

Welcome message from General Chair



On behalf of the Organizing Committee, it is our great pleasure to welcome you to the 2nd International Joint Conference on Advanced Engineering and Technology and International Symposium on Advanced Mechanical and Power Engineering (IJCAET & ISAMPE 2017). This year's Conference continues its tradition of being the premier forum for presentation of research results in this field of green technology research, including high-quality papers in all aspects of advanced engineering and innovation.

The call for papers attracted more than 360 paper submissions from Australia, China, India, South Korea, North Korea, Japan Singapore, Malaysia, Thailand, Vietnam, Mauritius, Ethiopia, Nigeria, Srilangka, United Kingdom and Canada. The program committee accepted 333 of those Papers to be presented in this conference. This year's sessions include topics in the field: Aeronautical and Aviation Engineering, Architecture, Automation, Mechatronics and Robotics, Bio-Medical Engineering, Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical Engineering, Environmental Engineering, Geodetic and Geology, Image Processing and Recognition, Industrial Engineering, Information Technology, Materials and Metallurgical Engineering, Mechanical Engineering, Nano-Technology, Natural Sciences, Naval Architecture and Marine Systems Engineering, Ocean Engineering, Safety and Reliability in Engineering, Urban Planning and Urban Design.

We extend our gratitude to the Conference International Advisory Board members, Scientific Committee Members, Session Chairs, to all authors for their invaluable contributions, effort, and time. We sincerely express our appreciation to the numerous technical reviewers and the various Review Committees for their thorough work, making the Program Book a high quality and useful document. The efforts, diligence, and thoroughness of the reviewers are gratefully acknowledged.

Special thanks to the Keynote Speakers: Dr. Arcandra Tahar, Prof. Alexander Cuthbert, Prof. Andrew Price and Prof. Tomomi Honda, the Invited Speakers: Prof. Buntara Sthenly Gan, Prof. Tegoeh Tjahjowidodo, Prof. Niro Nagai, Prof. Junghwan Oh and Prof. Prabir Basu. We appreciate the supporting organizations, Ministry of Research, Technology and Higher Education of the Republic of Indonesia, University of Fukui, and University of Shanghai for Science and Technology (USST), the sponsors and of course to our university main partners: Pukyong National University and Udayana University.

We welcome you to Bali, and we very much hope you enjoy the conference.

Jati Utomo Dwi Hatmoko, Ph.D

IJCAET & ISAMPE 2017 General Chair
VICE DEAN for Research and Innovation
Faculty of Engineering, Diponegoro University, Indonesia

Welcome message from Dean of Faculty of Engineering – Diponegoro University



We are delighted to have you here at the 2nd International Joint Conference on Advanced Engineering and Technology and International Symposium on Advanced Mechanical and Power Engineering (IJCAET & ISAMPE 2017) in Bali, Indonesia. The fact that many of you come from various distant places around the world serves to remind us of how important this gathering is. This year's conference is held jointly by Diponegoro University with Pukyong National University and Udayana University.

The conference's theme is "Advanced Engineering and Innovation for Green Technology and Sustainable Development", it will broadly cover various disciplines of from fundamental research to real world applications for society sustainability, highlight global interactions and interdisciplinary collaborations among academics, scientist, practitioners and industry experts.

We are honored to have outstanding speakers from around the world. These remarkable individuals are going to shed light on some selected novel topics drawn from their life-long work and experience involving Green technology and sustainable development through advanced engineering, innovation, management, and technology.

It is such a pride to get to host this conference in Bali, Indonesia, which is also known as the land of paradise. Specially, welcome all of you to the fabulous small town, Sanur, Bali's earliest beach resort, featuring a relaxed coastal ambiance. Among Bali's first hotels and beachfront retreats, together with an eclectic mix of restaurants, shops and bars and an assortment of innovative and modern entertainment venues share the Sanur Beach coastline. Known for its laidback atmosphere, Sanur Beach maintains its wealth in arts and culture, making it an ideal destination to enjoy the best of both eras, classic and contemporary. Hope you will get a chance to experience them all.

I want to say once more on behalf of the Faculty of Engineering, Diponegoro University, "Welcome." Hope this scholarly gathering will keep you intellectually intrigued and inspired. Thank you all for coming.

M. Agung Wibowo, Ph.D
DEAN, Faculty of Engineering, Diponegoro University, Indonesia

Welcome message from Dean of College of Engineering - Pukyong National University



On behalf of College of Engineering - Pukyong National University, I welcome all of participants and distinguished guests of the 2nd International Joint Conference on Advanced Engineering and Technology and International Symposium on Advanced Mechanical and Power Engineering (IJCAET & ISAMPE 2017) in beautiful Bali, Indonesia.

First of all, I would like to special thank Dr. Agung Wibowo, Dean of Faculty of Engineering, Diponegoro University, Prof. Ngakan Putu Gede Suardana, Dean of Faculty of Engineering, Udayana University, and also to appreciate General Co-chairs, Dr. Jati Utomo Dwi Hatmoko, Prof. Ngakan Putu Sueca, Prof. Tae Wan Kim, and the all other committees as well. This year's conference is held jointly with which Diponegoro University, Udayana University and Pukyong National University host on behalf of the consortium Deans.

Especially, this year's conference is also held together with ISAMPE 2017. ISAMPE 2016 was held on 27-30 October 2016 in Fukui, Japan. For the cooperation of ISAMPE 2017, I also would like to thank Prof. Niro Nagai, Fukui University, Japan and Prof. Dai Ren, University of Shanghai for Science and Technology.

It is my great honor to give you a welcome message. This conference would be a wonderful time to share the progress in Advanced Engineering and Technology with each other, and to find a chance to cooperate with others. No one doubt that many valuable research results will be presented at this conference. So, I hope, you have many creative inspirations and discussions from this conference and that would be your great opportunity to find promising future research topics as well. Especially, for your students, I would like to strongly recommend to experience globalized sociality with friends from other countries and to try make many international friendship with them to enhance your global minds.

Once again, our college of engineering, Pukyong National University is very happy to host this International Joint Conference on Advanced Engineering and Technology and International Symposium on Advanced Mechanical and Power Engineering (IJCAET & ISAMPE 2017) with Diponegoro University and Udayana University.

I would like to give sincere thanks to all participants.
Thank you very much.

Prof. Seon Jin Kim

DEAN, College of Engineering, Pukyong National University, South Korea



2nd International Joint Conference on Advanced Engineering and Technology & International Symposium on Advanced Mechanical and Power Engineering

24 - 26 August 2017
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Welcome message from Dean of Faculty of Engineering – Udayana University



We are delighted to extend a warm welcome to you at the 2nd International Joint Conference on Advanced Engineering and Technology and International Symposium on Advanced Mechanical and Power Engineering (IJCAET & ISAMPE 2017) to be held from 24th to 26th August 2017 in Sanur, Bali, Indonesia.

This year, IJCAET & ISAMPE 2017 is jointly organized by Diponegoro University, Udayana University and Pukyong National University

We are fortunate to have some of the distinguished keynote and invited speakers in the theme areas of the conference. We thank them for their kindness to be with us in this conference.

We would like to thank all authors and participants for their interests and contributions to IJCAET & ISAMPE 2017. We acknowledge the support from the sponsors. We also express our gratitude to all the organizing committee members and the reviewers who gave their valuable time in providing critical reviews. The conference would not have been possible without the help of the organizing committee and the volunteers and we thank them most sincerely.

We hope you have a fruitful conference and a culturally engaging experience in Bali!

Prof. Ngakan Putu Gede Suardana

DEAN, Faculty of Engineering Udayana University, Indonesia