

Welcome Word from the Rector of Universitas Sriwijaya



I am delighted and honoured to present to you the collection of articles from the 2nd Sriwijaya International Conference on Engineering and Technology (SICETO 2023).

In today's world, globalization has created a highly competitive environment in all areas. In order to create a positive and sustainable future, this flourishing competition should address the harmony and balance between human demands and environmental quality.

A balance between human development and innovation to improve the quality of life and its harmony with nature must be maintained to achieve a sustainable future. Today, researchers and industry experts collaborate to create and develop technologies that we can enjoy and that are also expected to influence the sustainable future positively.

Innovative thinking requires more than just amazing ideas. Resources, skills, technology, information, tools, approaches, and much more are required for innovation. But, above all, innovations necessitate the participation of people. People are at the heart of any desire for change, whether to improve quality of life, better living conditions, or just make life easier and more pleasant. This conference was about understanding the underlying features that have the potential to impact the world and society, thinking ahead to potential global challenges, and uncovering innovations connected to industry prospects. Furthermore, this meeting brought together interdisciplinary people to accelerate activities in many areas simultaneously. This made the conference exceptional in terms of the potential impact of such a networking.

I extend my sincere thanks to the Faculty of Engineering, Universitas Sriwijaya, supporting parties and institutions for their participation and contributions to SICETO 2023. Furthermore, I would like to express my deepest gratitude to all the organizing committees, who dedicated their personal time to ensure an outstanding conference program for each of us.

Prof. Dr. Taufiq Marwa, S.E., M.Si.

Rector of Universitas Sriwijaya

Welcome Word from the Dean of Faculty of Engineering Universitas Sriwijaya



Welcome to this publication comprising the selection of articles from the 2nd Sriwijaya International Conference on Engineering and Technology (SICETO 2023). The Faculty of Engineering Universitas Sriwijaya is proud to have held an international conference of such a grand scale. This biennial two-day conference emphasizes the importance of establishing connections among national and international front-liners, thinkers, academics, executives, government and business officials, practitioners, and leaders from all over the world to share knowledge and best practices of a global network.

SICETO 2023 was the second meeting held at the Faculty of Engineering, University of Sriwijaya. We believe that after two years, we will produce many research results that need to be shared with our colleagues in other institutions.

I am hopeful that the intellectual discussion will lead to future collaborations between universities, research institutes, and industry both locally and internationally. It is envisaged that topics concerning innovations for the betterment of human life and the environment will receive special attention. We believe this conference series will become an international media for exchanging knowledge, experience, and research and the review of progress and discussion on the state of the art and future trend of prospective collaboration and networking in the broad field of eco-based technology development.

My deepest appreciation is extended to our sponsors, supported parties and various contributors for their never-ending support of this conference. I would also like to convey my gratitude to all of our distinguished speakers for making the time to share their knowledge with us. I would also like to express our appreciation to all members of the SICETO 2023 organizing committee for their hard work in making this conference another success.

Prof. Dr. Eng. Ir. Joni Arliansyah, M.T.
Dean Faculty of Engineering Universitas Sriwijaya

Welcome Word from the SICETO 2023 Chairwoman



Welcome to the 2nd edition of the Sriwijaya International Conference on Engineering and Technology 2023. Four key values, which served as the building blocks for the foundation of our effort and hard work towards making this conference a reality, were: rigor, impact, prestige, and service. We ensured a careful selection process for all the submissions including peer review and clear criteria for acceptance. The participants of the seminar came from 11 countries and presented their research results in various scientific fields, including:

- civil and structural engineering;
- electrical and electronic engineering;
- chemical engineering and science;
- mechanical engineering;
- architecture;
- mining and geological engineering;
- natural science.

This conference was the result of the hard work, support, and dedication of different parties. We wish to thank all the committee members who made the conference possible. The committee worked hard to propose sessions, review a record number of submissions, answer queries, arrange the schedule, and respond to last-minute requests. We also thank all the authors and reviewers who were the backbone of the conference.

Prof. Ir. Heni Fitriani, S.T., M.T., Ph.D., IPU., Asean.Eng
Chairman, Organizing Committee

