

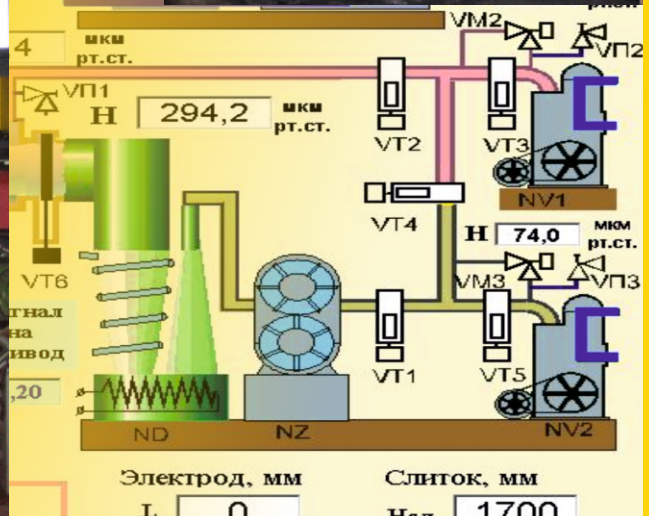


*We make high-performance  
melting appliances*

## VACUUM ARC FURNACES

**Control system provides  
for the following:**

- Automated control of the melting process from start to finish;
- Computed-aided testing of the furnace's readiness for melting;
- Giving the melter current information on the remelting process;
- Archiving digital traces of the remelting process in the database;
- Automated melting conditioning;
- Archiving digital videograms of the remelting process



## Ensuring ingot quality, performance gain, yield gain, electric energy saving

- Current and arc voltage control according to the given schedule, including warm-up period and shrinkhole positioning;
- Adaptive correction of setting arc voltage according to the frequency of drip impulses;
- Ensuring bumpless switching from manual to automated control (for both current and voltage);
- Input and display of task schedules (for both current and voltage);
- Software control of the inert gas feed system;
- Control, indication, and registration of current and voltage of the ram position arc, discharge in the working chamber;
- Control of the arc voltage and current according to the tasks being entered by the melter in the course of melting;
- Automated detection of inleakage before the melting begins;
- Displaying the controllable parameters of the furnace operation on the furnace's coloured mnemonic diagram;
- Manual input of information into the system using the touch-screen display in interactive mode;
- Keeping an archive of the meltings;
- Automated recording of the melting process in the form of detailed coloured traces and a passport.

## PARAMETERS OF THE SERIES OF VACUUM ARC MELTING FURNACES (VDP) FOR INGOTS MELTING

Parameter	VDP-100	VDP-250	VDP-350	VDP-450	VDP-600
Number of posts	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2
Rated capacity, kVA	250	400	800	800	1000
Open-circuit voltage, V	60	60	60	60	60
Diameter of crystalliser (max), mm	150	300	400	500	600
Diameter of electrode (max), mm	110	240	360	450	540
Maximum weight of ingot, kg	50	600	1,000	2,000	6,000
Maximum current, kA	4.0	6.0	10.0	12.5	16.0
Pressure in black furnace, mm Hg	1x10	1x10	1x10	1x10	1x10
Water consumption for cooling, m3/h	15.0	25.0	40.0	50.0	70.0
Dimensions (without power source)*, mm	4000x4,000 x7000	5000x6,000 x8000	5000x7,500 x12000	7500x10000 x12000	7500x10000 x14000

