



Dept. of Nuclear Engineering and Engineering Physics  
Universitas Gadjah Mada

## Preface

Energy-Food-Water Nexus is an essential factor of human life. This energy-food-water relationship is need to be taken into account in the researches and innovation for sustainable future. This is the theme of our 6th International Energy Conference: ASTECHNOVA 2017 held by Department of Nuclear Engineering and Engineering Physics (DNEEP), Universitas Gadjah Mada.

ASTECHNOVA 2017 received 42 extended abstracts and after peer review process from International Scientific and National Scientific reviewer, there are 41 extended abstract which continue to next step for submitting the full paper. In order to increase the quality of the paper, ASTECHNOVA 2017 committee conducted similarity crosscheck with software, and peer-review of full paper by scientific reviewers.

Finishing of all the review process, we have 33 encouraging papers, coming from 12 different institutions, 8 different countries, 83 participants, and 31 papers have been presented at the conference. Throughtout the keynote speech and presentation from participants, ideas sharing between researchers especially in the same field of research can be achieved. The discussions also provide the general participants to explore what are the recent issues and challenges related to Energy-Food-Water Nexus field.

Let me close this preface with the highest appreciation for all of your participation, fruitful discussion and let keep our network strong for contribution in energy field development.

Thank you very much.

Best regards,

Dr. Rachmawan Budiarto  
ASTECHNOVA 2017 General Chair



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## **ABOUT THE CONFERENCE**

# **ASTECHNOVA 2017 INTERNATIONAL ENERGY CONFERENCE**

## **“Innovative Sustainable System in Energy - Food - Water Nexus”**

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**ASTECHNOVA 2017 - International Energy Conference**

Department of Nuclear Engineering and Engineering Physics, Universitas Gadjah Mada

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## ABOUT THE CONFERENCE

### ASTECHNOVA 2017

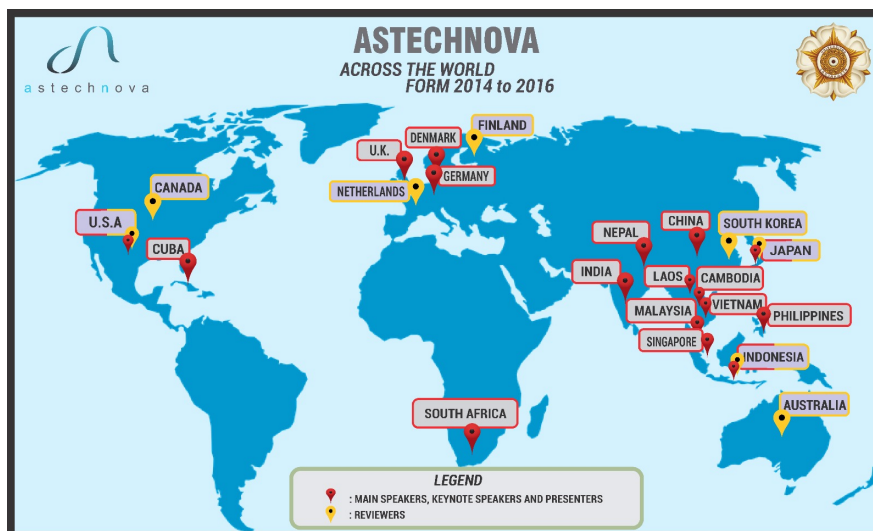
#### INTERNATIONAL ENERGY CONFERENCE

#### “Innovative Sustainable System in Energy - Food - Water Nexus”

### Short Description

With huge population growth and unstable economic problem, nowadays, the challenges on securing the needs of energy, water, and food (E-W-F) become a big issue. The connection of the E-W-F aspects offer ascent to the requirement for handling the difficulties with a nexus approach. The discussion between the research progresses between E-W-F aspects is vital for better comprehension the complicity of E-W-F nexus and adopting coordinated strategies for the next progress.

