

1. **I.A. Dibrov (President of the Russian Association of Foundry Workers, Doctor of Technical Sciences, Professor, Honored Metallurgist of the Russian Federation).** State and prospects of development of cast iron casting

Annotation. The state and main directions of development of the production of cast iron castings with lamellar, spherical and vermicular forms of graphite are given.

Keywords: cast iron, high-strength cast iron, hybrid cast iron, isothermal hardening.

2. **A.G. Panov.** The main results of the days of cast iron in Naberezhnye Chelny — 2022

Annotation. Brief information about the International Scientific and Technical Conference «Science and technology of pig iron modification» in Naberezhnye Chelny.



Keywords: cast iron, modification, spherical and vermicular graphite form.

3. **R.M. Galimov.** Experience in the development of structures, technologies and production of critical castings from cast iron with vermicular graphite.

Annotation. Phoenix LLC has developed technologies for the production of pearlitic cast iron with a vermicular graphite shape with a strength of 450 MPa for the production of heads and cylinder blocks of forced diesel engines in the automotive industry, as well as shipbuilding, energy and small aircraft. The results of testing the strength characteristics and microstructure of cast iron are presented. Recommendations are formulated.

Keywords: pearlitic cast iron, cast iron with vermicular graphite, technology, production.

4. **T.A. Sivkova, V.A. Ivanova, A.G. Panov, N.G. Degtyareva.** Method of identification of forms of graphite inclusions in cast iron.

Annotation. The analysis of normative and methodological documentation in the field of evaluation of graphite inclusions in cast iron is carried out. The insufficiency of a semi-quantitative description of the structure using reference images of standards is shown. The beginning of a comprehensive work on the creation of a method for identifying forms of graphite inclusions in cast iron. A scale of distribution of graphite particles according to typical forms with a description of their characteristic features is proposed.

Keywords: graphite inclusions, cast iron, the shape of graphite inclusions, microstructure.

5. **A.D. Podolsk.** Graphitizing modification of cast iron with carbon-silicon carbide materials.

Abstract. This article, dedicated to our head, Academician M.I. Gasik, briefly presents the results of many years of research conducted by our company's employees on a wide range of issues of alloying,

modifying and deoxidation of iron-carbon alloys with carbon-silicon carbide materials. The article highlights one of these areas and concerns graphitizing modification of cast iron.

Keywords: carbon — silicon carbide materials, silicon carbide, gray cast iron, high-strength iron with spheroidal graphite, graphitizing inoculation effect, crystallization centres of graphite in iron melt, eutectic supercooling during crystallization of cast iron, improved graphitizing properties of cast iron.

6. **V.A. Ivanova, A.G. Panov.** Work on standardization of melt modifiers

Abstract. The variety of modifiers and modification technologies in the absence of common methods of control contribute to the decrease in quality and competitiveness of modifiers manufactured in Russia. The experience in producing and using melt modifiers as well as the need to improve the quality of Russian modifiers indicate the need for standardization. As part of the standardization process, it is necessary to develop standards for organizations, technical specifications, as well as national standards. The organization standards and engineering documentation of the manufacturer shall contain all requirements made to the process of modifier production. The accompanying documentation shall include the modification process in the form of technical specifications when melt modifiers are supplied. Within the national standardization system, it is necessary to develop a system of standards containing requirements for terms and definitions, classification, marking, and general specifications of modifiers. Development of national standards will improve the quality and competitiveness not only of melt modifiers but also of Russian metal products.

Keywords: melt modifiers, standardization of modifiers, classification of modifiers, design technical committee.

7. **A. Popov.** Implementation of core-making technologies from Laempe for production of large engine block castings in the global foundry industry

Annotation. The article explains the approach to the selection of the core-making technology for large cast engine blocks. The experience of successful foundries of the world on the introduction of modern core-making machines is described, the characteristics of the equipment are given.

Keywords: core-making machines, foundry modernization, Coldbox-Amin-process, engine block castings.

8. **O.V. Mikhailov, S.S. Tkachenko, A.V. Sokolov.** Environmentally friendly molding and core mixtures

Annotation. The article suggests the use of eco-friendly liquid-glass molding and core mixtures for the production of castings by the CO₂ process. The compositions of mixtures with a reduced content of liquid glass and binder are presented.

Keywords: ecology, liquid glass, CO₂ process, mixture compositions, additive.