THE 2ND INTERNATIONAL CONFERENCE ON HIGH VOLTAGE ENGINEERING AND POWER SYSTEMS (ICHVEPS) 2019

BALI, OCTOBER, 1st - 4th, 2019

Inna Grand Bali Beach Hotel, Sanur, Bali, Indonesia

The 74th National Electricity Day 2019
ICHVEPS SECRETARIAT

Dr. Ir. Umar Khayam
School of Electrical Engineering and Informatics
Institut Teknologi Bandung
Jl. Ganesha 10 Bandung 40132
Indonesia

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E-mail: secretary@ichveps.org or ichveps@stei.itb.ac.id
Website: http://www.ichveps.org/
Distinguish participants and guests, welcome to Bali, welcome to Indonesia and welcome to The International Conference on High Voltage Engineering and Power System 2019 (ICHVEPS 2019). The conference will be held in Inna Grand Bali Beach Hotel Sanur Bali, Indonesia on 1-4 October 2019. The ICHVEPS 2019 is a biannual conference organized by the School of Electrical Engineering and Informatics, Institut Teknologi Bandung (ITB), Indonesia and sponsored by IEEE Indonesia Section, IEEE Power and Energy Society Indonesia Chapter, IEEE Indonesia Student Branch and PT. PLN (Persero). The conference is designed to be an international forum for exchange ideas, discussion and dissemination of research results and recent technologies in the field of High Voltage Engineering and Power System from power utilities, universities, research institutes as well as industries. The conference received a large number of abstracts/papers submission of more than 186. After review, finally 136 papers from 14 countries (Indonesia, Germany, Malaysia, India, Australia, South Korea, China, Japan, Taiwan, Vietnam, Canada, Italy, USA, and Morocco were accepted. The papers will be presented in 2 invited plenary sessions and 16 technical sessions. All accepted papers will be sent to IEEE Xplore (and Scopus) and selected papers will be invited to be published in International Journal on Electrical Engineering and Informatics.

I hope ICHVEPS 2019 will provide all of you a fruitful meeting, memorable experience and pleasant stay in Bali.

I am looking forward to welcoming you in Bali, Indonesia.

Prof. Dr. Ir. Suwarno,
General Chairman of ICHVEPS 2019
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- Rudi K. (UNTAN, Indonesia)
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- I.A.G. Antari (UNUD, Indonesia)
ABOUT BALI

Indonesia is one of the very few nations on earth to span such a broad spectrum of world history and human civilizations from its ancient Hindu-Javanese temples to Bali’s modern luxury resorts, and from the stone-age lifestyle in West Papua to an immense metropolis that is Jakarta. The population of nearly 234 million people is derived from 300 ethnic groups people who speak over 250 distinct languages. The common element is the national language of Bahasa Indonesia.

Situated almost smack in the middle of the Indonesian archipelago, Bali is approximately 5,620 sq km (2,170 sq miles) in size with a population of almost 3 million. As one of the eight regencies, Badung is the urban and commercial center. Here, most tourists spend their holidays at the beach, playing and partying, most often in the tourist enclaves of Nusa Dua, Sanur or Kuta/Legian. But even here, despite blatant commercialism, traditional undercurrents remain.

Bali lies between the islands of Java and Lombok and is one of more than 17,000 islands that makes up the Indonesian Archipelago. Bali is small, stretching approximately 140 km from east to west and 80 km from north to south. Slightly off-center, and running east to west, are a string of volcanic mountains. Lying just 8° south of the Equator, Bali boasts a tropical climate with just two seasons, wet and dry, a year and an average annual temperature of around 28° C. The rich volcanic soil and healthy monsoon season make this island extremely fertile and a range of crops are grown here. The wide and gently sloping southern regions play host to Bali’s famed rice terraces, among some of the most spectacular in the world. In the hill, northern coastal regions, mainly coffee, copra, spices, vegetables, cattle, and rice are produced.