Committee

Scientific Committee

Names	Affiliation
Prof. Dr. Anis Saggaff	Universitas Sriwijaya, Indonesia
Prof. Zainuddin Nawawi, Ph.D.	Universitas Sriwijaya, Indonesia
Prof. Dr. Muhammad Said	Universitas Sriwijaya, Indonesia
Prof. Dr. Eng. Joni Arliansyah	Universitas Sriwijaya, Indonesia
Prof. Saheed O. Ajayi	Leeds Beckett University, UK
Prof. Sunkuk Kim, Ph.D., P.E.	Kyung Hee University, South Korea
Prof Mitsunori Ozaki	Kanazawa University, Japan
Assoc. Prof. Dr. Hafiz M. Ali	King Fahd University of Petroleum and Minerals, KSA
Prof. Novia, Ph.D.	Universitas Sriwijaya, Indonesia
Dr. Bhakti Yudho Suprapto	Universitas Sriwijaya, Indonesia
Widya Fransisca, Ph.D.	Universitas Sriwijaya, Indonesia
Prof. Amrifan S. Mohruni, Ph.D	Universitas Sriwijaya, Indonesia
Dr. Makatar Wae-Hayer	Princes of Songkla University, Thailand
Prof. Dr. Budiarto	Universitas Indonesia, Indonesia
Assoc. Prof. Dr. Nor Azwadi	UTM KL, Malaysia
Prof. Dr. Hafiz Alaka	University of Hertfordshire, UK
Dr. Olonade Kolawole Adisa	University of Lagos, Nigeria
Prof. Dr. Mona Iyer	CEPT University, India
Prof Dr. Sridevi	Velammal Institute of Technology, India
Intisar Ameen Tyne, Ph.D	Texas State University, USA
Doriane Meyer, Ph.D	Yale University
Dr. Mohamad Nadim Adi	Texas State University, USA
Prof. Hasan Basri, Ph.D.	Universitas Sriwijaya, Indonesia
Prof. Subriyer Nasir, Ph.D.	Universitas Sriwijaya, Indonesia
Prof. Dr. Eddy Ibrahim	Universitas Sriwijaya, Indonesia
Prof. Dr. Edy Sutryono	Universitas Sriwijaya, Indonesia
Prof. Dr. Dinar Dwi Putro	Universitas Sriwijaya, Indonesia
Prof. Dr. Nukman	Universitas Sriwijaya, Indonesia
Prof. Dr. Erika Buchari	Universitas Sriwijaya, Indonesia
Prof. Dr. Kaprawi	Universitas Sriwijaya, Indonesia
Prof. Poedji Loekitowati Hariani	Universitas Sriwijaya, Indonesia
Irsyadi Yani, Ph.D.	Universitas Sriwijaya, Indonesia
Dr. Saloma	Universitas Sriwijaya, Indonesia
Dr. M. Abu Bakar Sidik	Universitas Sriwijaya, Indonesia
Dr. Tuti Indah Sari	Universitas Sriwijaya, Indonesia

Organizing Committee

Chairman:	Prof. Heni Fitriani, Ph.D.
Secretary:	Dr. Maya Fitri Oktariani
Coordinator of Finance:	Abdul Haris Dalimunthe, M.TI.
Coordinator of Funding:	Dr. Syarifa Fitria
Coordinator of Paper Processing:	Dr. Arie Putra Usman
Coordinator of Publication:	Dr. Dendy Adanta
Coordinator of Conference Program:	Lia Cundari, M.T.

Technical Program Committee

Rhaptalyani, Ph.D.
Ar. Muhammad Fajri Romdhoni, Ph.D. IAI
Muhammad Rendana, Ph.D.
Dr. Rosidawani
Sakura Yulia Iryani, M.Eng.
Dessa Andriyali, M.T.
Bazlina Dawami Afrah, M.Eng.
Desi Windi Sari, M.Eng.

Speaker

Keynoted Speaker

Prof. Saheed O. Ajayi, Ph.D.

Leeds Beckett University, Leeds, United Kingdom
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=56394201100>
WoS : <https://www.webofscience.com/wos/author/record/2345284>

Prof. Sunkuk Kim, Ph.D., P.E.

Kyung Hee University, South Korea
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=7601578906>

Prof. Dr. Mitsunori Ozaki

Kanazawa University, Japan
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=8506644300>
WoS : <https://www.webofscience.com/wos/author/record/1129072>

Assoc. Prof. Dr. Hafiz M. Ali

King Fahd University of Petroleum and Minerals, Saudi Arabia
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=55749198400>
WoS : <https://www.webofscience.com/wos/author/record/2224522>

Assoc. Prof. Novia, Ph.D.

Universitas Sriwijaya, Indonesia
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=55925544400>
WoS : <https://www.webofscience.com/wos/author/record/1347500>

Invited Speaker

Dr. M. Reza Hosseini

Deakin University, Geelong, Australia
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=57193617746>

Prof. Dr. Budiarto

Universitas Indonesia, Depok, Indonesia
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=12780330700>

Assoc. Prof. Dr. Nor Azwadi

Universiti Teknologi Malaysia Kuala Lumpur, Kuala Lumpur, Malaysia
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=57204852231>

Prof. Dr. Jeffrey D. Rimer

University of Houston, Houston, United States

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=6506431622>

Dr. Hafiz A. Alaka

University of Hertfordshire, Hatfield, United Kingdom

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=56770004100>

Assoc. Prof. Ahmad Fudholi, Ph.D. (REN)

Universiti Kebangsaan Malaysia, Bangi, Malaysia

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=57195432490>

Dr. Makatar Wae-Hayee

Prince of Songkla University, Hatyai, Thailand

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=54581708300>

Prof. Dr. Sri Devi

Velammal Institute of Technology, India

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=57480103700>

Dr. Olonade Kolawole

University of Lagos, Nigeria

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=57711451900>

Intisar Ameen Tyne, Ph.D

Texas State University, San Marcos, United States

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=57215323927>

Doriane Meyer, Ph.D.

Del Mar College, US

Dr. Mohamad Nadim Adi

Texas State University, Texas, US

Scopus : <https://www.scopus.com/authid/detail.uri?authorId=36080328900>

Prof. Dr. Mona Iyer

CEPT University, India