

FOUNDRY REVIEW 1-2'2021

- SUMMARIES -



PARTIAL ECONOMIC RECOVERY IN SEVERAL REGIONS AND INCREASED DEMAND IN SECTORS SUCH AS AUTOMOTIVE AND HOUSEHOLD APPLIANCES HAD AN IMPACT ON DECEMBER 2020

One of the metals that experienced the highest price increases was manganese flakes. A similar upward trend can be observed in the case of FeSi prices. Metalshub's FeSi price index rose in December, but the increase was more moderate. In January, the prices of FeSi stabilized. Likewise, prices for ferro-vanadium and ferro-molybdenum also increased.

The revaluation of the euro against the US dollar throughout December fueled the rise in dollar-denominated alloys – the Metalshub USD indices also showed an increase in prices for ferro-vanadium and ferro-molybdenum, respectively. In both markets, prices were heated by increased consumer demand and continued increases in Chinese ferroalloy prices.

Unlike other ferroalloys, prices for low carbon ferro-chrome and high carbon ferro-manganese on the Metalshub platform in December were moving sideways. Both categories showed a balance between supply and demand, although increasing demand supported moderate price increases in 2021.

PIOTR ZIÓŁKOWSKI

DIGITAL TRANSFORMATION BARRIERS

Following the media devoted to industry, we see suppliers of innovative technologies and industrial plants successfully undergoing digital transformation walking in the vanguard of Industry 4.0. One gets the impression that Industry 4.0 technologies are already widely known and have embraced the entire industrial world. On the other hand, research conducted by Deloitte or the Engineering & Maintenance service shows that a significant part of industrial plants in Poland has not yet started their digital transformation. Many companies see the potential benefits, plan their budget for implementation and development of those strategies. These plans, however, often backfire, the mass of conceptual work goes to the bin, and suppliers leave, leaving a slight consternation after the pilot project, from which

virtually nothing was achieved. There are reoccurring responses among the respondents pointing out the barriers which stand on their way of starting the digital transformation.

KRZYSZTOF REGULSKI

DATA MINING AND MACHINE LEARNING IN ASPECTS OF ACQUIRING KNOWLEDGE ABOUT THE PRODUCTION AND PROCESSING OF METALS FOR THE NEEDS OF INDUSTRY 4.0

The methodology of automatic knowledge discovery about metal production and processing processes includes problems related to (1) data acquisition and integration in the aspect of further exploration, (2) selection and adaptation of machine learning methods – rule induction, quantitative and qualitative variable prediction, (3) formalization knowledge in appropriate representations: rule, fuzzy sets, rough sets and finally descriptive logic and (4) integration of knowledge in repositories described by semantic models or ontologies. The author presented the possibility of achieving a balance between ease of use and precision when acquiring knowledge from small collections. Research has shown that decision trees are a convenient tool for discovering knowledge and that they deal well with strongly non-linear problems, and the introduction of discretization improves their operation. The use of cluster analysis methods also made it possible to draw more general conclusions, which proved the thesis that granulation of information allows finding patterns even in small data sets. As part of the research, a procedure was developed for analyzing small experimental data sets for multistage, multivariate & multivariable models, which can greatly simplify such research in the future.

COLIN POWELL

INCREASING THE REPEATABILITY OF CAST IRON CASTING PROPERTIES AND REDUCTION OF CASTING FAULTS THANKS TO THE APPLICATION OF FERROLAB THERMAL ANALYSIS EQUIPMENT * V

The production of high-quality cast iron castings requires high repeatability of the physicochemical properties of liquid cast iron. The quality of liquid cast iron depends not only on its chemical composition, but also on its physicochemical state and the ability to nucleate. Thermal analysis provides a fast and cost-effective way to assess the nucleation capacity of liquid cast iron, ensuring consistent production. This article describes a simple and reliable device – the Foseco FERROLAB V Thermal Analysis Equipment. In addition, it shows how to use this device in Romi foundry in Brazil to check, adjust and record the physicochemical condition of cast iron.

RÖSLER TUNEUP: RETROFIT FOR ALL BRANDS OF SHOT BLASTING EQUIPMENT. SIGNIFICANT IMPROVEMENT OF PRODUCTIVITY, MACHINE AVAILABILITY, QUALITY AND ENERGY CONSUMPTION

Investing in a new machine is not necessarily the only alternative! Rösler's TuneUp division, specialized in the modernization of shot blasting machines of any make, offers a complete retrofit program for

existing equipment. The technical upgrade, tailor-made to the individual requirements of the customers, allows not only to increase the capacity but also improves quality, equipment availability and energy efficiency. And, of course, it also helps to reduce the operating costs and adapt the equipment to the latest legal technical standards. An up-front binding return-on-investment calculation ensures that the individual customers benefit of high investment security.

MTM MODELE Sp. z o.o.

MTM MODELE Sp z o.o. is based in Bodzanów near Wieliczka. The company has been operating continuously since 2009, specializing from the very beginning in the production of large-size casting models. All models are produced in CNC technology using NX software. The production capabilities allow us to make a model set in any accuracy class and any size range. The company offers wooden, plywood, resin, laminate, aluminum and styrofoam models. All members of the management staff are graduates of the Faculty of Foundry Engineering at AGH in Krakow. In November 2020, the expansion of the production hall with office facilities was completed. The current total area of the plant is 3050m². The machine park of the new plant has been expanded with a large-size 5-axis CNC milling machine with dimensions of 12000 x 4500 x 1800 mm and three other CNC milling machines with a working space of 5000 x 2200 x 1200 mm (5 axes)/3100 x 2100 x 1000 mm (5 axes)/1600 x 1000 x 500 mm (3 axes). We invite all companies from the foundry industry and individual clients focused on high-quality products made in CNC technology to cooperate.

PERSONAL DEVELOPMENT AND EDUCATION OF ENGINEERS

The most important skill for an engineer is creativity and a restless mind. Openness is the driving force behind action. These words greeted the guests of the Forum of Future Engineers, prof. Dariusz Łydzba, Vice-Rector for Cooperation at Wrocław University of Science and Technology, emphasized that often the key solution for every engineer is to think outside the box and look for non-obvious answers, which may sometimes turn into groundbreaking discoveries. During the forum there were many speeches and discussion panels during which experts from various fields looked for answers to questions about the situation of young people on the job market. Through a joint conversation and exchange of experiences, we tried to determine what skills and competences will be necessary to achieve professional success and what new industries and technological solutions we can expect in 5, 10, 15 years.