

NEW FURNACE FOR FOUNDERS

DPS-2: Direct current arc furnace for steel melting, 2 tons (up to 3 tons)

New DPS-2 furnace with transistor rectifier at the VKM-Stal Plant, city of Saransk

20GL steel is melted in the furnace for pouring into molds on a test foundry machine by a well-known German manufacturer.

April 13, 2010: first melting in the furnace.

April 27-30, 2010: acceptance test. 5 test meltings performed by specialists of both COMTERM and VKM-Stal.

May 19-21, 2010: 5 test meltings, adjustment of the technological method for efficient 20GL steel melting by specialists of both COMTERM and VKM-Stal.

Results of the test meltings:

Minimum meltdown time: 46 minutes

Minimum total melting time: 1 hour 45 minutes

Minimum electric energy consumption for meltdown: 544 kW/h

Energy indicators:

During the entire melting process, minimum $\cos\Phi$ is 0.95; nonsinusoidality ratio KU is within normally permissible parameters for a point of common coupling to a 10 kV electric network.

Melting is entirely automated, no programme for voltage level switching or current setting is required. During test meltings, the steelmakers have sufficiently mastered furnace control. Since May 18, 2010 the steelmakers control the furnace on their own.

Furnace delivered under leasing agreement. Delivery package included all necessary components of the furnace, including:

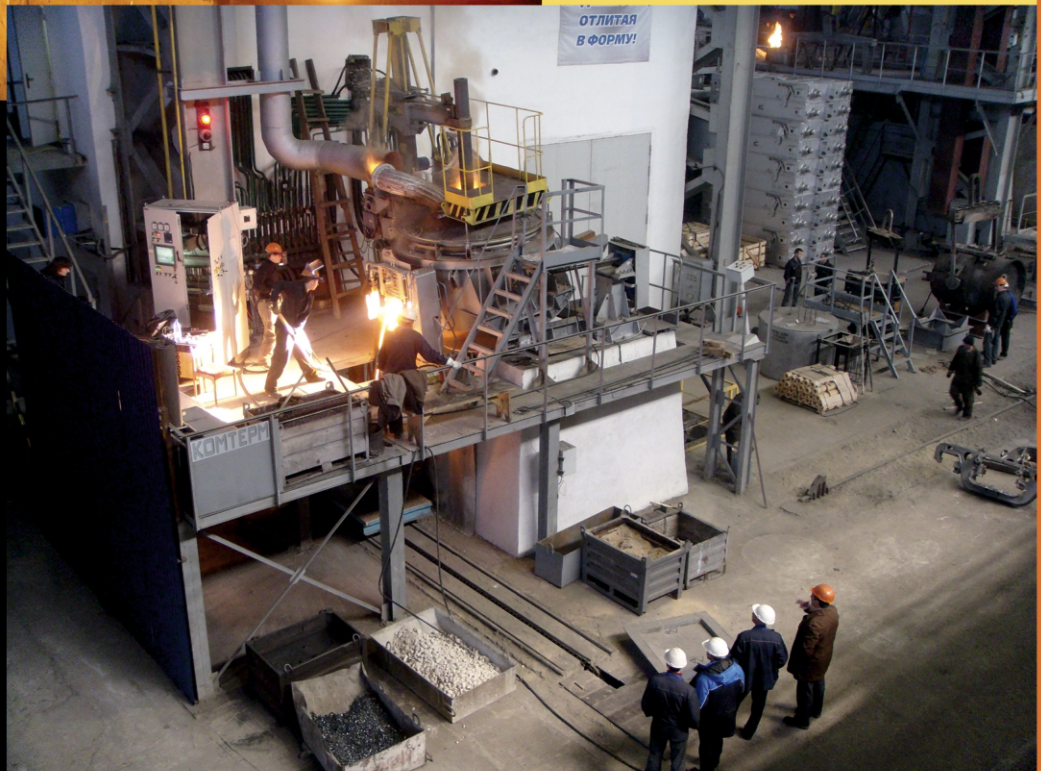
Transformer TMZ-2500 10/4, 2,500 kVA, general purpose industrial grade;

Transistor rectifier made according to COMTERM's documentation and under COMTERM's supervision;

Automated control system on the basis of elements of automated systems by Siemens and others, made by COMTERM;

Mechanical part of the furnace made according to COMTERM's documentation and under COMTERM's supervision;

Components – standard elements by well-known manufacturers.



