ISSN 1331-7210

Engineering Power

BULLETIN OF THE CROATIAN ACADEMY OF ENGINEERING Vol. 17(3) 2022

EDITOR-IN-CHIEF'S WORD

Dear readers,

Technical sciences are the foundation of our modern society, applied to solve practical problems, advance human knowledge, and built a better future to all. Croatian Academy of Engineering promotes and advances the field of engineering through research, education, and collaboration, and helps to develop and recognize the contributions of outstanding engineers. It serves as a platform for engineers to exchange ideas, address critical issues facing society, and provide guidance on important engineering-related policies and practices. This issue of Engineering power is dedicated to metallurgy. This field of engineering plays a crucial role in the development of new cutting-edge technologies, like renewable energy systems, electric vehicles, and advanced aerospace materials, which rely heavily on advanced metallurgical techniques and materials.

Editor-in-Chief
Vedran Mornar, President of the Croatian Academy of Engineering

EDITOR'S WORD

Dear readers,

it is our great pleasure to present to you the first issue of Engineering Power journal, published by the new editorial team. This issue was edited by Prof. Zdenka Zovko Brodarac, PhD, associate member of the HATZ Department of Mining and Metallurgy. With an overview of the scientific research potential of the Faculty of Metallurgy, University of Zagreb, you will have the opportunity to read review paper on the historical development of metallurgy, focusing on the discovery and use of aluminium, as well as original scientific article on the resistance of tool steels to local corrosion. Have a good time!

Editor
Bruno Zelić, Vice-President of the Croatian Academy of Engineering

FOREWORD

Visions of the professional development of scientists, as an integral part of the academic society, directly contribute to the development of the field of metallurgy both in the academic world and in the international community. At the same time, it is important to keep in mind the development and preservation of the primary role of the Faculty of Metallurgy in the education and training of highly qualified engineers in the field of metallurgy as an important part of the STEM field. The knowledge and technology transfer of the Faculty as a result of R&D should be evaluated as an indispensable factor for strengthening the economy, based on a 15.5% share of metallurgical production in Croatian industrial production, which is the result of the main subactivities in 2020.

The importance of the metallurgical profession and the influence of the Faculty is reflected as a triad of metallurgical competitiveness supported by state-of-the-art technology, efficient manufacturing processes and a skilled workforce. Since the metal production industry is extremely export-oriented, the scope of the production is also oriented to the needs of foreign manufacturers of end products. In the same 2020, this was supported by the high contribution of the metallurgical industry with 24% of the total merchandise exports of the Republic of Croatia. According to the economic analyzes Croatia should pursue its industrial development through the metal production industry, encouraging the development of SMEs´ with specific end products, starting up with relatively low investment and operating costs, all supported by quality education and knowledge and technology transfer relying on experts and resources of the Faculty of Metallurgy. Today, the Faculty's experts are currently working on cutting-edge metallurgy study subjects. Therefore, metallurgy is presented here with articles related to metallurgical development through scientific, research and professional results by enhancing the scientific research potential of the Faculty of Metallurgy through the implementation of infrastructure projects, the development of aluminum and its alloys through history, but also with a glimpse of future application followed by an example examining the local corrosion resistance of tool steel.

Guest-Editor
Zdenka Zovko Brodarac, University of Zagreb Faculty of Metallurgy