The ASTECHNOVA 2017 is to host communication and dissemination of proposed new approaches in dealing with E- W-F nexus issues, as studying complexity and knowledge management. The papers on the issues relating to technology innovations and policy implementation of the E- W-F nexus s are welcomed. This event is the third international energy conference. Since 2014 till 2016 the conference was held successfully and attended by several participants and experts from Japan, Cuba, Cambodia, Vietnam, Philippines, Nepal, South Africa, China, Japan, Cuba and USA. Map of reviewer and presenter of Astechnova 2014 – 2016 is shown as follow:



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The ASTECHNOVA 2017 -International Energy Conference- will systematically examine the following topics

- Oil and Gas
- New and Renewable Energy
- Nuclear Engineering
- Green Technologies
- Energy Management and Services
- Environmental Compliance
- Plant Engineering and Instrumentation & Control
- Energy efficiency
- Nexus from the Energy perspective related to water and food
- Future clean energy technologies and systems under water and food constrains
- Land, climate and energy constraints on water and food sectors
- Future urban energy systems with considerations of water and food security
- Technology innovations for supporting global secure access to clean energy and water
- Other relevant topics on energy – water – food nexus.

### **Rationale**

The 6<sup>th</sup> ASTECHNOVA 2017 is one of contribution of Department of Nuclear Engineering and Engineering Physics, Universitas Gadjah Mada (DNEEP) for energy-related researches and publication. In this context, by promoting research innovation in energy-related researches, DNEEP can reach the global network. This conference will be part of big steps in DNEEP to provide the ideas exchange, fruitful discussion, and to facilitate the researchers to present their work as part of energy-community information circle. DNEEP believes that by holding the ASTECHNOVA 2017 - is a good opportunity to open more networks for researchers and practitioners from academia and industry whose comments and suggestions will help DNEEP to excel as a centre of excellent in energy system in the near future.

In ASTECHNOVA 2017, not so different with previous ASTECHNOVA, there will be the scientific members who theirs expertise and networks will be essential points in energy innovation. The scientific members; Prof. Sunil Chirayath (Texas A&M University, USA), Dr. Liem Peng Hong (NAIS Co., Inc, Japan), Prof. Agus Pulung Sasmito (McGill University, Canada), Prof. Christophe Demaziere (Chalmers University of Technology, Sweden), Hiroshige Kikura (Tokyo Institute of

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Technology), Prof. Sunarno, Prof. Phillip Beeley (Khalifa University, United Arab Emirates), Prof. Yonghee Kim (KAIST, South Korea), Dr. Jim Kuijper (NUCLIC, Netherlands) Dr.-Ing. Sihana (Universitas Gadjah Mada, Indonesia), Dr. Gea O.F. Parikesit (Universitas Gadjah Mada, Indonesia), Dr. Totok Soehartanto (Institut Teknologi Sepuluh Nopember, Indonesia) and Dr. Jarot Setyowiyoto (Universitas Gadjah Mada, Indonesia), Prof. Dr. Ing. Ir. Misri Gozan, M.Tech (Universitas Indonesia, Indonesia), Prof. John Z. Zhai (University of Colorado Boulder).

### **Aims**

1. To facilitate researchers and experts both from industry and academia to give the state of the art of innovation in energy system,
2. To present recent achievements and results of advanced technology developments in energy system,
3. To discuss and exchange ideas and experiences in the field of technology developments in energy system.

### **Event**

The ASTECHNOVA 2017 - International Energy Conference - is proposed to take two days in November 2017 with 100 participants world wide that will present their papers, i.e.

Date : 1 November 2017  
Time : 07:30 – 16:30 with five parallel scientific sessions  
Venue : Eastparc Hotel Yogyakarta

### **Important dates for participants for this event**

Abstract submission deadline : 11.07.2017  
Notification of acceptance : 07.08.2017  
Full paper submission : 04.09.2017

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The detail schedule of ASTECHNOVA -International Energy Conference-, as follows:

