

Issued with the consent of the Rector

Editor in Chief Publishing House of Rzeszow University of Technology
Professor Grzegorz OSTASZ, DSc, PhD

Scientific Council

prof. Hasan Arman (United Arab Emirates), prof. Zinoviy Blikharskyy (Ukraine)
prof. Antonio João Carvalho de Albuquerque (Portugal), prof. Marina Ciuna (Italy)
prof. Volodymyr V. Cherniuk (Ukraine), prof. Maurizio d'Amato (Italy)
prof. Endre Domokos (Węgry), prof. Mohamed Eid (Francja), prof. Maria Elektorowicz (Canada),
prof. Haritha Malladi (USA), prof. Samuel Hudson (USA), prof. Dušan Katunsky (Slovakia)
prof. Krzysztof Knapik (Poland), prof. Ryszard L. Kowalczyk (Australia)
prof. Jozef Kriš (Slovakia), prof. Vincent Kvočák (Slovakia), prof. Stanisław Kuś (Poland)
prof. Mladen Radujkovic (Croatia), prof. Czesława Rosik-Dulewska (Poland)
prof. Francesca Salvo (Italy), prof. João Antonio Saraiva Pires da Fonseca (Portugal)
prof. Marco Simonotti (Italy), prof. Nadežda Številová (Slovakia),
prof. Janusz A. Tomaszek (Polska), prof. David Valis (Czech Republic)
prof. António Avelino Batista Vieira (Portugal), prof. Oksana Vovk (Ukraine)
prof. Tomasz Winnicki (Poland), prof. Jerzy Ziółko (Poland)

Editorial Board

(affiliation: Poland)

Editor-in-Chief

Piotr KOSZELNIK, DSc, PhD, Eng., Professor

Editorial Committee (Thematic editors)

Bartosz MILLER, DSc, PhD, Eng., Professor

Professor Janusz RAK, DSc, PhD, Eng.

Statistical Editor

Szczepan WOLIŃSKI, DSc, PhD, Eng., Professor

Editorial Assistant

Katarzyna PIETRUCHA-URBANIK, PhD, Eng.

Members

Renata GRUCA-ROKOSZ, DSc, PhD, Eng., Professor;

Anna SIKORA, PhD, Arch, Eng.; Michał JUREK, PhD, Arch, Eng.;

Lucjan ŚLĘCZKA, DSc, PhD, Eng., Professor; Artur SZALACHA, MSc, Eng.

Language Editors

Barbara OLEKSIEWICZ, Msc

James RICHARDS, PhD – native English speaker (UK)

Volume Editor

Artur SZALACHA

e-ISSN 2300-8903

p-ISSN 2300-5130

The electronic version of the Journal is an original version.

Editorial Office: Rzeszow University of Technology, Faculty of Civil and Environmental Engineering
and Architecture, St. Poznańska, 35-084 Rzeszów, Poland, www.oficyna.prz.edu.pl/pl/zeszyty-naukowe/czasopismo-inzynierii-ladowej-s/ (e-mail: jceea_bud@prz.edu.pl)

Publisher: Publishing House of Rzeszow University of Technology, 12 Powstanców Warszawy Ave.,
35-959 Rzeszow, www.oficyna.prz.edu.pl (e-mail: oficyna@prz.edu.pl)

Additional information and an imprint – p. 177