



***ENVIRONMENTAL ENGINEERING, PHOTOGRAMMETRY, GEOINFORMATICS –  
MODERN TECHNOLOGIES AND DEVELOPMENT PERSPECTIVES***

**17-20 SEPTEMBER 2019, LUBLIN, POLAND**

**Preface**

We are pleased to present the proceedings of the 9<sup>th</sup> International Scientific and Technical Conference "Environmental Engineering, Photogrammetry, Geoinformatics - Modern Technologies and Development Perspectives", which took place in Lublin (Poland) on September 17-20, 2019.

The conference was organized on the basis of cooperation of University of Life Sciences in Lublin from Poland, Hugo Kołłątaj University of Agriculture in Kraków from Poland, University of Opole from Poland, Polytechnic Institute of Beja from Portugal, Lviv Polytechnic National University from Ukraine, Technical University of Moldova from Moldova, Hochschule für Technik Stuttgart University of Applied Sciences from Germany.

The conference brought together scientists, academics, other specialists and students from around the world to present and disseminate their research.

The conference covered two main topics: environmental engineering and photogrammetry plus geoinformatics.

Approximately 140 people attended the conference, including about 60 from foreign academic centers from 11 countries (Ukraine, Portugal, Moldova, Germany, Lithuania, Spain, Switzerland, the Netherlands, the Czech Republic, China, Denmark). Other participants represented scientific centers from Poland, including: Lublin, Kraków, Gdańsk, Poznań, Wrocław, Warsaw, Opole, Kielce, Olsztyn, Gliwice, Falenty, Chełm and Częstochowa. The conference was also attended by representatives of local government units from the province of Lublin, the Regional Directorate for Environmental Protection in Lublin, the Provincial Fund for Environmental Protection and Water Management in Lublin and the Polish Society of Ecological Engineering Branch in Lublin.

The total number of 62 oral presentations and 112 posters were presented during the conference by authors from countries around the world. This volume of proceedings consists of 30 peer-reviewed articles on various conference topics. Publication of the proceedings is funded by the Polish National Agency for Academic Exchange under the International Academic Partnerships Programme from the project „Organization of the 9<sup>th</sup> International Scientific and Technical Conference entitled Environmental Engineering, Photogrammetry, Geoinformatics – Modern Technologies and Development Perspectives”.

We hope that the presentation of the latest scientific achievements in the field of environmental engineering, photogrammetry and geoinformatics will help in implementation of results into practice and contribute not only to improving the well-being of people, but also to develop effective methods for managing environmental resources as a part of circular economy in sustainable development.

We would like to thank the sponsors of the conference: Nałęczów Zdrój S.A. - Drzewce near Nałęczów, Concrete Products Plant Wojciech Trykacz from Łucka near Lubartów, Grundfos Pompy Sp. z o.o. from Baranów near Poznań, Prestige from Poznań, Hydro-Vacuum S.A. from Grudziądz and Sanitmal Design and Executive Company inż. Arkadiusz Malik from Lublin. The online broadcast of the conference opening and two plenary sessions was produced by Studiotech - Audiovisual Engineering company from Warsaw. Information from the conference was also provided by Polish Television "TVP Lublin" in Panorama Lubelska broadcast on September 18<sup>th</sup>, 2019 and in the "Morning between Vistula and Bug" broadcast on September 24<sup>th</sup>, 2019.

With the financial support of sponsors, the conference was graced by the performances of the Song and Dance Ensemble "Jawor" of the University of Life Sciences in Lublin (Poland) and the "Band Cyja" from Bychawa (Poland).

At the end, we would like to thank all the members of the scientific and organizing committees for their hard work.

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Detailed information about the conference is available on the website: <https://eepgtech.urk.edu.pl/>

We invite you to participate in our next conferences.

*This volume of proceedings is funded by the Polish National Agency for Academic Exchange under the International Academic Partnerships Programme from the project „Organization of the 9<sup>th</sup>*

*International Scientific and Technical Conference entitled Environmental Engineering, Photogrammetry, Geoinformatics – Modern Technologies and Development Perspectives”.*



Organizers

## Opening address



### **ENVIRONMENTAL ENGINEERING, PHOTOGRAMMETRY, GEOINFORMATICS Modern Technologies and Development Perspectives**

**17 - 20 September 2019**  
Lublin, Poland

**The conference is funded by the Polish National Agency for Academic Exchange under the International Academic Partnerships Programme**

On behalf of the Organizing Committee of the **9<sup>th</sup> Scientific-Technical Conference "Environmental Engineering, Photogrammetry, Geoinformatics – Modern Technologies and Development Perspectives"** we were invited You to Lublin. Lublin is an academic city with **11 scientific institutions** with students from all over the world. The first conference was organized in 1997 and since then it has been taking place in different locations in Ukraine and Poland. The idea of organizing this 9<sup>th</sup> edition of conference arose on the base of well-established cooperation of seven universities: **from Poland (Lublin, Kraków, Opole), Ukraine (Lviv), Portugal (Beja), Moldova (Chisinau) and Germany (Stuttgart).**

We hope that our conference was an opportunity to continue discussion about the problems concerning water and wastewater treatment, renewable energy sources, waste management, landscape protection, circular economy, water, soil and air protection, as well as photogrammetry, remote sensing, geodesy, cadastre, cartography and geoinformatics. We convinced there was a need for such a discussion among scientists, engineers, environmentalists, managers, consultants and officials of different sectors.

We believe that the cooperation will be developed in order to realize joint research and implementation projects carried out by interdisciplinary teams from a variety of research units and business environments. Most of all our key issue was the exchange of thoughts and experiences during the conference towards improvement of state of the environment and of the spatial structure of rural and urban areas.

We hope that the presentation of the most recent scientific accomplishments in the area of environmental engineering, photogrammetry and geoinformatics will be transferred into practice and will contribute not only to the improvement of peoples well-being, but it shall also let us elaborate the effective methods of environmental resources management according to idea of the sustainable development.



**POLISH** NATIONAL AGENCY  
FOR ACADEMIC EXCHANGE



# THE 9TH INTERNATIONAL SCIENTIFIC-TECHNICAL CONFERENCE



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PHOTOGRAMMETRY, GEODINFORMATICS**  
*Modern Technologies  
and Development Perspectives*

17-20 September 2019  
LUBLIN, POLAND



Conference is funded by the Polish National Agency for Academic Exchange under the International Academic Partnerships Programme. Title of the project: „Organization of the 9th International Scientific and Technical Conference entitled Environmental Engineering, Photogrammetry, Geoinformatics – Modern Technologies and Development Perspectives”

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