

FOUNDRY REVIEW

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- SUMMARIES -



THE LAEMPE COMPANY, SUPPLIER OF COMPLEX SERVICES FOR THE FOUNDRY INDUSTRY, PRESENTS ITS WHOLE PORTFOLIO AT THE GIFA FAIRS 2023

The International GIFA Fairs will take place in Düsseldorf (Germany), on June 12–16, 2023.

Apart from the known and valued shooting machines for producing cores, of various types and sizes, the producer will present several devices improving efficiency and quality of produced details of a modern foundry.

Automatisation of the core production process, visual systems of defects recognition and 3D printers constitute new areas and new solutions offered by the Laempe Company.

The reliable shooting machine LL20 with the mixer for core sand preparation and 3D printer will be presented, among others, at GIFA Fairs.

All interested are cordially invited to visit stand D23, Hall 17.

SEONG-HO HA , NAM-SEOK KIM, YOUNG-GIL JUNG, SEUNG-YOON YANG, KWEON-HOON CHOI, HEON KANG, BONG-HWAN KIM, YOUNG-OK YOON, HYUN-KYU LIM, SHAE-KWANG KIM, FRANCO CHIESA, DAVID LEVASSEUR, JIN-KYU LEE, SUNKI KIM, DAWID KAPINOS, BOGUSŁAW AUGUSTYN, BARTŁOMIEJ PŁONKA, SONIA BOCZKAL, JANG HUM YEON, SI WOO LEE, JEONG HUN HONG

A POSTSCRIPT OF THE SESSION TITLED: "AI-Mg ALLOYS PROCESSES" PRESENTED AT THE 74TH WORLD FOUNDRY CONGRESS

After the World Foundry Congress (WFC), which took place in Poland in 2018, the next 74th edition took place in Busan, South Korea, on account of the COVID-19 epidemic. This edition was performed by the hybrid method, joining the on-line as well as off-line presentations. The subject matter sessions were divided into ferrous and non-ferrous metals and various casting methods. In the name of all authors and co-authors, the presentations in the session entitled: „Al-Mg Alloys Processes” are reported in the hereby paper. Aluminium alloys discussed in this session are alloys based on aluminium and magnesium of a high Mg content, which in respect of contents and properties are exceeding commercial Al-Mg based alloys.

JAROSŁAW PIĄTKOWSKI

CASTING OF ENGINE PISTONS FROM ALUMINUM ALLOYS OVER 50 YEARS IN FEDERAL-MOGUL GORZYCE

The article presents a historical overview of the casting of combustion engine pistons on the example of 50 years of experience of Federal-Mogul (FM) Gorzyce Ltd. Particular attention was paid to the changes in the design of the cooling system of the mold making machines, which are currently coupled with robots pouring liquid Al-Si-Cu-Ni-Mg piston alloy. This solution ensures uniform crystallization of the pistons and optimal efficiency of the casting process. As a result of the need to improve engine efficiency, and thus reduce fuel consumption and emissions of substances harmful to the environment, the design of the pistons has also changed. Depending on the type of engine, the current pistons have a different shape of the bottom, the edges of which are melted by laser, the lower, so-called „crown” of the piston and slimmed down inner walls. To ensure lower friction losses of the piston-rings-cylinder system and increased cooling of the annular part, modern pistons are equipped with various components (salt channels, and alfinated ring inserts), and the piston skirt is subjected to surface treatment. The use of innovative solutions at Federal-Mogul Gorzyce Ltd provides a compromise between the production of engines with reduced displacement and high power, while maintaining the durability and reliability of today’s cast aluminum alloy pistons.

SAND TEAM – MODERN MATERIALS THAT SAVE COSTS IN FOUNDRY

This year our company SAND TEAM, spol. s r. o. celebrates its 25th anniversary, and the 10th anniversary of entering the Polish market. From the very beginning, it is most important for us to present in foundries the most modern materials that help the foundry to create the most complex castings of the required quality and accuracy. Not only in these not so simple times, when foundries struggle with huge increases in the prices of raw materials, energy and various types of services, also with the lack of qualified workforce, but all the time we try to help foundries find a solution that is technically the best and at the same time the best in terms of total costs making a healthy castings. Our mission is to be a reliable partner and innovator for our clients to continue to strengthen our position in the market, constantly expanding the portfolio of our products and their deliveries. We are working intensively on the development of new products and relationships with our partners.

