

Book of Abstracts from 9th International Scientific Conference on Advances in Mechanical Engineering



TRANS TECH PUBLICATIONS

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Conference on Advances
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Welcome Message

On behalf of the ISCAME Scientific and Organizing Committee I am pleased to welcome you to Debrecen for the 9th International Scientific Conference on Advances in Mechanical Engineering organized by the Department of Mechanical Engineering, Faculty of Engineering of the University of Debrecen.

The main goal of ISCAME is to yearly bring together engineers working on research, development and practical application in the field of mechanical engineering. Furthermore, the purpose of this Conference is to provide opportunities for scientists and engineers to meet and to discuss current research, new concepts and ideas and establish possibilities for future collaborations in all aspects of mechanical engineering.

I am pleased to inform you that 202 experts from higher education have registered for this year's conference from altogether 12 countries. In the framework of ISCAME 110 presentations were given and 49 posters were exhibited.

This year, the theme of the plenary lectures was artificial intelligence (AI) and material testing. Accordingly, the head of the Material and Process Analysis Laboratory of the BMW Group Plant Debrecen gave lecture about their activities and the representatives of Mathworks introduced the AI solutions of Matlab. Furthermore, the researcher of the host Department of Mechanical Engineering presented the application of artificial intelligence and the related material testing in the context of a case study. Accompanying programs of ISCAME was a Matlab Workshop and the Exhibition of Creative Mechanical Engineers.

We invite you to be an active participant in this Conference and to contribute to any topic of your scientific interest. We hope that the 9th International Scientific Conference on Advances in Mechanical Engineering will have an important impact on the research in all topics included in its program.

It is also an honour for us to have a privilege to give a report about the 9th Mechanical Engineering Industrial Exhibition and Job Fair. The Department of Mechanical Engineering of the University of Debrecen hosted – parallel to ISCAME – the event, called “Mechanical Engineering Industrial Exhibition and Job Fair” where 27 companies were exhibited. This professional program benefited the visitors who wanted to get up-to-date knowledge with the latest technology.

We want to express our appreciation to all members of the committees involved in the preparation of this Conference and to all the staff who were managing the different aspects of the Conference and to all the contributing authors and participants who created the real Conference. We hope that all of you feel awarded for your participation and contribution.

Website of the Department of Mechanical Engineering, Faculty of Engineering, University of Debrecen:

www.mecheng.unideb.hu

Website of ISCAME:

<https://konferencia.unideb.hu/en/iscame-home-page>

Yours Sincerely,

Tamás Mankovits
Chair of ISCAME, Head of Department
Department of Mechanical Engineering
Faculty of Engineering, University of Debrecen

Chair of ISCAME 2023

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Innovations in Wastewater Treatment

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Abstract. For efficient design and reliable operation of the system, it is necessary to collect as much data as possible on the flow and composition of the wastewater in order to ensure compliance with all regulatory requirements. Adoption of new standards and regulations, along with penalties for non-compliance, encourages the use of devices and facilities for wastewater treatment to ensure safe discharge into the environment. Municipal wastewater requires complex purification processes to remove organic and inorganic substances, including surfactants such as soaps and detergents.

Wastewater from metal processing industries, which include various chemicals, require complex purification processes, including chemical treatment to remove pollutants. Treated waters (effluents) can be discharged into natural watercourses, used for irrigation of energy crops, or injected underground, while sludge can be used as organic fertilizer, and biogas for energy production (Picture 1). In this paper, new techniques and devices in the field of wastewater treatment technology will be presented.

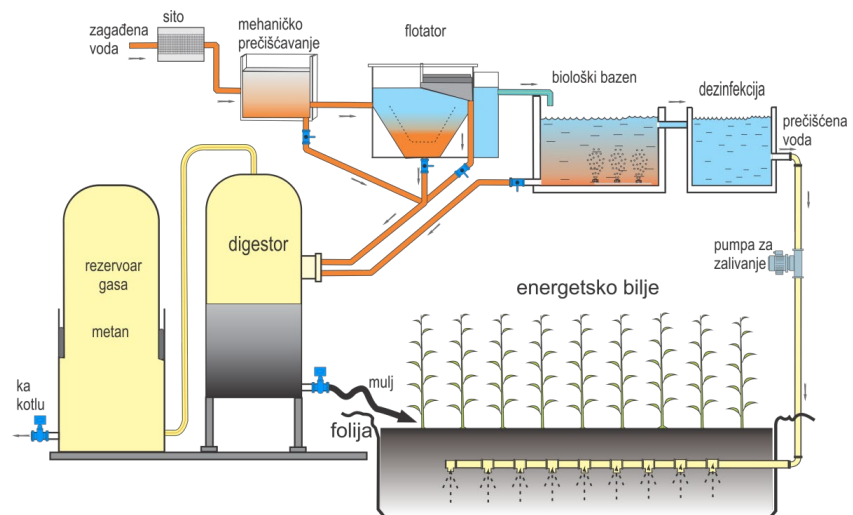


Figure 1. Utilization of sludge and effluent in plantations for the cultivation of energy crops.

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References

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