<b>The Grand Ballroom</b>	
<b>Time</b>	<b>Schedule</b>
07:30– 08:00	Registration
08:00 – 08:10	<b>Welcome Remark</b> by General Chair of ASTECHNOVA 2017
08:10 – 08:20	<b>Opening</b> by Vice Rector for Research and Community Service of Universitas Gadjah Mada
08:20 – 08:30	<b>Souvenirs</b> for Keynote Speaker, Main Speakers, Volunteer Reviewers and Moderators by Head of - Department of Nuclear Engineering and Engineering Physics UGM
08:30 – 08:45	<b>Keynote Speech</b> by <b>Ambassador/Senior Advisor for Political, Legal and Security Affairs, Director of Non-Aligned Movement Centre for South-South Technical Cooperation (NAM CSSTC) – Prianti Gagarin Djatmiko-Singgih</b>
08:45 – 09:00	<b>Coffee break</b>
09:00 – 10:50	<p><b>Plenary Session 1 “Developing Energy - Food - Water Nexus for Today’s and Future Civilization”</b></p> <p><b>Main Speaker :</b></p> <ul style="list-style-type: none"> <li>- Ambassador of Bolivarian Republic of Venezuela – <b>Gladys F. Urbaneja Duran</b></li> <li>- Federal Democratic Republic of Nepal – <b>Sundar Bahadur Khadka</b></li> <li>- Republic of Cuba – <b>Barbara Hernandez Martinez</b></li> </ul> <p><b>Chair :</b></p> <p>Rachmawan Budiarto</p>
11:00 – 12:00	<p><b>Plenary Session 2 “Energy for Human Life”</b></p> <p><b>Main Speaker :</b></p> <ul style="list-style-type: none"> <li>- Tokyo Institute of Technology – <b>Hiroshige Kikura</b> “Status in Fukushima and Decommissioning Project”</li> <li>- Department of Nuclear Engineering and Engineering Physics UGM – <b>Gea Oswah Fatah Parikesit</b> “Energy, Culture, and Humanities: A Quantitative Study on the Indonesian Art of Wayang Kulit”</li> </ul> <p><b>Moderator :</b></p> <p>Haryono Budi Santosa</p>
12:00 – 13:00	<b>Lunch</b> at Grand Ballroom

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**Scientific Parallel Session**

Time	Orchid Room	Tulip Room	Magnolia Room	Carnation Room	Dahlia Room
	New and Renewable Energy	Oil and Gas, Plant Engineering and Instrumentation & Control	Green Technologies, Energy Efficiency and Other	Nuclear Engineering and Other	New and Renewable Energy
	Chair : Sihana	Chair : Awang Wardhana	Chair : Sentagi Sesotya Utami	Chair : Alexander Agung	Chair : Nazrul Effendy
13:00-13:15	#6 Analysis Of Characteristics Of Pendulum Oscillation In PLTGL-SB (Juniarko Prananda)	#2 Sustainable Innovation Of Processing Bagasse To Sodium Ligno sulphonate Surfactant Utilized In Enhanced Oil Recovery (Rini Setiati)	#21 Life Cycle Assessment for Canning Crab Product (Portunus Pelagius) Product in Indonesia (Putri Amelia)	#14 Longitudinal and shear wave velocities measurement in compacted bentonite for water content (Shun Kimura, et.al.)	#35 Study of Supervisory Control Implementation In A Small Scale Variable Speed Wind Turbine (Katherin Indriawati)
13:15-13:30	#12 Response to Pontoon and Pendulum Motion at Wave Energy Converter Based on Pendulum System (Teuku Arvisa)	#7 Design of PLC Integrated Process Simulation Software for Steam Generator Using Matlab Simulink (Ikhtiander Ikhtiander)	#11 Demand Simulation for Water, Food Irrigation, and Energy from Micro Hydro Power Plant in Sungai Bayang, Bayang Utara, Pesisir Selatan, West Sumatera (Siti Nurlaila Indriani, et.al.)	#33 Analysis Of Maintenance Task Of Secondary Cooling Process System At G.A. Siwabessy Research Reactor Using Reliability Centered Maintenance Method (Winda Sarmita)	#9 Implementation of Maximum Power Point Tracking (MPPT) Technique on Solar Tracking System Based on Adaptive Neuro-Fuzzy Inference System (ANFIS) (Imam Abadi, et.al.)
13:30-13:45	#39 Design And Implementation Soft-switching MPPT SEPIC Converter Using P&O Algorithm (Ony Qudsi, et.al.)	#26 An Application of Statistical Modelling on Power Generating Asset Performance Analysis at the Asam-Asam Steam Power Plant of South Kalimantan (Aqli Mursadin)	#10 The Effect Of Inlet Curvature And Flange On Wind Turbine Diffuser Performance (Muhammad Nasir, et.al.)	#37 Arc Plasma Sintering; Novel Technology for Producing of Zirconia Enhanced ODS Alloy (Arbi Dimiyati)	#4 Performance Test Of Solar-Powered Ice Maker: Case Study in South Lampung (Putri Wullandari, et.al.)