The Balinese people have strong spiritual roots and despite the large influx of tourists over the years, their culture is still very much alive. Naturally creative, the Balinese have traditionally used their talents for religious purposes and most of the beautiful works to be seen here, have been inspired by stories from the Ramayana and other Hindu epics. With a reputation as being one of the most beautiful and diverse tourist spots in Asia, Bali attracts almost 1,000,000 visitors a year, from all around the world.
GENERAL INFORMATION
Indonesia Government had granted visa on arrival favor to 52 countries to be able to purchase the visa on arrival facility upon their arrival in Indonesia's designed “International Gateway” at 15 airports and 21 seaports.

BUSINESS HOURS
Government offices open at 8 am every day except Sunday, Monday to Thursday the are open to around 3 pm. Fridays to 11.30 and Saturday to 2 pm. Shops in Denpasar and other towns close in the afternoon for a siesta (usually 1 pm to 6 pm) and re-open in the evening until 9 pm.

CLIMATE
The average temperature in Bali in December is between 28°C (82.4) - 30°C (86) and the relative humidity is about 88%. There is comparatively little difference between the daytime and nighttime temperatures.

CURRENCY
Only Rupiah (Indonesian currency) is acceptable at regular stores and restaurants. Certain foreign currencies and major credit cards are accepted by most hotels. Restaurants and souvenirs shops. The exchange rates 1 US$ is about Rp. 14,000,-

TRAVELERS CHECK AND CREDIT CARDS
Travelers' checks are accepted by leading banks and hotels in principals cities. The use of travelers' checks in Indonesia is as popular as in any other countries. Dinners Club and American Express, Visa and Master Card are widely accepted at hotel, department stores, shops, restaurants and night clubs. According to the Indonesian banking regulations, payment of credit card should be charged in local currency.

ELECTRICITY
The electricity used in Indonesia is 220 Volt at 50 Hz.

SIGHTSEEING
There are various tourist attractions to visit in Bali, from diving sites to sunrise destinations, cultural landmarks, and shopping spots. Some of the most popular ones are Pura Tanah Lot, Mount Batur, Uluwatu Temple, Ubud, and beaches, such as Sanur and Kuta. The interested participants could receive further information from the hotel’s front desk.

IDD (INTERNATIONAL DIRECT DIALING)
Country Code = Indonesia :+62
City Code = Bali :+62-361

For further information please contact ICHVEPS secretariat office.
REGISTRATION

Registration Fee
The registration fee includes conference kit, conference proceedings, admission to all sessions, welcoming reception, banquet, lunches, and coffee breaks.

CONFERENCE PROGRAM :

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE Member</td>
<td>USD 300</td>
</tr>
<tr>
<td>Non-IEEE Member</td>
<td>USD 350</td>
</tr>
<tr>
<td>Overseas Student</td>
<td>USD 250</td>
</tr>
<tr>
<td>Local Academia (Lecturer/Student)</td>
<td>IDR 2,500,000</td>
</tr>
</tbody>
</table>

WORKSHOP PROGRAM :

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overseas Participant</td>
<td>USD 125</td>
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<tr>
<td>Domestic Participant</td>
<td>IDR 1,500,000</td>
</tr>
</tbody>
</table>
CONFERENCE VENUE

The conference venue of ICHVEPS 2019 is Inna Grand Bali Beach Hotel, Sanur. It is located on a wide stretch and white sand of Sanur beach, the most complete and competitive resort in Bali, in over 40 hectares, with extensive landscaped gardens around mature trees.

There are some international direct flights to Denpasar – Bali from several countries such as Singapura, China, Japan, Europe, etc.

From Ngurah Rai International Airport to Conference Venue or Inna Grand Beach Bali Hotel, delegates may use a taxi (price to Sanur about IDR 150,000), it will take about 24 minutes. The hotel is only 10 minutes to the traditional art market with a range of recreational facilities.

