



Volume 7, Issue 2, June 2020

Articles

Front Pages

ALI H. TARRAD

A Perspective Model for Borehole Thermal Resistance Prediction of a Vertical U-Tube in Geothermal Heat Source

MARINKO OLUIĆ, MIRA MOROVIĆ & ANDREI IVANOV

Detection of Oil Slicks in the Adriatic Sea (Mediterranean) Using Satellite SAR Imagery

OSAMA ELSAHLY & AKMAL ABDEL FATAH

Influence of Autonomous Vehicles on Freeway Traffic Performance for Undersaturated Traffic Conditions

XAVIER FERNANDO HURTADO AMÉZQUITA & MARITZABEL MOLINA HERRERA

Alternative Fastening Mechanism for Shear Connectors with Cold-Formed Steel Shapes Involved in Composite Sections



ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

A World Association of Academics and Researchers

8 Valaoritou Str., Kolonaki, 10671 Athens, Greece.

Tel.: 210-36.34.210 Fax: 210-36.34.209

Email: info@atiner.gr URL: www.atiner.gr

Established in 1995



(ATINER)

(ATINER)

Mission

ATINER is an Athens-based World Association of Academics and Researchers based in Athens. ATINER is an independent and non-profit **Association** with a **Mission** to become a forum where Academics and Researchers from all over the world can meet in Athens, exchange ideas on their research and discuss future developments in their disciplines, **as well as engage with professionals from other fields**. Athens was chosen because of its long history of academic gatherings, which go back thousands of years to *Plato's Academy* and *Aristotle's Lyceum*. Both these historic places are within walking distance from ATINER's downtown offices. Since antiquity, Athens was an open city. In the words of Pericles, ***Athens "... is open to the world, we never expel a foreigner from learning or seeing"***. ("Pericles' Funeral Oration", in Thucydides, *The History of the Peloponnesian War*). It is ATINER's **mission** to revive the glory of Ancient Athens by inviting the World Academic Community to the city, to learn from each other in an environment of freedom and respect for other people's opinions and beliefs. After all, the free expression of one's opinion formed the basis for the development of democracy, and Athens was its cradle. As it turned out, the Golden Age of Athens was in fact, the Golden Age of the Western Civilization. *Education* and *(Re)searching* for the 'truth' are the pillars of any free (democratic) society. This is the reason why *Education* and *Research* are the two core words in ATINER's name.

The Athens Journal of Technology & Engineering
ISSN NUMBER: 2241-8237- DOI: 10.30958/ajte
Volume 7, Issue 2, June 2020
Download the entire issue ([PDF](#))

<u>Front Pages</u>	i-viii
<u>A Perspective Model for Borehole Thermal Resistance Prediction of a Vertical U-Tube in Geothermal Heat Source</u> <i>Ali H. Tarrad</i>	73
<u>Detection of Oil Slicks in the Adriatic Sea (Mediterranean) Using Satellite SAR Imagery</u> <i>Marinko Oluić, Mira Morović & Andrei Ivanov</i>	93
<u>Influence of Autonomous Vehicles on Freeway Traffic Performance for Undersaturated Traffic Conditions</u> <i>Osama ElSahly & Akmal Abdelfatah</i>	117
<u>Alternative Fastening Mechanism for Shear Connectors with Cold-Formed Steel Shapes Involved in Composite Sections</u> <i>Xavier Fernando Hurtado Amézquita & Maritzabel Molina Herrera</i>	133

Athens Journal of Technology & Engineering

Editorial and Reviewers' Board

Editors

- **Dr. Panagiotis Petratos**, Vice-President of Information Communications Technology, ATINER & Fellow, Institution of Engineering and Technology & Professor, Department of Computer Information Systems, California State University, Stanislaus, USA.
- **Dr. Nikos Mourtos**, Head, [Mechanical Engineering Unit](#), ATINER & Professor, San Jose State University USA.
- **Dr. Theodore Trafalis**, Director, [Engineering & Architecture Division](#), ATINER, Professor of Industrial & Systems Engineering and Director, Optimization & Intelligent Systems Laboratory, The University of Oklahoma, USA.
- **Dr. Virginia Sisiopiku**, Head, [Transportation Engineering Unit](#), ATINER & Associate Professor, The University of Alabama at Birmingham, USA.

Editorial Board

- Dr. Marek Osinski, Academic Member, ATINER & Gardner-Zemke Professor, University of New Mexico, USA.
- Dr. Jose A. Ventura, Academic Member, ATINER & Professor, The Pennsylvania State University, USA.
- Dr. Nicolas Abatzoglou, Professor and Head, Department of Chemical & Biotechnological Engineering, University of Sherbrooke, Canada.
- Dr. Jamal Khatib, Professor, Faculty of Science and Engineering, University of Wolverhampton, UK.
- Dr. Luis Norberto Lopez de Lacalle, Professor, University of the Basque Country, Spain.
- Dr. Zagabathuni Venkata Panchakshari Murthy, Professor & Head, Department of Chemical Engineering, Sardar Vallabhba National Institute of Technology, India.
- Dr. Yiannis Papadopoulos, Professor, Leader of Dependable Systems Research Group, University of Hull, UK.
- Dr. Bulent Yesilata, Professor & Dean, Engineering Faculty, Harran University, Turkey.
- Dr. Javed Iqbal Qazi, Professor, University of the Punjab, Pakistan.
- Dr. Ahmed Senouci, Associate Professor, College of Technology, University of Houston, USA.
- Dr. Najla Fourati, Associate Professor, National Conservatory of Arts and Crafts (Cnam)-Paris, France.
- Dr. Ameersing Luximon, Associate Professor, Institute of Textiles and Clothing, Polytechnic University, Hong Kong.
- Dr. Georges Nassar, Associate Professor, University of Lille Nord de France, France.
- Dr. Roberto Gomez, Associate Professor, Institute of Engineering, National Autonomous University of Mexico, Mexico.
- Dr. Aly Mousaad Aly, Academic Member, ATINER & Assistant Professor, Department of Civil and Environmental Engineering, Louisiana State University, USA.
- Dr. Hugo Rodrigues, Senior Lecturer, Civil Engineering Department, School of Technology and Management, Polytechnic Institute of Leiria, Portugal.
- Dr. Saravanamuthttu Subramaniam Sivakumar, Head & Senior Lecturer, Department of Civil Engineering, Faculty of Engineering, University of Jaffna, Sri Lanka.
- Dr. Hamid Reza Tabatabaiefar, Lecturer, Faculty of Science and Technology, Federation University, Australia.

