

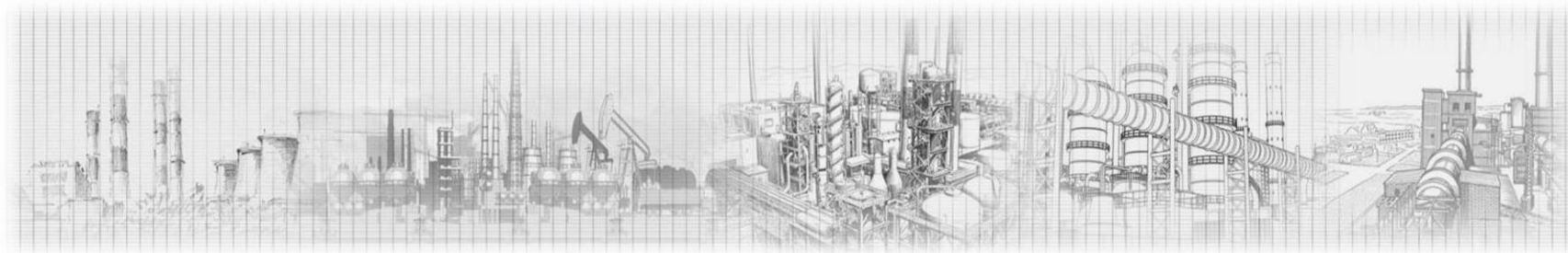


**STATE SCIENTIFIC CENTER
OF THE RUSSIAN FEDERATION
I.P. Bardin Central Research Institute
for Ferrous Metallurgy "TsNIIHERMET"**

2017 — the year of the fundamental turning point

**Russia's leading center for ferrous
metallurgy science and technology**

SEMENOV VIKTOR
General Director



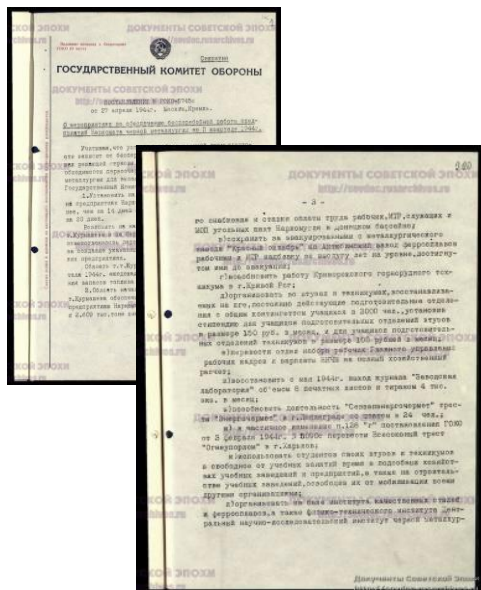
GENERAL INFORMATION ABOUT THE INSTITUTE



Russia



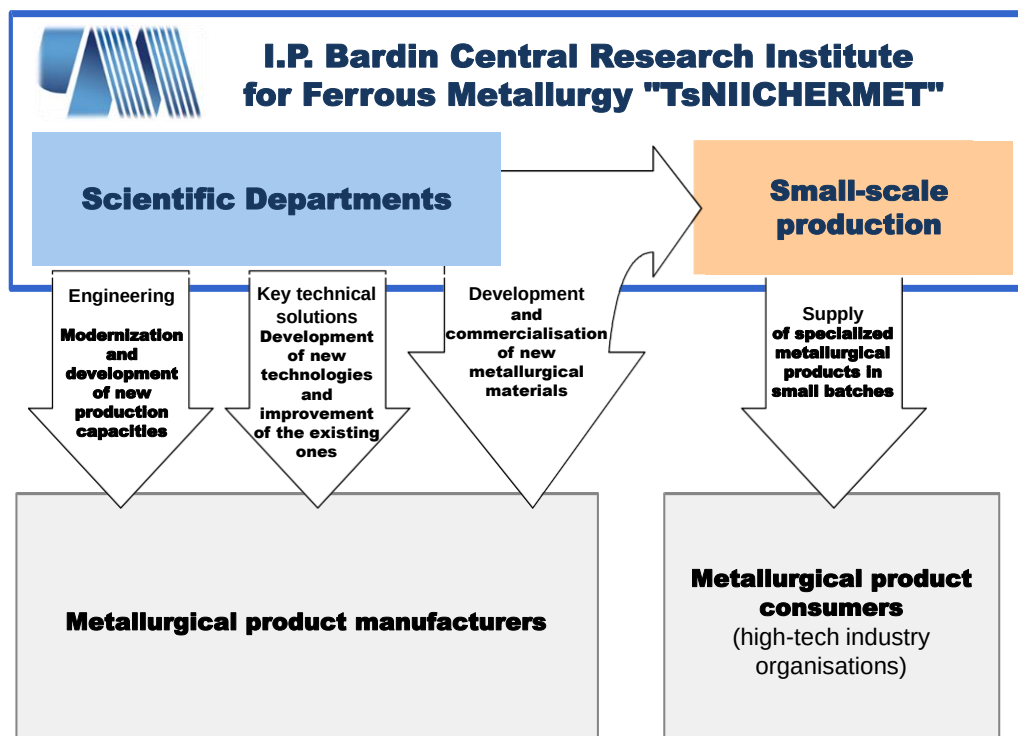
FSUE I.P. Bardin Central Research Institute
for Ferrous Metallurgy
Moscow, Radio St., bld. 23/9, 2



