1. **E.S. Gayntseva, R.R. Ganiev, A.S. Goryukhin, A.O. Demenok, B.A. Kulakov**. Mathematical model of the fi lling process of a multi-seat block of blades.

The article discusses the process of pouring a multi-seat block of cooled blades using a two-tier gate-feeding system. The authors developed a mathematical model that describes the process of pouring a multi-unit block, which allows you to calculate the filling time of both individual elements of the block (sump, siphon, feather blade), and the block as a whole, as well as to determine the place of confluence of metal flows coming through the lower and upper feeders. The mathematical model allows you to calculate the place and time of the confluence of flows, as well as to control the place of confluence of flows by changing the cross section of the diffuser, which reduces the possibility of formation of defects. The proposed mathematical model can be used to calculate the filling time of other castings obtained in multi-unit blocks with a similar gate system.

Keywords: cooled working blade; feather blade; a sprue-feeding system; vertical well; sprue base sump; siphon; choke; filling time; coefficient of consumption; coefficient of integration; merge flows.

2. **V.A. Korovin, K.A. Maslov, A.V. Titov, M.A. Volkov, N.A. Bubnova, P.F. Pimnev.** Improvement of the technology for producing U15KhNM steel for inclined rolls of a wheel rolling mill.

The results of experimental work on the assessment of the operational durability of inclined rolls in the conditions of the rolling mill section of the wheel-rolling shop of JSC «VMZ» are presented. It is shown that the treatment of the melt with materials based on barium and strontium carbonates leads to the refinement of the structural components, to the leveling and increase in the homogeneity of the microstructure, as well as to the purification of the melt from non-metallic inclusions and a decrease in the gas content. As a result, the durability of the inclined rolls is significantly increased.

Keywords: Inclined rolls, modification, degassing, nonmetallic inclusions

3. **B.B. Vlasenko, V.D. Belov, A.N. Sidoryuk, S.V. Laktionov**. Innovative Technological Solutions in the Production of High-Strength Cast Iron Castings for Critical Heavy Engineering.

The experience of fulfilling a contract for the supply of rolling-mill machinery for Cuba by the «Elektrostal Heavy Machine Building Plant» (JSC «EZTM») is described on the example of the manufacture of five cast parts from cast iron VCh60 and VCh50. The high-performance properties of the casts are achieved due to the unique technology of the «soft cooler» application (molding sands with increased heat storage capacity). Given the large amount of cast details, the cost savings effect was significant.

Keywords: iron casting, VCh60, VCh50, sand casting.

4. **O.P. Chechushkin, A.R. Luts.** Ensuring the operational reliability of products from the modifi ed AK12M2 alloy from the position of applied positions of the phenomenon of structural heritage.

The article presents an analysis of the influence of structural inheritance of fine-crystal ligature produced by combining self-propagating high-temperature synthesis and furnace fusion of components on the structural-phase composition of the AK12M2 alloy.

Keywords: the phenomenon of structural (metallurgical) heredity, analysis of the microstructure, silumin, intermetallic phase.

5. **I.A. Strelnikov, L. Sh. Pestryaeva, Sh.V. Sadetdinov.** Infl uence of dipinaconborates on the physical and mechanical properties of lignosulphonate binders and mixtures.

The results of the impact studies divinecaroline compounds: lithium definecolor (DPKBL) of the formula Li[B(O2C6H12)2]·4H2O, divinecaroline sodium (TPKBN) of the formula Na[B(O2C6H12)2]·4H2O and potassium definecolor (MPKBK) of the formula a[B(O2C6H12)2]·4H2O, on the physico-mechanical properties lignosulfonate binders and mixtures. The experimental data obtained indicate that lithium, sodium and potassium dipinaconborates increase the binding properties of technical lignosulfonates, the strength of mixtures based on them, reduce the crumbling and improve the formability of lignosulfonate mixtures. Binders and mixtures based on technical lignosulfonates and dipinaconborates with high physical and mechanical properties have been developed.

Keywords: technical lignosulfonates, lithium, sodium, potassium dipinaconborates, binding properties, lignosulfonate mixtures, survivability, shedding, formability, compressive strength, kinetics of increasing the strength of mixtures, residual strength, knocking operation.

6. **S.A. Sirotkin**. Th e Reasons for the Formation of a Crack in One of the Glass-Half Aft er Its Production Testing.

Using of the parts of the glass molds in a cyclic mode «molten glass air» — based on opening-closing with an interval of 0.3...2.0 per operation, depending on the capacity and requirements for the wall thickness of the glassware. During one cycle, the glass is filled with molten glass (with a temperature of 950—1200 °C), the glassware is blown out, the metal mold is opened to remove the glass container and closed to accept a new portion of the molten glass. With this principle of operation of the part, when, under conditions of cyclic changeable temperatures and environments with different chemical compositions and state of aggregation, physicochemical processes occur in boundary layering contacts, structural changes are made in the body of the product and, as a result, the integrity of the working surface of the glass mold is violated, leading to its premature removal from the production line.

Keywords: glass mold; cast iron.

7. **E.S. Musinova, A.A. Akutin, A.A. Shatulsky** Determination of cooling of the front of the fl ow of an aluminum melt in a thin vertical cavity of a shell ceramic mold with its upper supply.

A technique is presented for conducting an experiment to determine the cooling of the front of an aluminum melt flow in a thin vertical cavity of a shell ceramic mold during investment casting with an upper supply of the melt into the mold cavity.

Keywords: melt flow front, shell ceramic mold, investment casting, upper gating system.

8. **Vladislav Kopitar** Machine for cleaning metal castings from sand.

The article presents material on a machine for cleaning sand from castings. The scope of application, design features, technical and environmental advantages are shown.

Keywords: cleaning of castings, foundry sand, abrasive mixture

INFORMATION

What, where, when, who, to whom, how much, why?

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2. Production of castings

3. Ferroalloy price indices

4. Obituary Vdovin K. N.