1. **K.N. Vdovin, M.V. Shubina.** Heat resistance of gray cast iron with diff erent graphite and metal matrix structure.

The heat resistance of unalloyed gray cast iron with lamellar and compact graphite in perlite and pearliticferritic metal matrices was investigated. Heat resistance tests were carried out according to GOST 6130—71 at temperatures of 500, 600, 700 and 800 °C for 30 hours with intermediate weighing of the samples every 6 hours. It was found that heat resistance of pearliticand pearlitic-ferritic cast iron with lamellar graphite differed insignificantly. It has been established that the heat resistance of pearlitic-ferritic cast iron with compact graphite exceeded this property for cast iron with lamellar graphite by 48 % at a test temperature of 500 °C and by 16 % at a temperature of 800 °C. Consequently, the change in the shape of graphite from lamellar to compact is a reserve for increasing the temperature threshold for the heat resistance of unalloyedgray cast iron.

Key words: cast iron, graphite, heat resistance, metal matrix, lamellar graphite, compact graphite.

2. **E. Shestovskikh, I. V. Kostin, A. S. Koptyakov, S. G. Bochvar, V. N. Timofeev.** Ultrasonic equipment for treatment of aluminium and magnesium melts.

The paper considers ultrasonic equipment for realizationof well-known technologies of ultrasonic treatment of aluminum melts. It also presents the original method for stabilizing the acoustic power introduced into the melt. The equipment providing this technology demonstrates its efficiency experimentally by determining the influence of the ultrasonic cavitation attack on the grinding of iron-containing constituents and Mg2Si phases.

Key words: ultrasonic equipment, ultrasonic degassing, ultrasonic refining, melt homogenization, control of acoustic power.

3. **K. V. Nikitin, V. I. Nikitin, V. A. Glushchenkov, D. G. Chernikov.** Infl uece of modifying master-alloys AlZr4, AlZr10, AlSc2 and magnetic-pulse treatment on the structure and physical properties of wrought alloys of the system Al—Mg.

A comparative study on the effect of modifying masteralloys AlZr4, AlZr10 and AlSc2 and magneticpulse treatment on density (liquid and solid state) the electrical conductivity (solid) and their macrostructure of alloys AMg5 and AMg6 was carried out. Liquid of modifying master-alloys poured into a special devices, providing the cooling rate during the crystallization of ~102, ~103 and ~106 °C/sec. Modifying master-alloys were introduced into the melts from the rate of 0,01 % on the element-modifier. Modifying the melt processing additives of modifying master- alloys contributes to the increase of density of the alloy in liquid and solid states. The electrical conductivity of the alloys after the introduction of modifying master-alloys AlZr4 and AlZr10 reduced. Introduction modifying master-alloy AlSc2 causes an increase in the electrical conductivity of alloys AMg5 and AMg6. This effect is installed for the first time and requires additional research. It was found that the greatest influence on the physical properties of alloys, in comparison with modifying masteralloys AlZr4 and AlZr10, has modifying master-alloy AlSc2, obtained by crystallization in a water-cooled roller mold. Maximum decrease of size of macrograins of alloys were also found with the introduction master-alloys AlSc2. Magnetic-pulse treatment (MPT) of the melts at the axial scheme of the impact, as the introduction of modifying master-alloys, contributes to increasing the density of the alloy in liquid and solid States. The electrical conductivity increases after MPT, like after processing of the melt additives of alloys AlSc2. Decrease of size of macrograins of alloys at magnetic-pulse treatment is comparable with the addition of master-alloys AlZr4. On the basis of comparative studies concluded that magnetic-pulse treatment can be attributed to physical methods of modification. Methods of determining the density and electrical conductivity can be used to express evaluation examined the effectiveness of modifying influences.

Key words: alloys of the system Al-Mg, ingots, density, electrical conductivity, modifying master-alloys, magnetic-pulse treatment, macrostructure.

4. **V. F. Mysik, A. V. Zhdanov**. Problems of downgrading of scrap quality.

Problems of downgrading of scrap quality, separation and processing before smelting in foundry practice are considered in the present article. Most of scrap-processing companies currently use visual estimation instead of modern equipment for rapid analisys. This factor in many cases becomes an obstacle for quality steel and pig-iron scrap separation and leads to accumulation of detrimental impurities, especially non-ferrous metals such as copper, tin et. al. in iron-carbon melt.A sophisticated analysis of sources of non-ferrous metals pick-up by iron-carbon melt from different charge materials is made and several technical solutions for the problem are proposed.

Key words: foundry, scrap, detrimental impurities, copper, tin, ferro-alloys, DRI, separation, steel, pig-iron, scrap grades.

5. **ADEL NOFAL CMRDI.** Metallurgical aspects of High-Chromium White Irons.

Microstructure of high-chromium cast irons. The structure of the metal matrix-chromium cast irons can be pearlitic, austenitic, Martensitic or mixed. Castings with pearlitic matrix have moderate abrasion and low toughness. Pearlitic metal matrix formed in the midst of strengthening of alloying elements. A significant portion of chromium is karbidah, so to ensure adequate zakalivaemosti need additional alloying. Castings with Martensitic matrix have maximum wear resistance. Castings with austenitic matrix, despite relatively low hardness can provide a satisfactory performance abrasive sustainability through hardening during operation due to the transformation of austenite in martensite if shock loads. Carbides in high-chromium cast iron extremely hard, wear-resistant, but also fragile.

Key words: Microstructure of high-chromium cast iron, pearlitic matrix with metal matricea austenitic, martensitic matrix.

6. **E.A. Usoltcev, E.L. Furman, I.E. Furman**. Cast valve pairs of sucker rod pumps.

7. **Gavin Dooley, Grant Bradley, Manuel Guerra, M. Everden.** Advanced manufacturing technology of ceramic membranes ADBOND ® QUIKSET fast sohnushhaja suspension.

The company has developed QUIKSET™™ material Remet-new concentrate polymer which boosts productivity with simultaneous improvement of durability of ceramic membranes. This article contains the results of the tests of this material and shows advantages in comparison with other materials.

Key words: ceramic shell, polymer.

8. **P. Kosushkin.** Innovations for casting with Stereolithography 3D printers.

Investment casting is one of the oldest metal-forming techniques based on the principles of «lost-wax» casting. High-volume production typically uses metal tooling to create wax patterns.a Stereolithography has been used for over 20 years (adapted for burn-out instead of melt-out) to create patterns when production volumes are low or parts are large, contain very high detail, or are complex in design

Key words: 3D printer, Stereolithography (SLA), investment casting

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