- **Established** in 1944 by the USSR State Defense Committee
(Resolution No. GOKO-5745s dated 27 April 1944)
- **Awarded** the Honorary Badge "For Achievements in Labor"
- **Awarded** the USSR Order of the Red Banner of Labor and ChSSR Order of Labor
- **State Scientific Center of the Russian Federation** since 1995
(RF Presidential Decree No. 939 dated 22 June 1993, Decree No. 122 dated 7 February 1995
by the Government of the Russian Federation)
- **Included** in the List of Strategic Enterprises and Strategic Joint-Stock Companies
(Presidential Decree of the Russian Federation No. 1009 dated 4 August 2004)

MISSION AND FIELDS OF ACTIVITY

The mission of the Institute is to develop and implement steels and alloys, production of its technologies and technologies for manufacturing products from them in order to ensure competitive advantages for strategically important Russian industrial organizations and for Russian industry as a whole



- **Scientific support** of the governmental industrial policy in the field of metallurgy implemented by the Ministry of Industry and Trade of Russia
- **Fundamental and exploratory research** for creating the scientific basis development of new steels and alloys
- **Development of breakthrough industrial technologies** for the production of steel and alloy products (metallurgical production technologies)
- **Development of new steels and alloys** (with improved characteristics or new properties, including special steels and alloys)
- **Small-scale production** of special high-tech metallurgical products
- **Engineering and technological audit** within projects of capital construction, reconstruction and technical re-equipment of metallurgical enterprises.
- **Testing, standardization and certification** of metallurgical products, expertise of metallurgical technologies and products
- **Training** of highly qualified research specialists, advanced training, and retraining of specialists in the field of metallurgy

100% of the Institute's developments are implemented in industry

SPECIALIZATION OF SCIENTIFIC AND PRODUCTION DEPARTMENTS OF THE INSTITUTE

LINES OF ACTIVITY

ENSURING THE IMPLEMENTATION OF INDUSTRIAL POLICY
in the field of metallurgy implemented by
the Ministry of Industry and Trade of Russia

FUNDAMENTAL AND EXPLORATORY RESEARCH
aimed at creating the scientific foundations
for the development of new steels and alloys

DEVELOPMENT OF INDUSTRIAL TECHNOLOGIES
for all processing stages of steel and alloy production
(metallurgical production technologies)

DEVELOPMENT OF NEW STEELS AND ALLOYS
research of experimental samples

SMALL-SCALE PRODUCTION OF PRODUCTS
manufacturing of experimental samples of new steels and alloys

ENGINEERING AND TECHNOLOGICAL AUDIT
of metallurgical plants

TESTING, STANDARDIZATION AND CERTIFICATION
of metallurgical products

TRAINING, ADVANCED TRAINING AND RETRAINING
OF SPECIALISTS in the field of metallurgy

SPECIALIZED DEPARTMENTS OF THE INSTITUTE

Metallurgical Industry Analysis and Monitoring Department

Scientific Center for Fundamental and Experimental Studies

Scientific Center for
Metallurgical
Technologies

Scientific Center for
Metallurgical Raw
Materials

Non-destructive Testing
Scientific Center

Scientific
Center for
High-Quality
Steels

Scientific
Center for
Special
Materials

Scientific
Center for
Pipe
Steels

Automotive
Steels
Scientific
Center

Precision
Alloys
Scientific
and
Production
Center

Powder
Metallurgy
Scientific
and
Production
Center

Experimental Production Facility

Engineering Center
(Ural, Magnitogorsk, Novokuznetsk, Lipetsk and Southern Divisions)