Sanur, Bali’s original seaside, has long been known for its world-class facilities and atmosphere of comfort and privacy. This oasis of luxury offers a wide range of dining and leisure opportunities.
WORKSHOP PROGRAM

Date : **Tuesday, Oct 1st, 2019.**
Time : 09.00 – 17.00
Room : Bali Hai (10th Floor, Inna Grand Bali Beach Hotel)

*Open Registration: 07.30 – 09.00

1. Opening Speech by ICHVEPS2019 General Chair

2. **Prof. Andrea Cavallini**  
   *University of Bologna, Italy*  
   “HV Cables: Fundamental, Aging, and Diagnostics”

3. **Prof. Masayuki Hikita**  
   *Kyushu Institute of Technology, Japan*  
   “Recent Progress on Electrical Insulation and Diagnosis Technology in Gas Insulated Power Apparatus”

4. **Dr. Anita Pharmatrisanti**  
   *PT. PLN (Persero), Indonesia*  
   “Asset Management for High Voltage Transmission Systems (Case Study: Jawa-Bali)”

5. **Prof. Ahmed Abu Siada**  
   *Curtin University, Australia*  
   “Intelligent Trends in Frequency Response Analysis Technique”

Page 11
Lunch Break

Prof. Guan-Jun Zhang  
Xi’an Jiaotong University, China  
“High Voltage Engineering in China, Prospect, Problem, and Solution”

Prof. Suwarno  
Bandung Institute of Technology, Indonesia  
“New Liquid Insulating Materials for High Voltage Transformers”

Jeff Butler, P.E.  
Hubbell Power Systems, USA  
“Optimization of Transmission Line Design and Insulating Materials”

Closing Speech by ICHVEPS2019 General Chair
### CONFERENCE PROGRAM OUTLINE

**Date**: Wednesday, October 2\(^{nd}\), 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.30 – 08.30</td>
<td>Registration</td>
<td>Agung Room (1(^{st}) Floor)</td>
</tr>
<tr>
<td>08.30 – 09.00</td>
<td>Opening Ceremony</td>
<td>Agung Room</td>
</tr>
<tr>
<td>09.00 – 10.45</td>
<td>Plenary Invited Lecture Session I</td>
<td>Agung Room</td>
</tr>
<tr>
<td>10.45 – 11.00</td>
<td><em>Coffee Break and Group Photo</em></td>
<td>Agung Room</td>
</tr>
<tr>
<td>11.00 – 13.00</td>
<td>Plenary Invited Lecture Session II</td>
<td>Agung Room</td>
</tr>
<tr>
<td>13.00 – 14.00</td>
<td><em>Lunch Break</em></td>
<td></td>
</tr>
<tr>
<td>14.00 – 16.00</td>
<td>Parallel Technical Session I</td>
<td>*See details in each session</td>
</tr>
<tr>
<td>16.00 – 16.15</td>
<td><em>Coffee Break</em></td>
<td></td>
</tr>
<tr>
<td>16.15 – 18.15</td>
<td>Parallel Technical Session II</td>
<td>*See details in each session</td>
</tr>
<tr>
<td>18.15 – 19.00</td>
<td><em>Break</em></td>
<td></td>
</tr>
<tr>
<td>19.00 – 21.00</td>
<td>Gala Dinner (Banquet)</td>
<td>Pendawa Stage</td>
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**Date**: Thursday, October 3\(^{rd}\), 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.30 – 08.00</td>
<td>Registration</td>
<td>Agung Room (1(^{st}) Floor)</td>
</tr>
<tr>
<td>08.00 – 10.00</td>
<td>Plenary Invited Lecture Session III</td>
<td>Agung Room</td>
</tr>
<tr>
<td>10.00 – 10.15</td>
<td><em>Coffee Break</em></td>
<td></td>
</tr>
<tr>
<td>10.15 – 12.30</td>
<td>Plenary Invited Lecture Session IV</td>
<td>Agung Room</td>
</tr>
<tr>
<td>12.30 – 13.30</td>
<td><em>Lunch Break</em></td>
<td></td>
</tr>
<tr>
<td>13.30 – 15.30</td>
<td>Parallel Technical Session III</td>
<td>*See details in each session</td>
</tr>
<tr>
<td>15.30 – 15.45</td>
<td><em>Coffee Break</em></td>
<td></td>
</tr>
<tr>
<td>15.45 – 17.45</td>
<td>Parallel Technical Session IV</td>
<td>*See details in each session</td>
</tr>
<tr>
<td>17.45 – 18.00</td>
<td>Closing Ceremony</td>
<td>Agung Room</td>
</tr>
</tbody>
</table>
### PLENARY INVITED LECTURES