\* Specified during approval of technical specifications for furnace delivery

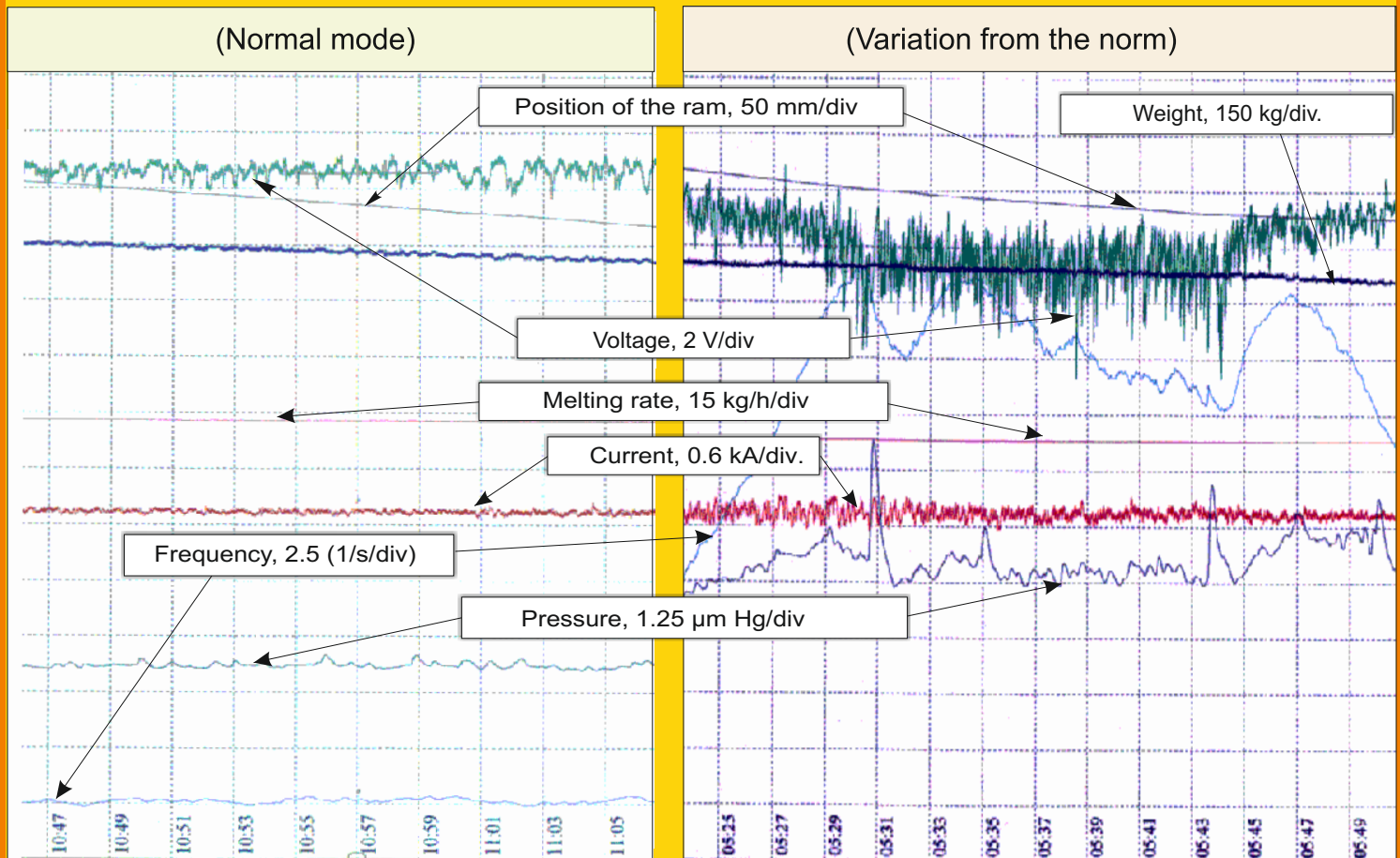
## BASIC EQUIPMENT PACKAGE FOR A VACUUM ARC FURNACE FOR MELTING HEAT-RESISTANT ALLOY INGOTS

No.	Description	Quantity
1	Supporting frame, including operating platform, safeguard, ladder	1 set
2	Vacuum chamber	1 set
3	Metal structure of the electrode holder ram moving mechanism	1 set
4	Electrode holder ram	1 piece
5	Electrode holder ram moving mechanism	1 set
6	Base moving mechanism	1 set
7	Crystalliser (case, casting mold, base)	1 set
8	Cooling system	1 set
9	Low-voltage circuit busline (from power source to electrode holder ram)	1 set
10	Low-voltage circuit water-cooled flexible cables (from busline to electrode holder ram)	1 set
11	Vacuum system	1 set
12	Power source: furnace transformer, rectifier, heat-exchange unit, throttler, lead-in cabinet	1 set
13	Control cabinet, automated control system	1 set
14	Video monitoring system	1 set
15	Inert gas supply unit	1 set





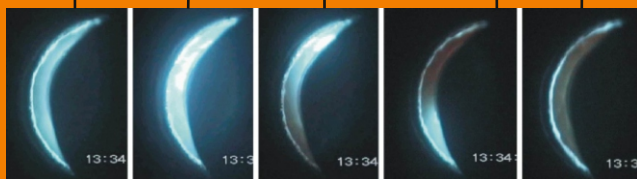
## VACUUM ARC FURNACE MODES TRACES



Video monitoring of the arc and software control of the melting mode ensure stable high quality of the ingots and yield gain.



video control of the arc



Still frames of the vacuum arc furnace's operating space

Computer-aided control of vacuum arc melting stabilises the conditions for crystallisation of ingots from alloys of ferrous materials and non-ferrous metals.