Our vision, i.e. an idea for the future, is a much wider use of ecological and inorganic materials in the production of castings, which reduce emissions during the casting production itself, but also improve the working environment in foundries and not only in the immediate area. So it is „sustainable development in foundry“. We also believe that the circular economy will be more and more often used, which will become an integral part of the foundry industry, thanks to which it will be a modern branch of human activity in the 21st century.

NEW GENERATION OF ENVIRONMENTALLY FRIENDLY FURFURYL RESINS FOR THE FOUNDRY INDUSTRY

Foundries are faced with increasing demands that enforce obtaining castings with high dimensional accuracy and surface smoothness while eliminating casting defects. A significant part of castings are made in moulding sands, which are also subject to increasing requirements to meet the above conditions. In addition, moulding sands should ensure adequate stiffness of the mould, so that the mold is not exposed to dimensional deformations during pouring with liquid metal and solidification of the casting. Binders based on furfuryl resins currently account for the largest share (approx. 55%) in the group of no-bake moulding sands, hardened without heating.

The presentation will show the results of testing the strength properties of moulding sands made on the basis of resins synthesized by Grupa Azoty Jednostka Ratownictwa Chemicznego Sp. z o.o. in comparison with commercial resins. The influence of the quality of regenerates derived from dry mechanical regeneration on the strength properties and service life of masses prepared on their basis will also be described. The effect of the quality of regenerates derived from dry, mechanical regeneration on the strength properties and the durability of moulding sands prepared on their basis will also be described. The second part of the presentation will show the production capabilities of the new furfuryl resin synthesis installation located at the Grupa Azoty JRCh Production and Service Department in Kędzierzyn-Koźle.

MAGDALENA PIETROŃ

1st FOUNDRYMEN POLISH CHAMPIONSHIPS IN SKIING AND SNOWBOARDING, MARCH 2–3, 2023, BUKOWINA TATRZAŃSKA

These Championships were joined with the technical conference, entitled: 'New possibilities for the foundry industry'.

The Polish Foundrymen's Technical Association together with the Foundry Economic Chamber organized this event.

The atmosphere during the competitions was excellent, the weather was just ideal for the 'white madness' and all competitors, accompanied by the sportsmanship fight, were highly engaged in their activities.

The Partners of this event were: Rusiń-Ski Station and Ski School Naferie.pl, while the medial Patron was The Foundry Journal.

ZBIGNIEW LANGE

WORLD ENGINEERING DAY, ELBLĄG MARCH 4, 2023. THE FIRST CONFERENCE: „ENGINEERS FROM ELBLĄG – STATE AND ACHIEVEMENTS 1945–2023”

The information concerning the first conference entitled: "Engineers from Elbląg – state and achievements 1945–2023" organized by Koło Środowiskowe SEP of Elbląg Sector on the 4th of March, 2023 on the occasion of the World Engineering Day, is presented in the hereby paper. Together with the Regional Council of FSNT NOT and all Associations the preliminary lists of engineers working and operating in Elbląg in years 1945–

2023 were prepared. These registers will be systematized and will constitute the historical biographic material of engineering activities in Elbląg.

WORLD ENGINEERING DAY, WARSZAWA, 4TH MARCH, 2023

Every practical appliance used in our everyday life is developed by creators of technique. A phone, computer, fridge, cooker, car, iron and even a toothbrush, before they occur in the market as ready products, someone had to device. All this we owe to engineers, to their creativity and fertile imagination, which constitutes a source of technological progress in the development of civilization. Without their inventions and technology none sector and none field can – in practice – exist. The occasion to remind their achievements is the World Engineering Day for Sustainable Development celebrated every year on March 4.

WITOLD DOBOSZ, MAGDALENA JASIŃSKA

METEF/MECSPE

This year the METEF Fairs took place in Bologna Fiere on March 29–31.

The aim of the METEF Fairs is a promotion of the metals producing industry and the advanced production highly related to aluminium, which is a versatile, sustainable and environment friendly metal, the symbol of the circular economy, the base of the development of all industries.

Parallel with the METEF Fairs the MECSPE event took place. At this event discussions and observations of actual problems of the aluminium foundry sector were exchanged.