**Date**: Wednesday, October 2\(^{nd}\), 2019  
**Venue**: Agung Room (1\(^{st}\) Floor, Inna Grand Bali Beach Hotel)  
**Moderator**: Prof. Suwarno, Dr. Ir. Umar Khayam (ITB, Indonesia)

<table>
<thead>
<tr>
<th>Lecture No.</th>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN-1</td>
<td>09.00 – 10.00</td>
<td>Prof. Masayuki Hikita</td>
<td>Kyushu Institute of Technology, Japan</td>
<td>“Electrical Insulation Technology in High Voltage Equipment and Power Electronics Integrated Packaging”</td>
</tr>
<tr>
<td>IN-3</td>
<td>11.00 – 12.00</td>
<td>Prof. Andrea Cavallini</td>
<td>University of Bologna, Italy</td>
<td>“High Voltage Insulation used in Aerospace”</td>
</tr>
<tr>
<td>IN-4</td>
<td>12.00 – 13.00</td>
<td>Prof. Ahmed Abu Siada</td>
<td>Curtin University, Australia</td>
<td>“Power Transformer Dissolved Gas Analysis – Challenges and Opportunities”</td>
</tr>
</tbody>
</table>
Date: Thursday, October 3rd, 2019  
Venue: Agung Room (1st Floor, Inna Grand Bali Beach Hotel)  
Moderator: Prof. Reynaldo Zoro, Prof. Pekik Argo Dahono (ITB, Indonesia)

IN-5  
08.00 – 09.00  
**Dr. Nanang Hariyanto**  
*Bandung Institute of Technology, Indonesia*  
“Power System Stability under Penetration of Renewable Energy Sources”

IN-6  
09.00 – 10.00  
**Prof. Guan-Jun Zhang**  
*X’ian Jiaotong University, China*  
“FDS based Non-Uniform Moisture Content Distribution of Oil-Paper Insulation”

IN-7  
10.15 – 11.00  
**Evy Haryadi, S.T., M.Sc.**  
*PT. PLN (Persero), Indonesia*  
“Technology Challenges, Research and Development for Reliable and Sustainable Electric Power System”

IN-8  
11.00 – 11.45  
**Franco D’Alessandro, PhD**  
*Lightning Protection International Pty Ltd (LPI), Australia*  
“New Approach for Lightning Protection of Substations”

IN-9  
11.45 – 12.30  
**Prof. Zulkarnain Abdul- Malek**  
*Universiti Teknologi Malaysia, Malaysia*  
“Lightning Related EMC and Safety of Petrochemical Plants”
## TECHNICAL SESSIONS

**ORAL SESSION TS-1**: Insulation Materials and Diagnostics  
**Date & Time**: Wednesday, October 2\(^{nd}\), 2019, 14.00 – 16.00  
**Venue**: Agung Room-1  
**Chair**: Andrea Cavallini (Univ. of Bologna – Italy)  
**Co-chair**: Moch Dhofir (Univ. Brawijaya – Indonesia)

<table>
<thead>
<tr>
<th>No.</th>
<th>Paper Submission No.</th>
<th>Title &amp; Authors</th>
</tr>
</thead>
</table>
| 1   | 118                  | A Novel Setup to Investigate Partial Discharges in Interfaces Subjected to HVDC Voltages  
  |                      | D.D. Kurniawan\(^1\), Suwarno\(^1\), A. Cavallini\(^2\), L. Cirioni\(^2\), and R. Candela\(^3\)  
  |                      | \(^1\)Institut Technology Bandung, Indonesia  
  |                      | \(^2\)University of Bologna, Italy  
  |                      | \(^3\)Prysmian Electronics, Italy |
| 2   | 67                   | Maximum Likelihood-based Technique for Accurate Estimation of Time-delay between UHF Signals Radiated from Partial Discharge Sources  
  |                      | Bhukya Anitha and Chiranjib Koley  
  |                      | National Institute of Technology Durgapur, India |
| 3   | 125                  | Comparison of The Characteristics and Mechanism of Surface Discharge Occurrence on The Acrylic Surface in Air and Oil Insulation With Circular Plane-Plane Electrodes  
  |                      | Rian Nurdiansyah and Umar Khayam  
  |                      | Bandung Institute of Technology, Indonesia |
| 4   | 8                    | The Making Processes of Natural Ester from Palm Oil Through Transesterification Reaction for Transformer Application  
  |                      | Suwarno, Yulia Erina Sari, and Tjokorda Istri Diah Karisma Dewi  
  |                      | Institut Teknologi Bandung, Indonesia |
| 5   | 143                  | Partial Discharge Pattern Detected by New Design Partial Discharge Sensors  
  |                      | Muhammad Sukri Habibi Daulay and Umar Khayam  
  |                      | Institut Teknologi Bandung, Indonesia |
| 6   | 130                  | The Step of Partial Discharge Pattern Recognition Using Fuzzy Logic  
  |                      | Lury Amatullah Lumba, Umar Khayam, Lunnetta Safura Lumba, and Claysius Dewanata Widjaja  
<p>|                      | Institut Teknologi Bandung, Indonesia |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Paper Submission No.</th>
<th>Title &amp; Authors</th>
</tr>
</thead>
</table>
| 7   | 74                  | Comparison of Algorithms for Clustering of Partial Discharge Signals under DC Voltage  

