ISSN: 1947-3931 Volume 9, Number 7, July 2017



# Engineering



## **Journal Editorial Board**

ISSN Print: 1947-3931 ISSN Online: 1947-394X

http://www.scirp.org/journal/eng

.....

#### Editor-in-Chief

Prof. David L. Carroll Wake Forest University, USA

#### **Editorial Board**

Dr. Murad Y. Abu-Farsakh Louisiana State University, USA

Prof. Moh'd A. M. Al-Nimr Jordan University of Science and Technology, Jordan

Prof. Abbas Amini Western Sydney University, Australia

Prof. Shahnor Basri Putra University, Malaysia

Prof. Roberto CapataUniversity of Roma Sapienza, ItalyProf. Bin ChenXi'an Jiaotong University, ChinaProf. Luisa DurãesUniversity of Coimbra, Portugal

Dr. Adinel GavrusEuropean University of Brittany, FranceDr. Krzysztof GórskiTechnical University of Radom, PolandDr. Sung-Cheon HanDaewon University College, South Korea

Prof. David HuiUniversity of New Orleans, USAProf. Yunho HwangUniversity of Maryland, USAProf. Shouetsu ItouKanagawa University, Japan

Dr. Renjie Ji China University of Petroleum, China

**Prof. Jae Moung Kim** Inha University, South Korea

Dr. Yi-Yang Li The Chinese University of Hong Kong, China

Dr. Vandna Luthra University of Delhi, India

**Prof. Magdi Mahmoud** King Fahd University for Petroleum and Minerals, Saudi Arabia

Prof. Andrzej S. NowakAuburn University, USAProf. Reinaldo Rodriguez RamosUniversity of Havana, Cuba

Prof. Yuri Ribakov Ariel University Center of Samaria, Israel

**Dr. P. Sanjeevikumar** Department of Electrical and Electronics Engineering, South Africa

Prof. Kune Y. Suh Seoul National University, South Korea

Prof. Hongbin SunTsinghua University, ChinaProf. Guihua TangXi'an Jiaotong University, ChinaProf. Costin D. UntaroiuUniversity of Virginia, USADr. Rodrigo Sérgio WiederkehrUniversity of Louisville, USA

Dr. Yufei WuCity University of Hong Kong, ChinaDr. Yuanchang XieUniversity of Massachusetts Lowell, USA

Dr. Wei ZhanTexas A & M University, USADr. Lei ZhangUniversity of Maryland, USADr. Ming ZhangSchlumberger Limited, USA



ISSN Online: 1947-394X ISSN Print: 1947-3931

# **Table of Contents**

Volume 9 N	lumber 7	July 2017
Investigation of Ex	ccavator Performance Factors in an Open-Pit Mi	ine Using
Loading Cycle Tin	1e	
S. V. Manyele		599
-	ent and Application of Geothermal Heat Pump S ions of the US: A Further Investigation	ystems in
Y. Yu, R. Miao, L.	Miller, H. J. Yang, G. Olson	625
•	Rock Transportation Process Performance in ar ll Analysis of Cycle Times Data	n Open-Pit Mine
S. V. Manyele		649
The Original Conr	nection of Synchronous Motor	
R. G. Khadeev		680
Defects in Founda A Case Study of M	tion Design Due to Miss-Interpretation of the G losul Dam	eological Data:
V. K. Sissakian, N.	Adamo, N. Al-Ansari, S. Knutsson, J. Laue	683

#### Engineering (ENG)

#### Journal Information

#### **SUBSCRIPTIONS**

The *Engineering* (Online at Scientific Research Publishing, <a href="www.SciRP.org">www.SciRP.org</a>) is published monthly by Scientific Research Publishing, Inc., USA.

#### Subscription rates:

Print: \$89 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: <a href="mailto:sub@scirp.org">sub@scirp.org</a>

#### **SERVICES**

#### Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

#### Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

#### **COPYRIGHT**

#### Copyright and reuse rights for the front matter of the journal:

Copyright © 2017 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

http://creativecommons.org/licenses/by/4.0/

#### Copyright for individual papers of the journal:

Copyright © 2017 by author(s) and Scientific Research Publishing Inc.

#### Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

#### Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

#### PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: eng@scirp.org



# **Engineering (ENG)**

ISSN Print: 1947-3931 ISSN Online: 1947-394X http://www.scirp.org/journal/eng

Engineering is an international journal dedicated to the latest advancement of engineering. The goal of this journal is to provide a platform for engineers and academicians all over the world to promote, share, and discuss various new issues and developments in different areas of engineering. All manuscripts must be prepared in English, and are subject to a rigorous and fair peer-review process. Accepted papers will immediately appear online followed by printed hard copy. The journal publishes original papers including but not limited to the following fields:

- Aerospace Engineering
- Agricultural Engineering
- Applied Thermal Engineering
- Aquacultural Engineering
- Architecture and Civil Engineering
- · Automobile Engineering
- Bioengineering
- Biological Engineering
- Biomedical Engineering
- Biomolecular Engineering
- Bionic Engineering
- Bioprocess and Biosystems Engineering
- Biotechnology and Bioengineering
- Building Services Engineering
- Business & Information Systems Engineering
- Cardiovascular Engineering and Technology
- Cellular and Molecular Bioengineering
- Chemical Engineering & Technology
- Civil Engineering
- Coal Science and Engineering
- Coastal Engineering
- Communication Engineering
- Computational Methods in Engineering
- Computer Aided Engineering
- Computer Applications in Engineering Education
- · Computer Engineering
- Computer Methods in Applied Mechanics and Engineering
- Computer-Aided Civil and Infrastructure Engineering
- Crystal Engineering
- Data and Knowledge Engineering
- Earthquake Engineering & Structural Dynamics
- Ecological Engineering
- Electrical and Electronic Engineering
- Energy and Power Engineering
- Energy Engineering
- Energy Systems Engineering
- Engine Engineering
- Engineering Analysis with Boundary Elements
- Engineering and Technology Management
- Engineering Applications of Artificial Intelligence
- Engineering Cybernetics
- Engineering Economy
- Engineering Education

- Engineering Failure Analysis
- Engineering for Sustainability
- Engineering Fracture Mechanics
- Engineering Geology and the Environment
- Engineering in Life Sciences
- Engineering in Medicine
- Engineering Manufacture
- Engineering Materials
- Engineering Mathematics
- Engineering Physics and Thermophysics
- Engineering Science in Medicine
- Engineering Structures
- Engineering Tribology
- Engineering with Computers
- Environmental Engineering
- Environmental Science & Engineering
- Fire Protection Engineering
- Food Engineering
- Food Process Engineering
- Fusion Engineering and Design
- Fuzzy Information and Engineering
- Geophysics and Engineering
- Geotechnical and Geological Engineering
- Green Energy Engineering
- Industrial Engineering
- Landscape and Ecological Engineering
- Macromolecular Materials and Engineering
- Macromolecular Reaction Engineering
- Magnetic Resonance Engineering
- Maintenance Engineering
- Management Engineering
- Maritime Engineering
- Materials Science and Engineering
- Mechanical Engineering
- Mechatronics Engineering
- Medical Engineering & Technology
- Metabolic Engineering
- · Metallurgical Engineering
- Microelectronic Engineering
- · Micromechanics and Microengineering
- Military Engineering
- Mineral Resources Engineering
- Mining Engineering
- Molecular Engineering
- Nanoengineering

- Natural Gas Science and Engineering
- NeuroEngineering and Rehabilitation
- Nuclear Engineering and Design
- Numerical Methods in Engineering
- Ocean Engineering
- Oil Engineering
- Optics and Lasers in Engineering
- Optimization and Engineering
- Particle Engineering
- Petroleum Engineering
- Petroleum Science and Engineering
- Polymer Engineering and Science
- Power Engineering
- Precision Engineering and Manufacturing
- Probabilistic Engineering Mechanics
- Process Engineering
- Production Engineering
- Protein Engineering, Design and Selection
- Public Safety Information
- Radar Engineering
- Rare Metal Materials and Engineering
- Reliability, Quality and Safety Engineering
- Renewable Energy Engineering
- Requirements Engineering
- RF and Microwave Engineering
- Rock Mechanics and Rock Engineering
- Safety Systems Engineering
- Science and Engineering Ethics
- Social and Environmental Impact of Engineering Innovation
- Software and Knowledge Engineering
- Soil Dynamics and Earthquake Engineering
- Sports Engineering
  Strain Analysis for Engineering Design
- Structural Engineering and Materials
- Surface Engineering and Applied Electrochemistry
- Systems and Control Engineering Systems and Software Engineering
- Systems Assurance Engineering and Management Test Engineering
- Tissue Engineering and Regenerative Medicine
- Transportation Engineering Wind Engineering and Industrial Aerodynamics

We are also interested in: 1) Short Reports—2-5 page papers where an author can either present an idea with theoretical background but has not yet completed the research needed for a complete paper or preliminary data; 2) Book Reviews—Comments and critiques.



### Notes for Intending Authors

Submitted papers should not be previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. For more details, please access the website.



Website and E-Mail

http://www.scirp.org/journal/eng

Email: eng@scirp.org