

Vol. 02 No. 03 2024



**RiESTech**

**JOURNAL**  
RECENT IN ENGINEERING  
SCIENCE AND TECHNOLOGY



E- ISSN : 2985-8321  
P -ISSN : 2985-704X



# Recent in Engineering Science and Technology (RiESTech)

Volume 2 No 3 July 2024

## FOCUS AND SCOPE

### RIESTECH

Recent in Engineering Science and Technology (**RiESTech**): ISSN: 2985-704X (*print*), ISSN: 2985-8321 (*online*) a peer-reviewed quarterly engineering journal, publishes theoretical and experimental high-quality papers to promote engineering and technology's theory and practice. In addition to peer-reviewed original research papers, the Editorial Board welcomes original research reports, state-of-the-art reviews, and communications in the broadly defined field of recent engineering science and technology. **RiESTech** covers topics contributing to a better understanding of engineering, material science, computer science, environmental science, and their applications. **RiESTech** is concerned with scientific research on mechanical and civil engineering, Electrical/Electronics and Computer Engineering, and Metallurgical and Materials Engineering with specific analytical techniques and/or computational methods.

The frequency of RiESTech publications is four times a year namely in January, April, July, and October. The scope of RiESTech includes a wide spectrum of subjects namely:

Mechanical and Civil Engineering (Automotive Technologies; Construction Materials; Design and Manufacturing; Dynamics and Control; Energy Generation, Utilization, Conversion, and Storage; Fluid Mechanics and Hydraulics; Heat and Mass Transfer; Micro-Nano Sciences; Renewable and Sustainable Energy Technologies; Robotics and Mechatronics; Solid Mechanics and Structure; Thermal Sciences)

Electrical/Electronics and Computer Engineering (Instrumentation; Coding, Cryptography, and Information Protection; Communications, Networks, Mobile Computing, and Distributed Systems; Compilers and Operating Systems; Parallel Processing, and Dependability; Computer Vision and Robotics; Control Theory; Electromagnetic Waves, Microwave Techniques and Antennas; Embedded Systems; Integrated Circuits, VLSI Design, Testing, and CAD; Microelectromechanical Systems; Microelectronics, and Electronic Devices and Circuits; Power, Energy and Energy Conversion Systems; Signal, Image, and Speech Processing; Machine Learning and Data Science)

Metallurgical and Materials Engineering (Advanced Materials Science; Ceramic and Inorganic Materials; Electronic-Magnetic Materials; Energy and Environment; Materials Characterization; Metallurgy Extractive; Polymers and Nanocomposites)

Environmental Science and Engineering (Waste Management, Climate Change, Zero Waste, Environmental Disaster Management, Circular Economy, Sustainable Development, Environmental Security, Environmental Management, Environmental Ecology, Conservation of Natural Resources And Environment, Environmental Impact Analysis, Planning and Environmental Administration, Environmental Health, Environmental Pollution, Environmental Accounting, and Environmental Information Systems)

## Recent in Engineering Science and Technology

(RiESTech)

Volume 2 No 3 July 2024

### EDITOR TEAM

#### *Editor in Chief*

Prof. Dr. Ir. Johnny Wahyuadi M. Soedarsono, DEA

#### *Managing Editor*

Iwan Susanto, Ph.D

Dr. Vika Rizkia

#### *Editorial Board*

Prof. Dr. Drs. Agus Edi Pramono. S.T., M.Si, Politeknik Negeri Jakarta, Indonesia

Prof. Dr. Ir. Dwi Rahmalina MT, Universitas Pancasila, Indonesia

Prof. Ing-Song Yu, National Dong Hwa University, Taiwan

Prof. Chao-Yu Lee, National Formosa University, Taiwan

Prof. Ching-An Huang, Chang Gung University, Taiwan

Prof. Fabrice Gourbilleau, CIMAP CNRS/CEA/ENSICAEN/

Université de Caen Normandie, France

Dr. Ir. Muhammad Amin, ST, MT, IPM, Universitas Samudra, Kota Langsa, Indonesia

Dr. Maykel Manawan, Universitas Pertahanan, Indonesia

Dr. Eng. Radon Dhelika, Universitas Indonesia

Dr. Ing. Haryanti Samekto, The University of Stuttgart, Germany (Alumni)

Dr. Ing. H. Agus Suhartono, BRIN, Indonesia

Yudhi Ariadi, Ph.D, Coventry University London, United Kingdom

Dien Taufan Lessy, S.ST, M.Sc Institute of Digital Signal Processing,

Universiät Duisburg Essen

#### *Peer-Reviewers*

Dr. Rachmat Adhi Wibowo, M.Sc., AIT Austrian Institute of Technology Center for Energy  
Energy Conversion and Hydrogen, Giefinggasse 2, 1210 Vienna, Austria

Dhayanantha Prabu Jaihindh, Ph.D Academia Sinica, Institute of Atomic and  
Molecular Sciences, Taiwan

Dr. rer nat Eko Budiyanto, Max-Planck-Institut für Kohlenforschung, Germany

Sk Jahir Abbas, Ph.D, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Wandi Wahyudi, Ph.D, Uppsala University, Sweden