- **Vice President of Publications:** Dr Zoe Boutsoli
- **General Managing Editor of all ATINER's Publications:** Ms. Afrodete Papanikou
- **ICT Managing Editor of all ATINER's Publications:** Mr. Kostas Spyropoulos
- **Managing Editor of this Journal:** Ms. Effie Stamoulara ([bio](#))

Reviewers' Board

[Click Here](#)

President's Message

All ATINER's publications including its e-journals are open access without any costs (submission, processing, publishing, open access paid by authors, open access paid by readers etc.) and is independent of presentations at any of the many small events (conferences, symposiums, forums, colloquiums, courses, roundtable discussions) organized by ATINER throughout the year and entail significant costs of participating. The intellectual property rights of the submitting papers remain with the author. Before you submit, please make sure your paper meets the [basic academic standards](#), which includes proper English. Some articles will be selected from the numerous papers that have been presented at the various annual international academic conferences organized by the different divisions and units of the Athens Institute for Education and Research. The plethora of papers presented every year will enable the editorial board of each journal to select the best, and in so doing produce a top-quality academic journal. In addition to papers presented, ATINER will encourage the independent submission of papers to be evaluated for publication.

The current issue is the second of the seventh volume of the *Athens Journal of Technology & Engineering (AJTE)*, published by the [Engineering & Architecture Division](#) of ATINER.

Gregory T. Papanikos, President, ATINER.



Athens Institute for Education and Research

A World Association of Academics and Researchers

10th Annual International Conference on Civil Engineering 20-25 June 2020, Athens, Greece

The [Civil Engineering Unit](#) of ATINER is organizing its 10th Annual International Conference on Civil Engineering, 22-25 June 2020, Athens, Greece sponsored by the [Athens Journal of Technology & Engineering](#). The aim of the conference is to bring together academics and researchers of all areas of Civil Engineering other related areas. You may participate as stream leader, presenter of one paper, chair of a session or observer. Please submit a proposal using the form available (<https://www.atiner.gr/2020/FORM-CIV.doc>).

Academic Members Responsible for the Conference

- **Dr. Dimitrios Goulias**, Head, [Civil Engineering Unit](#), ATINER and Associate Professor & Director of Undergraduate Studies Civil & Environmental Engineering Department, University of Maryland, USA.

Important Dates

- Abstract Submission: **11 May 2020**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **25 May 2020**

Social and Educational Program

The Social Program Emphasizes the Educational Aspect of the Academic Meetings of Atiner.

- Greek Night Entertainment (This is the official dinner of the conference)
- Athens Sightseeing: Old and New-An Educational Urban Walk
- Social Dinner
- Mycenae Visit
- Exploration of the Aegean Islands
- Delphi Visit
- Ancient Corinth and Cape Sounion

Conference Fees

Conference fees vary from 400€ to 2000€
Details can be found at: <https://www.atiner.gr/2019fees>



Athens Institute for Education and Research

A World Association of Academics and Researchers

8th Annual International Conference on Industrial, Systems and Design Engineering, 22-25 June 2020, Athens, Greece

The [Industrial Engineering Unit](#) of ATINER will hold its 8th Annual International Conference on Industrial, Systems and Design Engineering, 22-25 June 2020, Athens, Greece sponsored by the [Athens Journal of Technology & Engineering](#). The aim of the conference is to bring together academics, researchers and professionals in areas of Industrial, Systems, Design Engineering and related subjects. You may participate as stream leader, presenter of one paper, chair of a session or observer. Please submit a proposal using the form available (<https://www.atiner.gr/2020/FORM-IND.doc>).

Important Dates

- Abstract Submission: **11 May 2020**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **25 May 2020**

Academic Member Responsible for the Conference

- **Dr. Theodore Trafalis**, Director, [Engineering & Architecture Division](#), ATINER, Professor of Industrial & Systems Engineering and Director, Optimization & Intelligent Systems Laboratory, The University of Oklahoma, USA.

Social and Educational Program

The Social Program Emphasizes the Educational Aspect of the Academic Meetings of Atiner.

- Greek Night Entertainment (This is the official dinner of the conference)
- Athens Sightseeing: Old and New-An Educational Urban Walk
- Social Dinner
- Mycenae Visit
- Exploration of the Aegean Islands
- Delphi Visit
- Ancient Corinth and Cape Sounion

More information can be found here: <https://www.atiner.gr/social-program>

Conference Fees

Conference fees vary from 400€ to 2000€

Details can be found at: <https://www.atiner.gr/2019fees>

