallurgical fine-tuning)
- Improved cleanliness of the steel
- For all steel qualities, including stainless steel
- Reduction in total costs
- Reduction in refractory consumption