

1. Dibrov I.A. Twelfth Congress of Russian and international exhibition of Foundry "casting-2015".
2. Korovin V., Leushin I., Tokarnikova O., Kurilina T., Slusov A. Carbonates As Universal Refining-Modifying Mixture For Cast Iron And Copper.

Alloys. Refining-modifying influence of calcium, barium and strontium carbonates on microstructure and mechanical qualities of cast iron and brass pieces is studied. The perspective of these mixture application in terms of environmental safety is shown. The compound of mixture is optimized experimentally. The possibility of dispersed carbonates application and high efficiency of studied refining mixture is proved by thermo dynamical calculations and industrial tests.

Key words: Carbonates, Refining-Modifying Mixture, Cast Iron And Copper Alloys.

3. Minenko G. Effect of electric field treatment processes modifying Fe-C-alloys.

The description of physical model of electrical field effect on the alloy modifying process is shown. Main factors of treatment by electric current, arising from imposing of the electric field on the molten metal, are studied. The mechanism of electric field energy influence and power interaction of free current carriers with crystallization centers and crystals of alloy is shown. Periodization of alloy modification process is suggested. The results of electrical field influence on mechanical properties of modified alloys are provided.

Key words: processing of the electric field, the process of modifying alloy dissolution modifier particles, the flow of conduction electrons activation centers crystallization process step of modifying, improving the mechanical properties of the alloy.

4. Nesterov N., Vorontsov B. Mathematical model of liquid metal cooling during lost foam casting.

The process of metal pouring during lost foam casting is studied and methods of temperature field calculation in casting after pouring of mold are developed. The results of this work can be used during development of production technology for different types of casting and also for prediction of shrinkage in castings.

Key words: flask, mathematical model, lost foam casting.

Ivochkina O., Znamenskiy L., Varlamov S., Vertyukh S., Karachev E. Theoretical basics of electron-ion treatment of crystalline hydrate binder in precision casting.

Electron-ion treatment technology of crystalline hydrate binders for investment casting of large art castings has been developed and tested. The improvement of surface quality and decrease of clogging and gas cavities defects by 20-23% is shown.

Key words: electron-ion treatment, investment casting.

5. Karpov Ju., Karpova E., Shreder M., Iluchin V. Analysis of importance of the factors sealing impact on the sand in gravitational-pressing method of sealing.

Questioned the effectiveness of pre-compaction due to gravity forces in flasks of a height exceeding 300 mm which are mainly used in foundries of medium machine building. Proposed and experimentally tested purely gravitational method of casting forms.

Key words: the moulding mixture, shape casting, compacting, the gravitational force pressing.

6. Melnikov I. Production of thin-section hydraulic sound castings by Seiatu-process illustrated by boiler sections.

The article presents the experience of leading European plants producing cast iron boiler sections as well as heating radiator and proves the technology choice for these critical castings.

Key words: boiler sections, radiators, hydraulic sound castings, Seiatu-process.

7. Monastyrskiy V., Ershov M. Simulation model of piping and macro porosity formation.

A finite-element model of the piping and shrinkage macro porosity formation taking into account the capillarity and dendrites skeleton influence on feeding of the mushy zone were designed. A software module for PoligonSoft CAE system has been developed. The software module is available in test mode in PoligonSoft CAE system 13.4 and above.

Key words: porosity, shrinkage, casting cavity, capillary effect, casting defects.