

## Metallurgical equipment. Steelmaking equipment. After-furnace ladle steel treatment

### LADLE FURNACE UNIT

Main purpose of LF-process is execution of process operations range faster and more efficiently than in standard steel-melting units.



#### ADVANTAGES OF STEEL TREATMENT AT LFU:

- reduction of heat duration in steel-melting unit limited by the time of charge melting and receipt of semi-product;
- reduction of refractory materials, electrodes and power consumption;
- improvement of manufacturing processes organization through the application of LFU as the “buffer” between steel-melting unit and metal pouring;
- provision of pouring optimum conditions as per temperature mode and increase of metal castability;
- decrease of defective products quantity by means of deviations from stated chemical composition and content of non-metallic inclusions in the ingot.

#### Basic tasks being solved:

- equalization of chemical composition and metal temperature;
- alloying with exact bringing up of the chemical composition to the stated one;
- final deoxidation;
- removal of non-metallic inclusions;
- metal desulphuration.

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■ Наличием системы автоматического управления технологическим процессом.

**HIGH QUALITY OF METAL PROCESSING IS ENSURED BY:**

- Availability of accurate weighing of metal mass in the ladle and consumables mass in the feed system of bulk materials and ferroalloys in the feeding units of alloying, slag-forming and powder materials.
- Capability to maintain an optimal argon feed mode and its regulation during processing.
- Providing a non-oxidizing environment over the metal, by covering the ladle with a water-cooled roof with the presence of peripheral exhaust of gases from under the cover.
- Formation of the required volume of synthetic slag, which ensures, with the proper purging of the metal with argon, the processes of desulfurization and removal of non-metallic inclusions.
- Conducting the processing and transfer of metal to casting with the accurate maintaining of the temperature mode.
- Possibility to carry out microalloying, precise obtaining of carbon content and deoxidation of steel by using flux-cored wire and its accurate feed back to the ladle with wire feeder.
- Availability of an automatic process control system.

**Obtained operational parameters of LFU**

Parameter	Value
Speed of heating, °C/min	4,5...5,8
Power consumption, kW*h/t*°C	0,28...0,30
Electrodes consumption, g/kW*h	8,9...9,2
Dust content in the cleaned gas, mg/nm <sup>3</sup> ,	20...22

Technical characteristics

Parameter	Value
Transformer power, MVA	18
Ladle capacity, t	30/40/60/90
Electrodes diameter, mm	350
Pitch circle diameter, mm	650±50