Dr. Agus Budi Prasetyo, Pusat Riset Metalurgi, BRIN, Indonesia

Atul Verma, Ph.D., National Dong Hwa University, Shoufeng, Taiwan

Haolia Rahman, Ph.D, Politeknik Negeri Jakarta, Indonesia

Andy Tirta, S.T., M.Eng., Ph.D., Universitas Darma Persada, Indonesia

Dr. Vincent Irawan, Eindhoven University of Technology, Netherlands

Muhammad Hilmy Alfaruqi, S.T., M.Eng., Ph.D. Chonnam National University, South Korea

**Recent in Engineering Science and Technology (RiESTech)**

**PT MENCERDASKAN BANGSA INDONESIA [MBI]**

Available online at: <http://www.mbi-journals.com/index.php/riestech>

E- ISSN : 2985-8321

P -ISSN : 2985-704X

***Layout and Typesetting:***

Imam Sapto Nugroho, Universitas Indonesia (Alumni), Indonesia

Kamil Raihan Permana, Universitas Indonesia, Indonesia

Raihan Trinanda Agsya, Politeknik Negeri Jakarta, Indonesia

**PUBLISHER**

**PT MENCERDASKAN BANGSA INDONESIA (MBI)**

**Address : 4th Floor Gedung STC Senayan Room 31-34, Jl. Asia Afrika Pintu IX,  
Jakarta 10270, Indonesia.**

# Recent in Engineering Science and Technology (RiESTech)

Volume 2 No 3 July 2024

## PREFACE

**Journal RiESTech** (p-ISSN: 2985-704X (print), e-ISSN: 2985-8321 (online); is a peer review journal published by PT Mencerdaskan Bangsa Indonesia. The RiESTech journal is published four times a year in January, April, July, and October. This journal provides direct open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge within the engineering field. This journal aims to provide a place for academics, researchers, and practitioners to publish original research articles or review articles. The scope of articles published in this journal relates to various topics in the field of outcomes of research activities.

The RiESTech journal publishes papers strictly following the RiESTech guidelines and templates for manuscript preparation. All submitted manuscripts will go through a double-blind peer review process. The paper is read by members of the editor (according to the area of specialization) and will be screened by the Managing Editor to meet the criteria required for RiESTech publication. Manuscripts will be sent to two reviewers based on their historical experience in reviewing manuscripts or based on their areas of specialization. RiESTech has review forms to keep the same item reviewed by two reviewers. Then the editorial board makes a decision on the comments or suggestions of the reviewers.

Reviewers provide an assessment of originality, clarity of presentation, contribution to the field/science. This journal publishes research articles, review articles/literature reviews, case reports and concept/policy articles, in all fields of Computer Science, Informatics Engineering, Multimedia, Arts. The article to be published is an original work and has never been published. Incoming articles will be reviewed by the reviewer team.

The Editorial Board will try to continue to improve the quality of the journal so that it can become an important reference in the development of engineering sciences. The greatest appreciation and gratitude to Mitra Bestari along with members of the Editorial Board and all parties involved in the publication of this journal. Complete writing instructions are displayed on the portal of this journal.

Regards,

Chief Editor

# Recent in Engineering Science and Technology (RiESTech)

Volume 2 No 3 July 2024

## Contents

Focus and Scope	ii
Editor Team	iii
Preface	v
Contents	vi

### Articles

- ***Trend Analysis of the ARIMA Method: A Survey of Scholarly Works***  
Samsul Arifin, Monica Mayeni Manurung , Stanley Jonathan, Melody Effendi, Puguh Wahyu Prasetyo  
1 - 14
- ***Study of Combination of Physalis angulata Leaf and Cassia angustifolia Leaf Extract with a 50:50 Ratio as Green Inhibitor for API 5L in 1M HCl Solution***  
Trisa Adelia Ni Luh, Khalisha, Johny, M. Yudi M. Solihin  
15 - 26
- ***Design and construction of the 3D printer two-stand, controlled Arduino Mega 2560 R3 CH340G***  
Agus Edy Pramono, Nazhmi Fadhila, Rafi Pradaya Andareska, Feri Nugroho Adi Noto, Iman Setiyadi, Aminudin Zuhri, Yohanes Patrik  
27 - 39
- ***Troubleshooting Engine Overheat on Wheel Loader Liugong Type 856H***  
Raihan Trinanda Agsya, Shafa Nisrina, Rahmat Noval, Hong Yue, Andrian Pratama Batistuta, Seto Aji Santoso  
40 - 49
- ***Effect of The Carbon Content on the Biodegradable Metal Foam Fe-35Mn-C Produced by Powder Metallurgy Process with Potassium Carbonate as a Foaming Agent***  
Yudha Pratesa, Setyaningrum  
50 - 59



PT. Mencerdaskan  
Bangsa Indonesia

PT MENCERDASKAN BANGSA INDONESIA  
(MBI), 4th Floor Gedung STC Senayan Room  
31-34, Jl. Asia Afrika Pintu IX, Jakarta 10270,  
Indonesia.