"Metalltest"
Test Center

Center for Standardization
and Certification of Metal
Products

Export Control Center

Retraining and Advanced Training
Center

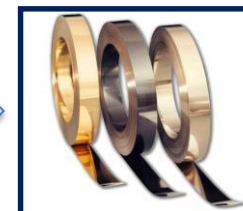
Post-graduate Program, Doctoral
councils

PRIORITY AREAS OF THE INSTITUTE'S RESEARCH AND DEVELOPMENT

Automotive sheet
steels



Electrical steels



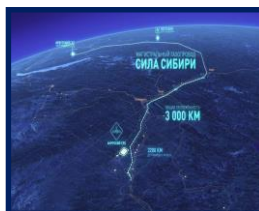
Railway steels



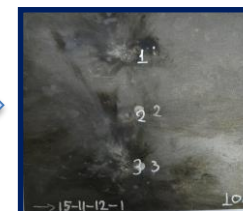
Bearing steels



Pipe and construction
steels



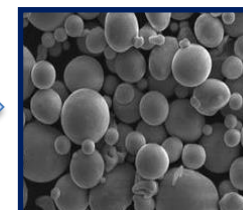
High-strength
steels



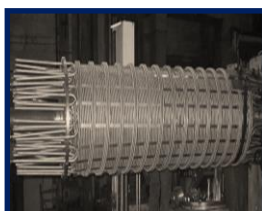
Steels for mining
industry



Powder
alloys



Nuclear power steels



*And much more!
Further details are provided in the presentations
of the Institute's Research Centers*

COLLABORATION WITH METALLURGICAL COMPANIES



I.P. BARDIN CENTRAL RESEARCH INSTITUTE FOR FERROUS METALLURGY

New types of metallurgical products

Metallurgical production technologies

Modernization of production facilities



CAPABILITIES OF THE INSTITUTE'S SMALL-SCALE PRODUCTION

I

- Reduction of time and costs for the implementation of developed technologies at metallurgical plants
- Reduction in development costs and improvement of metallurgical product development quality
- Testing of the developed metallurgical products before serial production

Features of the Institute's production facility



DUO-300 Hot Rolling Mill Complex



VIP-100
Vacuum Induction Furnace



Ladle Furnace Unit



Induction furnace



DP – 0,1
DC Electric Arc Furnace

Metallurgical plants

Melting volume: 350 t
Rolled steel: thicknesses from 8 to 100 mm
Width: from 1,500 to 4,800 mm
Length: 6,000...24,000 mm

State Scientific Center "TsNIICHERMET"

Melting volume: 40 kg
Rolled steel: thicknesses from 2 to 20 mm
Width: 200 mm
Length: 1000 mm

20 million rubles and above are cost savings
from launching into serial production of one type of sheet metal

II

- Ensuring consumer access to special, unique metallurgical products with low consumption volumes
- Reducing consumer costs for specialized and unique metallurgical products by supplying them with ready-made billets, parts and products

Full cycle of development and production

1. Fundamental and scientific studies
2. Development of chemical composition and production technology for advanced steels and alloys
3. Exploratory testing of production technology
4. Full cycle of sample studies and testing
5. Development of machining, coating application and assembly process (including welding)
6. Launching into production at our own manufacturing facility
7. Production release, acceptance testing and shipment



Regular supply of unique products in small batches

EXAMPLES OF INSTITUTE'S SMALL-SCALE PRODUCTION EQUIPMENT



DUO-KVARTO 320
Cold Rolling Mill Complex



Vacuum furnace for high-temperature
coating application



Cold extrusion press



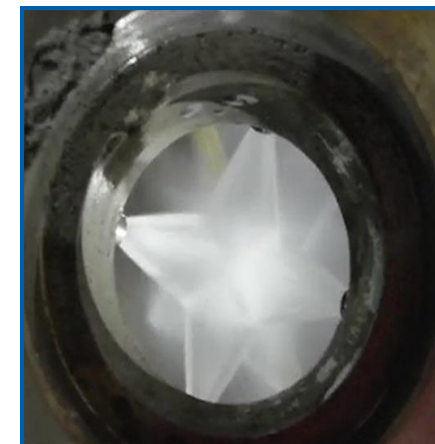
Hydrostatic press



High-energy mill



Plant for metall powder production by high-pressure spraying



ENGINEERING ACTIVITIES OF THE INSTITUTE



INSTITUTE'S ENGINEERING CENTER

(Moscow, Ural, Magnitogorsk, Novokuznetsk, Lipetsk and Southern Divisions)

