

1. **Fadeev A., Belov V., Bazhenov V., Koltygin A., Petrovskiy P., Sannikov A., Nikitina A., Pavlinich S., Alikin P.** The peculiarities of production of oversized thin-walled castings made of titanium alloy for gas turbine engine using model-free technology.

This article is about the possibility of producing oversized thin-walled castings for aircraft. The castings are made of titanium alloy VT20L and produced in graphite molds, prepared using model-free technology with computer pre-production of homeland materials and foundry equipment. Investigated the possibility of model-free technology application for manufacture of oversized (overall dimension more than 600 mm) and thin-walled (wall thickness beginning from 3.5 mm) titanium castings for aircraft. The authors of this article suggested to use this method as alternative to investment casting.

Key words: casting, aircraft industry, model-free technology, titan alloys, modelling, import-substituting technologies, ProCast, CNC.

2. **Zarubin A.** Design of gating system for chill casting of aluminum alloys.

Improved gating systems for chill casting were developed, based on the results of analysis of current technological process for production of castings, made of aluminum alloys. The optimization of gating system channels size, using modern computer technologies, has allowed to decrease the defects in casting significantly.

Key words: chill casting, castings made of aluminum alloy, gating systems.

3. **Brusnitsyn S.V., Mysik R.K., Sulitsin A.V., Ozhgikhin I.V.** Investigation of gas pores behaviour in the copper continuous cast bar during plastic deformation.

In this article the gas pores behaviour formed during continuous casting process of oxygen contained copper cast bar for rolling in the rod was investigated. The metallographic analysis of cast and rolled bars samples selected along the entire length of the rolling mill was carried out. The average pores size that is not completely healed during plastic deformation and influence on the formation of cracks in the rod was determined. Ways of the copper rod quality improving was suggested.

Key words: copper, continuous casting, rolling, rod, Contirod method, gas defects.

4. **Phillipenkov A., Shan'gin Y., Popov S., Rydlevskiy Y., Koscheev S., Trop L., Ponomarev S., Chaschin A., Kalimullin E.** Increase of working capacity of cast structural parts for freight wagons by improving foundry-mechanical and technological properties of the metal through the application of cold-resistant steel 20FTL.

At current moment 20FTL is the most perspective and competitive type of steel. Application of steel 20FTL allows to decrease the defects in castings, to improve the reliability of cast parts in wagons building and especially to increase significantly the index KCV-60°C. The transition to application of 20FTL steel is needed to improve the characteristics, which ensure trouble-free operation not only during service period, but also during the warranty period.

Key words: cast structural parts for freight wagons, car's side frame, dynamic loading.

5. **Budanov E.** Production of manganese steel castings by V-Process technology.

Choosing the moulding technology for manganese steel casting production is a challenging task for any foundry production. The article provides selection rationale for vacuum moulding technology with specific references to the world's leading foundries.

Key words: mining and milling companies, manganese steel castings, Vacuum moulding process.

6. **Leushin I., Chistyakov D.** Research of structural-morphological condition of graphite on the example of iron castings glass-molds.

The analysis of process of production of details iron glass-molds is made; the directions of improvement of a material for increase of its endurance are defined. Revealed are parameters of formation of various morphology of graphite. Developed is the technology of formation of the differentiated structure of cast preparation.

Key words: iron, casting, glass-mold, modifying, hardening speed, differentiated structure, graphite of a compact form.

7. **Minaev A.** Basics of dynamical theory of innovations (DinTInnova®),

Innovational research of foundry technologies development in leading industrially developed countries (LIDC) has allowed developing the basics of dynamical theory of innovations (DinTInnova®) [1]. Basic practical tenets, arising from the basics of dynamical theory of innovations, are given.

Key words: theory of emergent evolution, dynamical theory of innovations, DinTInnova®.

8. **Nikitin V., Romanyuk V., Nikitin K., Elinov E.** Synthesizing of aluminum alloys based on canned waste,

The studies present economic feasibility of aluminum alloys synthesizing with a high content of recyclable waste (up to 100%).

Key words: recycle of aluminum canned waste, synthesizing of casting alloy.