1. **Yu.P. Shapovalov, A.S. Galibus, M.V. Ageenko**. Experience equipping the areas for manufacturing, pouring, cooling, knocking out casting molds and core sections with absorption-biochemical installations (ABCU) for cleaning ventilation air.

The article discusses the use of absorption-biochemical technology for cleaning the ventilation air from harmful organic compounds in order to solve the environmental problem in the foundry.

**Keywords:** ventilation air, absorption — biochemical system.

2. **M.A. Ioff e, R.D. Farisov.** System-methodological approach to the problem of the quality of castings of mass iron foundry production based on the synthesis of the principles of thrift and synergetics.

The article proposes a methodology for continuous improvement of production and raising the level of quality of castings based on the synthesis of the principles of lean and synergetic. The concept of lean manufacturing is focused on combating losses of all types and in all areas of the enterprise. Basic principles of lean manufacturing are proposed.

**Keywords:** casting quality, frugality, synergy.

3. **A.V. Efremov, E.V. Panfi lov, I.F. Khakimov,V.I. Kazbanov, Z.R. Takhauova, S.P. Korolev.** Introduction of a new alloy AlSi7Cu0,4 for aluminum castings «Cylinder head» instead of AK9ch alloy in order to increase strength and performance properties.

The results of a study of replacing the AK9ch aluminum alloy with a high-strength economically alloyed aluminum alloy AlSi7Mg0.4 for the production of a complex and heavily loaded Cylinder Head casting for KAMAZ automobile engines are presented. The main purpose of the work was to increase the mechanical and operational properties of the alloy in castings and improve the casting properties.

**Keywords:** aluminum alloy, cylinder head casting, casting and mechanical properties.

4. **V.V. Andreev.** Effect of the wall thickness (reduced radius) of the casting on the mechanical properties and structure of high-strength cast iron of VCh50 grade.

The results of a study of the dependence of the mechanical properties and microstructure of nodular cast irons on the wall thickness and casting weight are presented.To obtain differential-walled castings with desired properties, it is necessary to apply methods for controlling the intensity of cooling of the casting or its individual parts. It is necessary to use combined casting molds, the elements of which are made of metal coolers and different types of molding sands with different thermophysical properties.

**Keywords:** differentiated castings, spherical graphite, cooler, mechanical properties, microstructure.

5. **N.S. Gushchin.** Experience in the manufacture of wear-resistant castings for grinding mills.

It is proposed to develop wear-resistant chromiumnickel cast irons with nodular graphite of the class (ChKh8N4Sh and ChKh8N4FSh) for the production of massive castings of complex configuration. The developed cast irons have better technological properties in comparison with foreign white cast iron of the «Nihard-4» type and make it possible to provide import substitution of cast irons of this class for the production of high-quality castings.

**Keywords:** wear resistant cast iron, nodular graphite,mill.

6. **I.Takhetsi, V.V. Korobeinikov, S.S. Tkachenko.** Trends in successful energy saving at industrial Enterprises.

The article presents the scientific and technical developments of LLC «TAHTECH RUS» and the production of modern equipment and materials, which can significantly improve the energy efficiency of technological processes and industrial furnace units. Energy saving at industrial enterprises is achieved by using a complex of thermal furnaces, gas burners, ceramic fiber refractory and heat-insulating materials. Examples of equipment and materials are given.

**Keywords:** energy saving, thermal furnaces, refractories.

7. **A.A. Lisovoy, I.S. Tkachenko, A.N. Khudeshenko.** Innovative new generation equipment for the LGM process.

One of the promising technological processes for the development of foundry production is casting according to gasified models. The AKS plant is a leading enterprise in Russia that manufactures tooling for one-off production and a set of equipment for batch and mass production of castings using the LGM process. At the request of the customer, AKS carries out reconstruction projects and the creation of new foundries for this technological process.

**Keywords:** gasified models, tooling, foundry.

8. **A.V. Chaikin, V.V. Kolpakov, O.I. Rutz, V.A. Chaikin**. Progressive materials for deoxidation and refi ning of steels in electric arc furnaces.

Dispersed mixtures for deoxidation and refining of steels melted in electric arc furnaces have been developed and tested. These mixtures successfully replace more expensive imported materials containing harmful compounds of chlorine and fluorine.

**Keywords:** dispersed mixtures, refining, deoxidation.

9. **V. A. Ivanova, E. O. Pobegalova**. Prediction of consumer properties of foundry coke.

The paper discusses the results of the tests conducted to determine changes in the particle size distribution and moisture content of foundry coke during transportation. It is established that when supplying foundry coke, in addition to data from the certificate of conformity, the distance and time of transportation, as well as weather conditions should be taken into account. Transporting foundry coke over 300 km may lead to a decrease of coarse grades by 3% and an increase in grades below 40 mm to 0.7%. The humidity of foundry coke can increase up to 11% when exposed to adverse weather conditions, high air humidity, and atmospheric precipitation.

**Keywords:** foundry coke, consumer properties, transportation,granulometric composition, moisture.

## Kovrizhnykh Nikolai Ivanovich
**(for the 90th anniversary of his birth)**

## Ten Edis Borisovich
**(September 17, 1941-June 30, 2021)**