- > 100 of highly qualified specialists
- > 39 successfully completed projects

INSTITUTE REPRESENTATION IN THE CITY OF ORSK (ORENBURG REGION)

Ural Branch - Metallurgical Equipment Design Bureau

The Engineering Center develops new designs for metallurgical equipment collaborating with Scientific Centers «TsNIICHERMET» that develop metallurgical production processes. This collaboration enables the Center to provide a full-cycle of works in creating a new equipment and production technologies.



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE

Project title:  Technical modernization of Continuous Casting Machine 2

Customer:  Volzhsky Pipe Plant

Project dates:  2023–2025

Project goal:  Modernization of Bloom Continuous Casting Machine 2 in order to enable casting of new billets, sizes: 150– 410mm round bars and 360mm square bars as well as stainless steel grades. Engineering design and supply of complete technological equipment. Ladle capacity: 150t.

MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE

Project title: ➡ New wagon dumpers VRS-125 and VRS-134

Customer: ➡ Novolipetsk Steel Company (NLMK)

Project dates: ➡ 2024–2025

Project goal: ➡ Development of design documentation,
author's supervision during trial assembly
and installation of the wagon dumper

MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE

- Project title:**  **Mechanical Repair Complex (LLC "MRK") - Casting and Forging Shop**
Organization of forged roll production
- Customer:**    **Mechanical Repair Complex (LLC "MRK")**
Magnitogorsk, Russia
- Project dates:**  **June 2023 – December 2026**
- Project goal:**  **Establishment of a modern production facility from the ground up (construction and equipment) with a capacity of 25 thousand tons per year, providing Russian metallurgical companies with forged rolls for cold rolling mills, forged backup rolls for cold and hot rolling mills, as well as large forged pieces**

MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



Construction site

MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



Examples of planned products

MAJOR ENGINEERING PROJECTS OF THE INSTITUTE

Project title: ➡ Technical upgrade of Bloom Continuous Casting Machine 2

Customer: ➡  JSC "Volzhsky Pipe Plant"
Volzhsky, Russia

Project dates: ➡ May 2023 – October 2024

Project goal: ➡ Modernization of the customer's outdated equipment aimed at increasing productivity, expanding the range of products and grades, improving the quality of cast blanks made from stainless steel grades



Example of components developed by the Engineering Center for the equipment undergoing modernization

MAJOR ENGINEERING PROJECTS OF THE INSTITUTE



Examples of components developed by the Engineering Center for the equipment undergoing modernization

INSTITUTE REPRESENTATION IN NEW REGIONS

Donetsk Branch of I.P. Bardin Central Research Institute for Ferrous Metallurgy

Research Institute of Metallurgy — Donetsk, 14 Lagutenko st.

Property complex of the former Donetsk Research and Design Institute of Non-Ferrous Metals (DonNIPITSMet)

Administrative buildings: **2**

Laboratory buildings: **2** ➔ **29,000 sq. m²**

Experimental buildings: **2**

ORGANIZATIONAL STRUCTURE of the Donetsk branch

(Order No. 84/2 dated 13 June 2023 by I.P. Bardin Institute for Ferrous Metallurgy TsNIIChERMET)

3 Scientific centers

1 Experimental and Production Complex

22 Scientific laboratories, sections and departments



Since March 2023, Donetsk branch of I.P. Bardin Institute for Ferrous Metallurgy TsNIIChERMET

INTERNATIONAL ACTIVITIES OF THE INSTITUTE



Belarus

Preparation of a Union State project between Russia and Belarus to create new types of cutting tools



China

Projects to upgrade metallurgy equipment at Russian plants with the involvement of I.P. Bardin TsNIChermet



Turkmenistan

Technological support for Mining and Processing Plant construction project ordered by the Ministry of Industry and Construction Production of Turkmenistan



Uzbekistan

Annual participation in the International Industrial Exhibition "INNOPROM. Central Asia". Project road-map signed with Almalyk Mining and Metallurgical Complex.