Time	Orchid Room	Tulip Room	Magnolia Room	Carnation Room	Dahlia Room
	New and Renewable Energy	Oil and Gas, Plant Engineering and Instrumentation & Control	Green Technologies, Energy Efficiency and Other	Nuclear Engineering and Other	New and Renewable Energy
	Chair : Sihana	Chair : Awang Wardhana	Chair : Sentagi Sesotya Utami	Chair : Alexander Agung	Chair : Nazrul Effendy
13:45-14:00	#1 Synthesis of Fatty Acid Methyl Ester from Soybean Oil Using Electrolysis with Kaolinite Acid as Catalyst (Rudy Syah Putra, et.al)	#34 Adsorption of CO <sub>2</sub> and Methane on Covalent Organic Polymer (Lee Siew-Pei, et.al.)	#15 Analysis of Palm-Oil-Based Bio-diesel in Indonesia as Technological Innovation System (Dintani Naimah)	#22 Determination LMWL Wonosobo Area By Using Nuclear Technology, Case Study: Hydrogeology Study for Aqua Danone CSR Program (Agus Wijatna, et.al)	#38 Design and Implementation Buck Converter for 540WP Solar Charger Using Fuzzy Logic Control (Sutedjo, et.al.)
14:00-14:15	#20 Al-Alginate as Acid Catalyst for FAME Synthesis Using Electrolysis Process (Rudy Syah Putra)	#13 Design of New Ultrasonic Transducer with Two Elements for Flow Rate Measurement Using Ultrasonic Doppler Method (Jevin Tanius Owen , Ari Hamdani)	#5 Analog tachometer as an indicator machine weathering of motorcycle machine based on moving coil (Dhanis Woro Fittri, et.al.)	#23 Prognostic Methods on Accelerator's Anode Voltage Regulator (Robby Christian, Balza Achmad)	#19 Analysis of Back Surface Field (BSF) Performance in P-Type And N-Type Monocrystalline Silicon Wafer (Ferdiansjah)
14:15-14:30	#27 The Effect of Sulfuric Acid Hydrolysis of Bagasse on Glucose Concentration (Nunung Prabaningrum)	#25 Performance Test of VHF-HF-based Emergency Data Communication System between the Sardjito Hospital and District Hospital in the Isolated and Disaster-prone	#31 Modeling of Fluid Flow Rate on Hybrid Solar PV-Thermal Panel (Yakob TH, et.al.)	#17 Research and Development Green School which is located in Jalan Raya Sibang Kaja, Banjar Saren, of Instruments for Measurement, Recording, and Analysis	

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	Chair : Sihana	Chair : Awang Wardhana	Chair : Sentagi Sesotya Utami	Chair : Alexander Agung	Chair : Nazrul Effendy
		Areas (Singgih Hawibowo, et.al.)		of The Power Quality toward Sustainable Energy Management System at Green School, Bali, Indonesia (Dita Anggraini, et.al.)	
14:30-14:45	#18 Characterization of Natural Zeolite and Chicken Manure Derived Biochar for Carbon Dioxide Adsorption in Biogas (Margaretha Wuri, et.al.)	#29 Neural Network Model For Smart Lighting Control In Energy Efficient Building Based on Occupants' Activities (Ivan Hidayat, et.al.)	#24 The Wireless Energy Transfer (WET) Using Ultra High Frequency (UHF) For Human Body Implant Recharging (Fahmy Rinanda Saputri, et.al.)		
14:45-15:15	<b>Closing ceremony (The Grand Ballroom)</b>				

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Prof. John Z. Zhai (University of Colorado Boulder)

### **Local Organizing Committee** (Universitas Gadjah Mada, Indonesia)

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Publicity & PR : Fitrotun Aliyah  
Financial Chair : Faridah  
Treasurer : Amrih Lestari, Safrudin  
Publication Chair : Balza Achmad, Agus Arif, Alexander Agung  
TPC Chair : Awang Wardhana, Anung Muharini, Singgih Hawibowo  
Program Chair : Susetyo Hario Putero  
Logistic Chair : Widya Rosita  
Sponsorship & PR : Sentagi Sesotya Utami Haryono Budi Santosa, Ferdiansjah

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