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Batch loading: 5 minutes



Meltdown: 32-50 minutes



Technological period



Metal discharge



Die casting



COMTERM: electric arc furnaces for foundry production

DIRECT CURRENT FURNACES FOR THE PRICE OF ALTERNATE CURRENT FURNACES

COMTERM Scientific Production Company offers all-purpose electric arc melting furnaces of capacity ranging from 0.5 to 6 tons. Our furnaces are used for melting **steel, cast iron, aluminium**.

The peculiarity of our small furnaces is their modularity and technological versatility. The furnace can be equipped with a power source using direct or alternate current. Using our own innovative solutions, we have achieved reducing of the cost of a direct current furnace to the cost of an alternate current furnace. When manufacturing a furnace, we take into consideration the customer's needs and peculiarities of production. We can also deliver or adjust melting technology on our equipment and the customer's equipment. We offer lifelong support of the equipment we deliver, unlimited technical advice, warranty and post-warranty maintenance, which ensures high qualities of our appliances. You can rely on the high quality of our work on every step of the way.

Characteristics of direct and alternate current furnaces

| Furnace type | DP-0.5 | DP-1.5 | DP-3 (DPS-2) | DP-6 |
|---|----------------|----------------|----------------|-------------------------|
| Power source capacity, kVA | 630 | 1600 | 2500 | 5000 |
| Type of transformer for direct current furnace (alternate current furnace is equipped with a special transformer) | Transistor | Transistor | Transistor | Thyristor or Transistor |
| Supply network voltage, kV | 0,38; 6; 10 | 0,38; 6; 10 | 0,38; 6; 10 | 0,38; 6; 10 |
| Parameters of furnaces when melting steel and cast iron | | | | |
| Nomical capacity of furnaces, tons | 0,5 | 1,5 | 3,0 (2,0) | 6,0 |
| Specific electric energy consumption on meltdown,kW.h/ton | 560 | 540 | 530 | 500 |
| Meltdown time, min | 32 | 36 | 46 | 50 |
| Parameters of furnaces when melting aluminium | | | | |
| Nomical capacity of furnaces,tons | 0,5 | 1,0 | 2,0 | 5,0 |
| Specific electric energy consumption on meltdown,kW.h/ton | 450 | 400 | 410 | 420 |
| Meltdown time, min | 26 | 19 | 27 | 36 |

We recommend buying direct current furnaces as they have a number of economical advantages over alternate current furnaces:

Power supply cost reduction by 15% by means of using the available capacity of the electrical equipment more fully, reducing melting time, reducing reactive power consumption by operating with $\cos\Phi=0.95$. **Electrode consumption reduction** to 1.5 kg per 1 ton of molten steel (previously 6-7 kg). Reduction of the cost of **alloying components by 15-20%**. Reduction of the **cost of batch, deoxidising agents, and modifiers by 2-5%** thanks to lower loss. It is no longer necessary to install filter compensating devices on the power supply network which **means a minimum 10% economy on the cost of electrical equipment**. Reduced dust emission and noise level mean **20-50% reduction of environmental** and labour protection measures. A direct current furnace uses the same materials for lining as an alternate current furnace, but a stricter hearth lining and routine maintenance quality control is required.

Our company owns and implements both traditional solutions and innovations. For an up-to-date list of implementations, please visit www.comterm.ru.

We have achieved reduction in the cost of implementation of innovative technologies (direct current furnaces with transistor power sources) to the level of the traditional alternate current furnances and, at the same time, in the payback time and improvement of investment appeal of the new furnaces implementation program.