India

Engineering, scientific and technological projects aimed at modernizing equipment and developing technologies for Indian metallurgical companies



Kyrgyzstan

Program for the Development of the Metallurgical Industry of the country was prepared by TsNIChermet for the Ministry of Economy and Commerce of Kyrgyzstan



Ethiopia

Project for technological and construction engineering with the aim of setting up metallurgical production in Ethiopia



Kazakhstan

Research and development of a process for producing low-carbon ferrochrome by vacuum-thermal treatment of compositions based on high-carbon ferrochrome



DPRK

Retraining and advanced training of North Korea's metallurgy specialists. Preparation of projects with DPRK State Committee for Science and Technology

STANDARDIZATION OF METALLURGICAL PRODUCTS

TK 375

"Metal Products made of Ferrous Metals and Alloys"

(Rosstandard Order No. 655
dated 27 March 2019)

The following is assigned to TK 375 Technical Committee:

- > 120 standards for metal products
- > 200 interstate and national standards for metallurgy products (GOST and GOST R)

Member of ISO: TK 17 "Steel" and TK 119 "Powder Metallurgy"
(11 international standards developed with the participation of TK 375)

Collaboration with DIN,
CEN/CENELEC



Since 2017:

- ➔ 18 interstate and national standards (GOST and GOST R) as well as 9 amendments have been developed and adopted
- ➔ More than 100 different expert reports have been prepared

MTK 120 "Cast iron, steel, rolled products"

(Protocol of the Interstate Council for Standardization No. 60-2021 dated 19 December 2021)

TK 372

"Rare and rare-earth metals"

(Rosstandard Orders No. 1682
dated 8 October 2020 and No. 2172
dated 23 December 2020)

The following is assigned to TK 372 Technical Committee:

- > 150 interstate standards for rare and rare-earth metals (GOST)

TK 372 represents the Russian Federation in ISO/TS 298 "Rare-earth metals" (Since 1 March 2021 it has full member status with voting rights)

CERTIFICATION OF METALLURGICAL PRODUCTS

Accreditation of METALLTEST Test Center of the Institute



RA.RU.21HM76*



ИСТ № 1411/2010/001
ИСТ № 1411/2010/001/001
ИСТ № 1411/2010/001/001

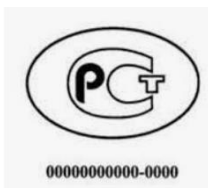
**FEDERAL SERVICE FOR
ACCREDITATION**



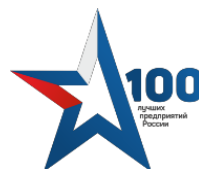
RUSSIAN RIVER REGISTER



**RUSSIAN MARINE REGISTER
OF SHIPPING**



**NATIONAL CERTIFICATION
SYSTEM**



**TOP 100 ENTERPRISES
OF RUSSIA**



RA.RU.21HM76

ILAC-MRA COMBINED MARK

**"METALLTEST"
TEST CENTER**



**Independent verification of metal product quality
for any industry**

OUR OWN ADVANCED TESTING FACILITIES

Use of the laboratory facilities of the Institute's scientific centers

TRAINING, RETRAINING AND ADVANCED TRAINING

Training and Advanced Training Center



More than 24 programs:

- Nanomaterials and Advanced Technologies
- Metal Forming
- Metallographic Analysis Methods
- Practical Materials Science
- Alloys with Special Properties
- Metal Science and Heat Treatment
- Theory and Technology of Thermal and Thermochemical Treatment
- Technologies for Development of New Materials
- Physical and Chemical Processes in Metallurgy
- Non-Destructive Testing Methods
- Electron Microscopy
- Fundamentals of Metal Science and Heat Treatment of Structural Steels and Special-Purpose Steels
- ...

POST-GRADUATE PROGRAMS

specialty 2.6.1

"Metallurgy and Heat Treatment of Metals and Alloys (Technical Sciences)"

specialty 2.6.2

"Metallurgy of Ferrous, Non-ferrous and Rare Metals"

DISSERTATION COUNCILS

Council 31.1.007.01 for specialty 2.6.1

"Metallurgy and Heat Treatment of Metals and Alloys (Technical Sciences)"

Council 31.1.007.02 for specialty 2.6.2

"Metallurgy of Ferrous, Non-ferrous and Rare Metals"