### Results achieved:

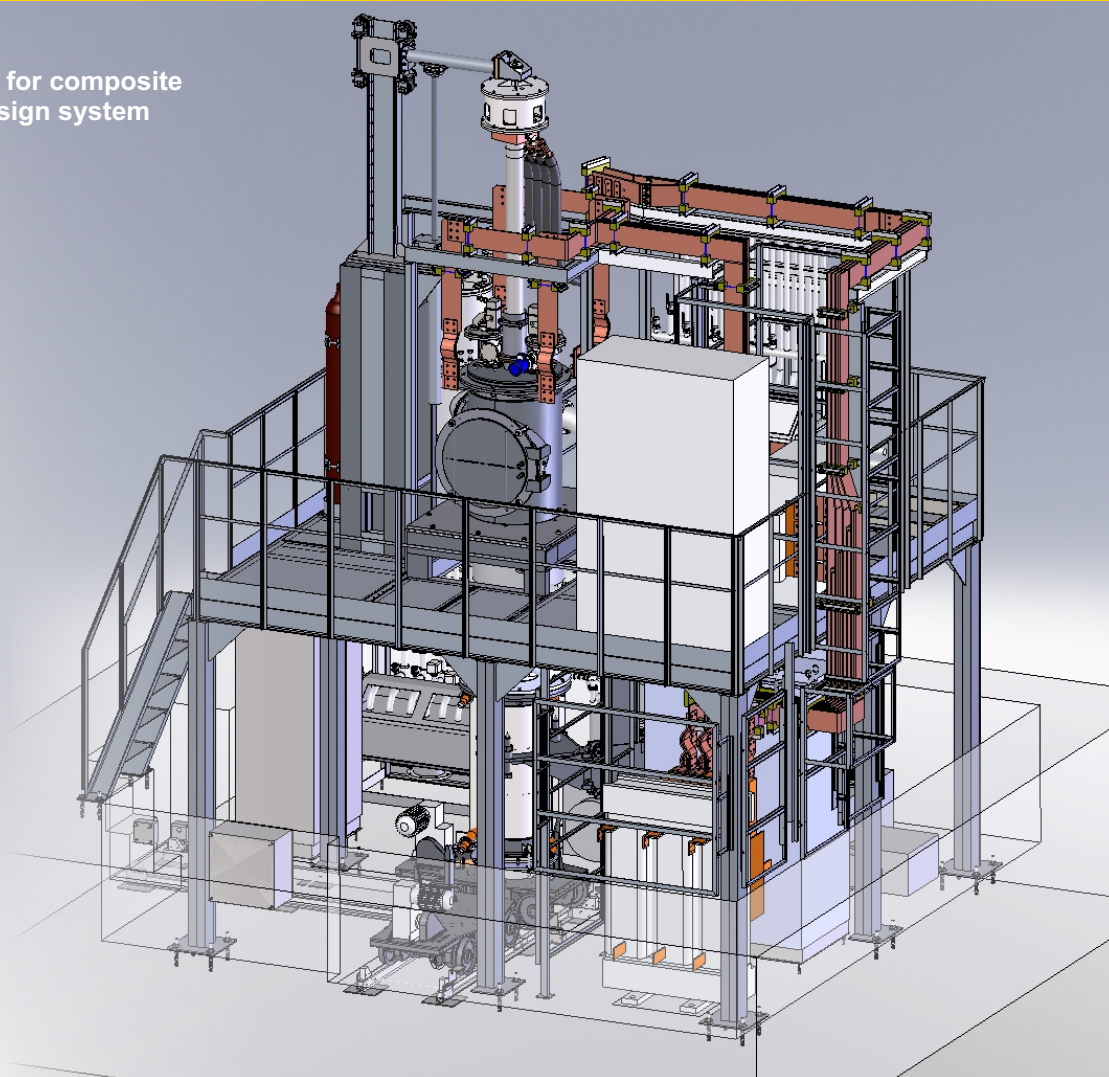
- yield gain;
- increased productivity;
- electric energy saving;
- conditioning of melting in accordance with international standards

*We would like to introduce automated control system implemented in four leading plants of Russia:*



- Krasny vyborzhets plant, city of st. Petersburg  
**VACUUM ARC FURNACE - COPPER HEAT-RESISTANT ALLOYS - 1 FURNACE;**
- Stupino Metallurgical Company  
**VACUUM ARC FURNACE - HEAT-RESISTANT ALLOYS - 5 FURNACES;**
- Chepetsky Mechanical Plant, Town of Glazov  
**VACUUM ARC FURNACE - ZIRCONIUM-BASED ALLOYS - 5 FURNACES;**
- Elektrostal Metallurgical Plant, Town of Elektrostal  
**VACUUM ARC FURNACE - HEAT-RESISTANT ALLOYS - 2 FURNACES.**

Vacuum arc furnace for composite materials in a 3D design system



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