Benedikt Hochbrückner¹, Martin Spiertz¹, Markus H. Zink¹, Andreas Küchler¹, and Karsten Backhaus²  
¹University of Applied Sciences Würzburg-Schweinfurt, Germany  
²Technische Universität Dresden, Germany |
| 8   | 65                  | The Influence of Nanocomposite Filler on the Lifetime Performance of Polypropylene Under Voltage Polarity Reversal  

A. Setiawan¹,², P. Seri², A. Cavallini², Suwarno³, and H. Naderiallaf²  
¹Institut Teknologi Bandung, Indonesia  
²University of Bologna, Italy  
³PT. PLN (Persero), Indonesia |

**ORAL SESSION TS-2**  
**Date & Time**: Wednesday, October 2nd, 2019, 14.00 – 16.00  
**Venue**: Agung Room-2  
**Chair**: Ahmed Abu Siada (Curtin Univ. – Australia)  
**Co-chair**: A.P. Purnomoadi (PT. PLN (Persero) – Indonesia) |

<table>
<thead>
<tr>
<th>No.</th>
<th>Paper Submission No.</th>
<th>Title &amp; Authors</th>
</tr>
</thead>
</table>
| 1   | 83                  | Developing Norms for Condition Assessment of High Voltage Apparatus  

A.P. Purnomoadi¹, H.I. Septiani¹, B.S. Munir¹, D.A. Nugrah¹, and H. Usman¹  
¹PLN Research Institute, Indonesia  
²PLN TJBT UPT Cirebon, Indonesia |
| 2   | 54                  | Risk Calculation Formula of the bay in Switchyard to Determine the Main Priority of Maintenance at PLN UIT JBTB  

