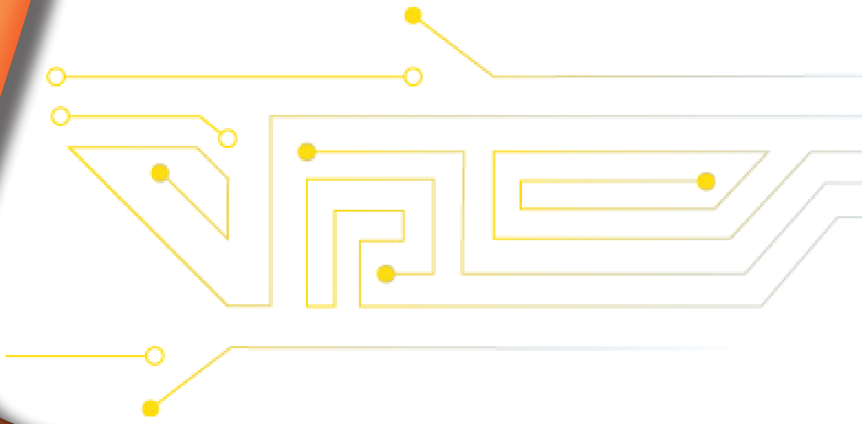
# INFERT
## 2018

International Conference on Applied Electrical,
Electronics, and Informatics Engineering

THE BREAKTHROUGH
IN TECHNOLOGY
FOR A BETTER TOMORROW

July 26-27 2018,
Hotel Mercure, Pontianak



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# FOREWORD

Alhamdulillahirobbil'alamin, Praise be to Allah SWT and peace be upon our Holy Prophet Muhammad SAW.
I would like to congratulate all the committee on the success in initiating and organizing the 1st International Conference on Applied Electrical, Electronics, and Informatics Engineering (INFERT) held from 26-27 July 2018.

I am pleased to know that the keynote speakers of this conference are prominent experts in the field of electrical, electronics and informatics engineering coming from among the top world universities (Leicester University of England, California State Polytechnic of USA, and King Abdul Aziz University of Saudi Arabia). It is also good to know that there are participants from Malaysia, United States of America and Pakistan presenting paper in this conference.
It is expected that the attendance of experts and researchers including postgraduate students from various nations could benefit all the attendees particularly in terms of the attainment of new knowledge and ideas. It is also hoped that this conference will be a medium for students, lecturers and practitioners to expand their networking with people from similar or different institutions and countries. It is the main aim of this conference to offer solutions to existing problems in the areas of electrical, electronics, and informatics engineering.
As the Director of Pontianak State Polytechnic (Polnep), I hope there will be more similar international academic events organized by other study programs and departments in the institution in the near future. Since such an event aligns well with the long-term vision of Polnep which is to be one of the top vocational higher institutions nationally and internationally, I promise that I will provide all the necessary supports for the success of the event.
My biggest expectation is that all the attendees can make the most out of this

# The DC House Project as an Alternate Solution to Rural Electrification

Professor Taufik
Director of Electric Power Institute
California Polytechnic State University, USA

ABSTRACT :
Indonesia, just like other developing countries in the world, faces the challenges of improving its electrification ratio especially in rural areas. With the thousands of islands comprising its territory, Indonesia's electrification problem becomes unique and demanding. However, Indonesia's plentiful sources of renewable energy present great opportunities for increased access to electricity to its population and to trigger technological and economic developments. At present, the majority of renewable energy solutions to rural electrification involve relatively large-scale and centralized approach. Such methods, however, have encountered many practical issues both technical and non-technical. Hence, an alternate solution is needed to minimize or even avoid these issues. In this presentation, the DC House Project aimed to provide an alternate solution to rural electrification utilizing renewable energy sources will be presented. The DC House offers a bottom-up approach which further yields technical and economic benefits such as efficient, scalable, flexible, affordable, and reliable. The development of DC House technology and its components since its inception will be discussed. Recent status of its research and deployment plans will also be presented.

# Applied Superconductivity for a Better Tomorrow. Fundamental Concepts and Technological Challenges

Dr. Harold S Ruiz
Head of the superconductivity program at the
Electrical Power and Power
Engineering Research Group (EPPER).
University of Leicester, UK

ABSTRACT :
The continuous increase in demand for smart electrical distribution grids and related power systems operating in low, medium or high voltage networks, as well as the need of smaller, lighter, and more efficient motors and generators, has recently raised the world-wide interest on the development and optimization of advanced superconducting technologies by exploiting their electrical and magnetic properties. In this talk, some of the most important applications of superconductivity in the electric, aerospace and transportation industries will be reviewed, exploring their current technological trends and challenges. In a first part, the main physical characteristics of the superconducting materials will be defined into the context of their applications and commercial benefits, as well as the theories underlying. Then, the main differences between Copper based technologies and the superconducting materials will be explained in terms of the local distribution of current density when the superconductor is subjected to external magnetic fields and/or transport currents. This will lead from the engineering perspective to a radical change in the way of thinking, either from the fundamental concepts of electromagnetism, or the way how an electrical machine must be designed when the superconducting materials are considered. For instance, it will be noticed that the classical Ohm's law for defining conducting materials is no longer valid when we refer to the applications of superconducting materials. Finally, based on the previous descriptions, a brief introduction to the state of the art technologies for high field permanent magnets, magnetic resonance imaging, power transmission lines, magnetic cloaking devices, radiation shielding of spacecraft, magnetic levitation trains, superconducting motors and generators, and superconducting fault current limiters, will be covered during this talk.

# Development of hydro power systems for remote communities

Dr. Alfeus Sunarso
Senior Lecturer & Researcher
Pontianak State Polytechnic, IDt

ABSTRACT
Hydro power is a promising alternative to overcome electricity problems in remote communities. In this paper, experience in development of hydro power plants for remote communities is presented. Two types of prototypes have been developed; one prototype was designed to work under a very low head condition (about 1.5 m) with water wheel as its prime mover, while the other prototype was designed to work with a low head condition (about 10 m) with cross flow turbine as its prime mover. The development processes include design, construction and field testing of the prototypes, which consist of civil buildings, and mechanical and electrical components. Particular details in the development of electronic load controller (ELC) and operating conditions monitoring system are presented extensively. Furthermore, some technical challenges related to the efforts to improve system efficiency and reliability are addressed as well.

# Assistive Robotic Technology: A Review!

Anton Satria Prabuwono, Ph.D
Associate Professor at Faculty of Computing and Information Technology
Rabigh (FCITR)

ABSTRACT

Older people with chronic conditions even lead to some disabilities face many challenges in performing daily life. Assistive robot is considered as a tool to provide companionship and assist daily life of older people and disabled people. This paper presents a review of assistive robotic technology, particularly for older people and disabled people. The result of this review constitutes a step towards the development of assistive robots capable of helping some problems of older people and disabled people. Hence, they may remain in at home and live independently.!

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