

Letter to the President of the Russian Federation Mr. Putin Vladimir Vladimirovich

1. **I.A. Dibrov.** Recommendations of the XIII Congress of Foundrymen on the development of foundry
2. **E.M. Visik, V.V. Gerasimov, N.V. Petrushin, E.V. Kolyadov, E.V. Filonova.** Technological testing of casting of turbine blades from high-temperature nickel low-density alloy VGL20.

For the first time, results were obtained on the development of a technology for casting uncooled single crystal working blades with axial orientation $\langle 001 \rangle$ III st. turbine GTE from a new high-temperature alloy VGL20 of reduced density. The design of the bloc model blocks with seed nodes, the melting and casting modes of the heat-resistant alloy at the industrial unit for directional crystallization of UVK-9A equipped with an ASU casting process ($G = 60\text{--}80^\circ/\text{cm}$) have been worked out.

The experimental batch of castings of blades of III st. turbine GTE from the alloy VGL20 in the conditions of pilot production of VIAM. The basic physical and mechanical properties of the alloy VGL20 with crystallographic orientation (CGO) $\langle 001 \rangle$ are given. Data on the structural-phase characteristics of the material of single-crystal blades after casting from an alloy of VGL20 are presented.

Key words: high-temperature nickel alloys with low density; directed crystallization; monocrystalline uncooled blades; microstructure.

3. **N.A. Kidalov, N.I. Gabelchenko, O.A. Ingemansson.** The comparative analysis of technological processes of manufacturing of castings from constructional alloyed steel 12DN2FL.

The analysis of technological processes of manufacturing of castings from constructional alloyed steel 12DN2FL and results of testing of mechanical properties is carried out. Studies indicate the possibility of increasing the mechanical properties of cast metal due to the correction of the technological process, in particular, replacement of a sluggish bale with an active one, and a significant reduction in the melting time.

Key words: steel, casting, mechanical properties.

4. **E.P. Shalunov, I.E. Illarionov.** Creation of heat-resistant composite materials of the matrix-filled type for heavily loaded elements of friction units.

A new approach to the creation of heat-resistant antifriction composite materials of a matrix-filled type based on copper alloys for heavily loaded elements of friction units is shown. It consists in the use, as a structural component of such materials, of heat and wear-resistant fillers in the form of copper based granules produced by reactionary mechanical alloying in the air of an attritor of a mixture of powders of their base, oxide and/or carbide forming metals and lubricating additives in the form of graphite, molybdenum disulphide and/or other elements and compounds. The possibility of obtaining such materials both in powder and in casting variants is shown.

Key words: heat-resistant antifriction composite materials, copper alloys, granules, reactionary mechanical alloying, attritor, mechanochemical synthesis, nanoparticles, dispersion hardening, nanocrystalline structure, hot and cold pressing, sintering, injection molding machines.

5. **A.V. Chikunov.** Modern engineering
6. **A.V. Monastyrskiy.** Computer modeling of thermal and phase fields during the continuous casting of slabs.

Press release. The Austrian-German company will produce chemical materials for complex castings of ferrous and non-ferrous alloys in Tagil.

12th International scientific and practical conference «Foundry today and tomorrow» St. Petersburg

8th Scientific and technical conference «Heredity in Foundry and Metallurgical Production», Samara.

Getman Anatoliy Antonovich (to the 90th anniversary)