

**FOUNDRY REVIEW**  
**9-10'2022**

**- SUMMARIES -**



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**LANTHANIDES: A FOCUSED REVIEW OF EUTECTIC MODIFICATION IN HYPOEUTECTIC AL-SI ALLOYS. PART 2**

A modified fibrous-like eutectic structure strongly improves the final mechanical properties of Al-Si foundry alloys, especially ductility. Beside widely used commercial eutectic modifiers such as Sr and Na, lanthanides appear to be a possible alternative in the eutectic Si modification process for hypoeutectic Al-Si casting alloys. All lanthanides have similar physical and chemical properties, such as density, melting point, and fading phenomena, which have been compared in the present review. They also show atomic radii close to the optimal atomic radius for a modifying agent. However, the microstructural evolution of eutectic Si is strictly related to the specific element and content of lanthanides, whose abundance, reserve, mining, production and market situations have been preliminary evaluated in this paper. The eutectic modification mechanisms induced by lanthanides are not well-discussed and clarified yet. The advantages and disadvantages of individual addition of lanthanides for chemical modification of hypoeutectic Al-Si alloys have been here critically reviewed. The use of lanthanides for eutectic Si modification in Al-Si alloys has been discussed from both effectiveness and economical point of views. Nowadays, the actual cost and their efficiency seem to make lanthanides still far from being used in foundry industry for commercial and large-scale applications.

**AUTOMATIC FINISHING OF CASTINGS. THE SCHMIEDEBERGER COMPANY HAS OVER 50% TIME SAVING DUE TO THE NEW AUTOMATIC GRINDING CENTER MAUS 600**

Personnel deficiencies, high process costs and variable results of manual finishing treatment of castings constitute a challenge for several foundry plants. In order to counteract that, the Schmiedeberger Gießerei Company invested in new automatic grinding center MAUS 600 of the German Engineering Company: Reichmann & Sohn.

MAREK SKOWRON

### **FROM THE HISTORY OF DEVELOPMENT OF MOULDING TOOLS**

One of the most important elements in the process of castings production constitutes the formation of the casting mould. In case of

a manual formation using the proper tool kit is necessary. These tools should allow thickening of a moulding sand, performing eventual repairs of a mould after a model removal and also making the gating system.

Examples of the moulding tools development from the middle of XVIII century up to the present times are presented in the article. The old names of tools and functions fulfilled by them are also given. The development of moulding tools in Poland, after regaining the independence, is shortly described.

PRZEMYSŁAW FIMA

### **18<sup>TH</sup> DISCUSSION MEETING ON THERMODYNAMICS OF ALLOYS TOFA 2022**

On September 12–16, 2022, the 18-th International Conference: Discussion Meeting on Thermodynamics of Alloys – TOFA 2022 was held in Krakow (<https://tofa2022.pl/>). This year's conference, organized by the Institute of Metallurgy and Materials Science of the Polish Academy of Sciences and the Polish Foundrymen's Association, was held in parallel with the 10<sup>th</sup> International Conference on High Temperature Capillarity Conference. The Institute of Metallurgy and Materials Science of the Polish Academy of Sciences was the organizer of TOFA for the second time (previously in 2008).

MIRJAM JAN BLAZIC

### **62<sup>nd</sup> INTERNATIONAL FOUNDRY CONFERENCE PORTOROŽ 2022**

The traditional yearly foundry conference and exhibition in Portorož, 62-nd in a row, organized by the Slovenian Foundrymen Society with co-organizers: Faculty of Natural Sciences and Engineering of University of Ljubljana and Faculty of Mechanical Engineering of University of Maribor, took place from 14<sup>th</sup>–16<sup>th</sup> September 2022. Unlike the conferences, which took place in years 2020 and 2021 and were significantly affected by the coronavirus pandemic, this year's conference went on without covid restrictions, which favoured a very nice atmosphere. People's satisfaction with being able to make again social and professional contacts in-person was apparent at every turn.

### **INTERNATIONAL MEETING OF THE FOUNDRY SECTOR AT THE METAL FAIRS IN KIELCE**

International Fairs of Foundry Technology: METAL and accompanying them – within the frame of 'Industrial Autumn' – exhibitions are one of the largest events of the metallurgy sector in the world. For three days of the Fairs a wide offer of products, machines and the

newest technological solutions was presented. The event was enriched by numerous lectures, seminars and work-shops.

JAN SZAJNAR

**MEETING OF THE FOUNDRY COMMISSION OF THE POLISH ACADEMY OF SCIENCES,  
KATOWICE SECTION**

On September 20, 2022 the Reporting-Electoral Meeting of the Foundry Commission of the Polish Academy of Sciences took place in the Fairs Centre in Kielce. New Authorities of the Commission were elected for the period: 2023–2026. The meeting accompanied the XXIV International Fairs of Foundry Technology METAL.

During the Commission meeting took place the ceremony of presenting Awards and Distinctions in the Competition - named after professor Waław Sakwa – for the best engineering and masters diploma works of the foundry zone.

**INTERNATIONAL CONFERENCE MCC'3 IN VARNA, BULGARIA**

On 26–28 September, the Third International Conference of Metals, Ceramics and Composites (IC MCC'3) took place in Varna (Bulgaria), organized by the Polish Foundrymen's Association and the Institute of Metal Science of the Bulgarian Academy of Sciences (IMS AS). The main motto of the Conference was: "Towards a successful transfer of materials science into the industry," and the supreme goal was to establish an international platform for sharing and exchanging knowledge and experience in a successful implementation of material science related laboratory trails to real industrial applications and their impact on sustainable economy.