Daniel B Limbong, Rachel I Silaban, Feri Febriandi, and Bayu Tri Nugroho  
PT. PLN (Persero) UIT JBTB, Indonesia |
<table>
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<tr>
<th>No.</th>
<th>Paper Submission No.</th>
<th>Title &amp; Authors</th>
</tr>
</thead>
</table>
| 3   | 132                  | The Impact of Wall Materials to Reduce Energy Costs for Air Conditioning  
|     |                      | Marwan Marwan  
|     |                      | Polytechnic State of Ujung Pandang, Indonesia |
| 4   | 28                   | Risk Cost Analysis and Impact of Dip Voltage, Case Study of The Food and Beverage Industry in East Java  
|     |                      | Bustani Hadi Wijaya¹ and Nanang Hariyanto²  
|     |                      | ¹PT. PLN (Persero), Indonesia  
|     |                      | ²Institut Teknologi Bandung, Indonesia |
| 5   | 104                  | Optimizing Stakeholder Management: Operational Decision Making for Transformer Replacement  
|     |                      | A.Tryollinna  
|     |                      | PT. PLN (Persero) UIT JBB, Indonesia |
| 6   | 127                  | Risk Assessment Method for Pending Maintenance  
|     |                      | Anna Dwita Paulus Sudin  
|     |                      | PT. PLN (Persero) UIT JBB, Indonesia |
| 7   | 156                  | A Review of Feed-In Tariff Model (FIT) for Photovoltaic (PV)  
|     |                      | Iswan Prahastono³, Ngapuli Irmea Sinisuka¹, Muhammad Nurdin¹, and Herry Nugraha²  
|     |                      | ¹Institut Teknologi Bandung, Indonesia  
|     |                      | ²PT. Indonesia Power, Indonesia |
| 8   | 170                  | Economic valuation of Efficient Pricing: Case study of Java Bali Power System  
|     |                      | Dzikri Firmansyah Hakam, Evy Haryadi, Harry Indrawan, and Arionmaro Asi Simaremare  
<p>|     |                      | PT. PLN (Persero), Indonesia |</p>
<table>
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<tr>
<th>No.</th>
<th>Paper Submission No.</th>
<th>Title &amp; Authors</th>
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</table>
_Eldi Firmansyah Nasution, Jakfar Shadiq, Heri Setyo Purnomo, and Joanna Francisca Socaningrum_  
_PT. PLN (Persero), Indonesia_ |
| 2   | 122                  | Study of FACTS Implementation to Balance Transmission Line Loading under Steady, Dynamic, and SSR Simulation. Study Case: Suralaya – Balaraja 500 kV  
_Fajar Ari Kristianto\(^1\), Iwa Garniwa\(^2\), Aristo Adi Kusuma\(^1\), and Musa Marbun\(^1\)_  
\(^1\)PT. PLN (Persero), Indonesia  
\(^2\)Universitas Indonesia, Indonesia |
| 3   | 148                  | Study of Increasing Surge Impedance Loading (SIL) and Voltage at DEPOK Substation by Changing TASIK-DEPOK 500 kV Transmission Line’s Configuration  
_Fajar Tri Wardana\(^1\) and Rudy Setiabudy\(^2\)_  
\(^1\)PT. PLN (Persero), Indonesia  
\(^2\)University of Indonesia, Indonesia |
| 4   | 165                  | Validation Simulation Model and Stability Analysis of Interconnecting Two Weak Subsystems  
_Joko Hartono\(^1\), Eko Aptono Triuwono\(^1\), Didik Fauzi Dakhlani\(^1\), Risky Rahmani\(^2\), Nanang Hariyanto\(^2\), and Muhammad Nurdin\(^2\)_  
\(^1\)PLN Research Institute, Indonesia  
\(^2\)Institut Teknologi Bandung, Indonesia |
| 5   | 106                  | Integrated Energy and Economic Model for Rooftop Photovoltaics on Distribution System  
_Ika Khoirun Nisa\(^1,2\) and Iwa Garniwa\(^1\)_  
\(^1\)Universitas Indonesia, Indonesia  
\(^2\)PT. PLN (Persero), Indonesia |
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| 6   | 168                  | Small Signal Stability Analysis as Impact of System Reconfiguration in Pacitan Sub-system  
*Muhammad Ridwan, Joko Hartono, Didik Fauzi Dakhlan, and Eko Aptono Tri Yuwono  
PLN Research Institute, Indonesia* |
| 7   | 169                  | System Modeling and Its Effect on State Estimation in Unbalanced Low Voltage Networks in the Presence of Measurement Errors  
*Kevin M. Banjar-Nahor¹,³, Florent Cadoux¹, Kalle Rauma², Nanang Hariyanto³, and Ngapuli Sinisuka³  
¹Univ. Grenoble Alpes, France  
²TU Dortmund University, Germany  
³Institut Teknologi Bandung, Indonesia* |
| 8   | 35                   | Modelling of Synchronous Generator for Transient Stability in Power System  
*Yurika, Suwarno, Gibson HM Sianpar, and Janson Naiborhu  
Institut Teknologi Bandung, Indonesia* |

**ORAL SESSION TS-4**  
*Renewable Energy*  
**Date & Time**: Wednesday, October 2nd, 2019, 14.00 – 16.00  
**Venue**: Baris Room  
**Chair**: Agus Purwadi (ITB – Indonesia)  
**Co-chair**: Ignatius Rendroyoko (PT. PLN (Persero) – Indonesia)

