

1. **I.V. Ryabchikov, V.A. Golubtsov, R.G. Usmanov, V.V. Lunev.** Influence of complex alloys with alkaline earth metals on mechanical characteristics of steel for transport purposes.

The results of studies of the effect of mixture modifiers, containing Ca, Ba, Sr on mechanical properties of steel 20GFL, are given. It is shown that refining and modifying of steel by modifiers type INSTEEL INSTEEL (Fe—Si—Ca—Ba, Fe—Si—Ca—Ba—Sr) produced by NPP Tekhnologiya company, allows to increase impact viscosity of metal used for castings for railway transport (side frame, bolster beam).

Key words: modifying, alkaline-earth metals, impact viscosity.

2. **V.A. Grachev.** Heat balance of shaft-refractive furnace for melting aluminum alloys.

The author offers several designs of blast-reverberatory furnace for melting aluminum alloys. Melting aluminum alloy in a liquid bath can significantly reduce the aluminum loss, and blast-reverberatory design provides high productivity and efficiency along with lower energy costs. Ensuring continuous operation of the liquid bath and overheating chamber tapping alloy with the required texture is achieved by the optimal design of partitions between them. This article presents calculations of the furnace's heat balance.

Key words: aluminum alloys smelting, blast-reverberatory furnace, heat balance.

3. **V.S. Doroshenko.** The development of casting technologies on ice patterns with the phenomena observed in nature.

The structure, results in metal casting research and technological development on ice patterns using a variety of features and phenomena observed in nature. Examples of condensation from the gaseous state and patterns of art products with their high-volume manufacturing, as well as examples of technical castings are shown.

Key words: ice pattern, sand casting, cryotechnology, casting, lost foam casting, investment casting.

4. **A.K. Masalov, M.G. Kuzmin.** New DC electric arc furnace with controlled electromagnetic stirring of the melt.

Electric arc DC-furnace with capacity of 6 tons has been developed at PJSC «Siblitmash» and is used for melting of cast iron and steel. The furnace is equipped with a magnetic field source for electromagnetic mixing of the melt, which allowed carrying out cast iron processing effectively for averaging the chemical composition, the effective dissolution of ferroalloys and carbonaceous materials for carburization of iron. The production of heavy duty cast iron with spherical graphite VCH60 has been developed.

Key words: Electric arc DC-furnace, electromagnetic mixing, heavy duty cast iron.

5. **V.I. Verbitsky.** The possibility of intensification of pre-compaction sand jolt-squeeze machines.

Diagrams of the structures of different shakers in the composition jolt-squeeze nodes. Comparative study of the specificity of their work, evaluated the effectiveness of different mechanisms for compacting the moulding sand. Shows the advantages of the two impact shakers air cushion low height.

Key words: forming machine, shaker, impact, job, efficiency.

6. **S.D. Ranich, V.E. Haychenko, I.A. Filippova.** Use of installation of electroslag chill mold for recovery of worn-out details.

The technology of recovery of hammer stamps on installation of electroslag chill mold, which is technically and economically reasonable, is offered.

Key words. Electroslag casting, chill mold, stamp.

7. **A. Dibrov.** XIII International Foundry Congress and International Exhibition «Lityo-2017».
8. **Nikitin Vladimir Ivanovich** the 75th anniversary of birth.