

1. **A.A. Garchenko, V.F. Shevyakov, V.A. Korovin, K.A. Maslov, A.V. Sorokin.** Improvement of the Gray Cast iron railcars for mills.

Molds in metallurgy are necessary for the production of ingots. High requirements are applied to the ladders as to the cast metal mold. It must withstand high temperature, pressure, pressure transformations on the part of the ingot and a large number of fillings. In this paper, we present a method for producing molds made of gray cast iron with additional processing in a bucket.

Keywords: melting point, grey cast iron, mold.

2. **A.Popov, P. Dotcenko.** Development trends of modern core-making technologies on the experience of Laempe

The article describes the development of core-making technologies from the first experiments in machine molding to the introduction of the most modern technologies such as the Coldbox-Amin process and 3D prototyping of cores. Technological processes and branches of application of specific core-making methods are described.

Keywords: Foundry development, introduction of modern technologies, Coldbox-Amine-process, 3D printing.

3. **Yu.P. Shapovalov, A.S. Galibus, M.V. Ageenko.** Experience equipping the areas for manufacturing, pouring, cooling, knocking out casting molds and core sections with absorption-biochemical installations (ABCU) for cleaning ventilation air

The article discusses the use of absorption-biochemical technology for cleaning the ventilation air from harmful organic compounds in order to solve the environmental problem in the foundry.

Keywords: ventilation air, absorption — biochemical system

4. **A.A. Tokarev, I.V. Bakin, A.V. Barkhatov, D.A. Boldyrev, B.A. Kulakov.** Thermal analysis as a means of controlling the process of obtaining PMH

The article describes the basic principles of controlling the production of cast iron with vermicular graphite using thermal analysis (TA) of the melt. The technical implementation of the TA principles and the results of their application in production conditions at one of the Russian foundries are presented.

Keywords: cast iron with vermicular graphite, thermal analysis, modification.

5. **V.A. Zolotarev.** Comparison of methods for obtaining dense castings from high-strength cast iron on the example of casting the turbine body from the alloy of the VCH40 brand

In the presented work, the modeling of the solidification of a turbine casing casting is considered to determine its thermal nodes and the accumulation of defects; profits and coolers, as well as gating systems, are calculated using various classical methods. Modeling for pouring and hardening was carried out in the ProCAST program.

Keywords: heat node, defects, shrinkage sinks, porosity, profit, cooler, gating and feeding systems, modeling, analysis.

6. **M.V. Maisuradze, Yu.V. Yudin, A.A. Kuklina, E.V. Antakov.** Mechanical properties of the heat treated engineering steels

The mechanical properties of the heat treated engineering steels has been studied for the different heat treatment modes — cooling from the austenitizing temperature at different rates and tempering at different temperatures. It is shown that the steels of different composition possess different levels of properties after identical heat treatment due to the influence of the alloying elements. The effect of the cooling intensity and tempering temperature on the impact toughness and strength of different steel grades has been established.

Keywords: steel, heat treatment, mechanical properties, microstructure, strength, impact toughness, alloying.