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*Bambang Anggoro, Setiyawan Edi Prasetyo, and Burhanuddin Halimi  
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  Naftalin Winanti¹, Giri Angga Setia¹, Nana Heryana², Handoko Rusiana¹, and Agus Purwadi²  
  ¹Universitas Jenderal Achmad Yani, Indonesia  
  ²Institut Teknologi Bandung, Indonesia |
| 4   | 99                   | Design of Solar Power Plant for Electrical Engineering Department Laboratory  
  
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  ²Prakarsa Jaringan Cerdas Indonesia, Indonesia  
  ³Dassault Systèmes, Thailand  
  ⁴ESDM, Indonesia |
| 6   | 139                  | Harvesting Solar Energy by Combining Thermal and Photovoltaic System in Fish Dryer  
  
  Elita Fidiya Nugrahani, Yunita Siti Mardhiyyah, and Ahmad Tavif  
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| 8   | 1                    | One-Hour-Ahead Solar Power Forecasting Using Artificial Neural Networks in Taiwan  
  
  Rois Ahmad Hanafî¹, Chih-Wen Liu², and Suwarno³  
  ¹PT. PLN (Persero), Indonesia  
  ²National Taiwan University, Taiwan  
  ³Institut Teknologi Bandung, Indonesia |
## ORAL SESSION TS-5: Insulation Materials and Diagnostics

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**ORAL SESSION TS-6:** Power System Automation  
**Date & Time:** Wednesday, October 2\textsuperscript{nd}, 2019, 16.15 – 18.15  
**Venue:** Agung Room-2  
**Chair:** Deny Hamdani (ITB – Indonesia)  
**Co-chair:** Dzikri Firmansyah Hakam (PT PLN Persero – Indonesia)

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| 3   | 98                   | IoT Application for On-line Monitoring of 1 kWp Photovoltaic System Based on NodeMCU ESP8266 and Android Application  
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| 8   | 113                  | Effect of Distributed Generation on Transformer Ageing in Industrial and Residential Area with High Penetrations of Electric Vehicles (Study Case in Jakarta, Indonesia)  
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¹PLN Research Institute, Indonesia  
²Delft University of Technology, Nederland |
| 2   | 10                  | Novel HVDC Spacers in GIS/GIL by Adaptively Controlling Surface Charges - Insulation Compounding Scheme  
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¹University of Bologna, Italy  
²Shandong Taikai High Voltage Switchgear Co., Ltd., China  
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| 3   | 174                 | Risk Assessment Model for GIS Operating under Tropical Conditions  
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| 8   | 136                  | Optimization of Transmission Line Design and Insulating Materials  
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**ORAL SESSION TS-8**: *Renewable Energy Integration*

**Date & Time**: Wednesday, October 2nd, 2019, 16.15 – 18.15

**Venue**: Baris Room

**Chair**: Arwindra Rizqiawan (ITB – Indonesia)

**Co-chair**: Musa Partahi Marbun (PT. PLN (Persero) – Indonesia)

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| 2   | 23                   | Interconnection Study of Photovoltaic – Battery Storage Hybrid Power Plant in A Coal Mine Microgrid  
*Dimas Jalaluddin Ahmad¹, Dadan Nurafiat², and Nanang Haryanto¹  
¹Institut Teknologi Bandung, Indonesia  
²PT. Tritama Mitra Lestari (TMLEnergy), Indonesia* |
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**ORAL SESSION TS-10** : *Power Transformer Diagnostics*

**Date & Time** : Thursday, October 3rd, 2019, 13.30 – 15.30
**Venue** : Agung Room-2
**Chair** : *Guan-Jun Zhang (Xi’an Jiaotong Univ. – China)*
**Co-chair** : *Umar Khayam (ITB – Indonesia)*

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*PT. PLN (Persero) UIT JBT, Indonesia* |
| 2   | 147                  | Analysis of The Effect of Ambient Temperature and Loading on Power Transformers Ageing (Study Case of 3rd Power Transformer in Cikupa Substation)  
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| 3   | 154                  | Diagnostic Magnetic Shunt Anomaly of Power Transformer 150/20 kV 60 MVA at Tambun Substation  
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*PT. PLN (Persero) UIT JBT, Indonesia* |
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<td>Muhammad Fuad Al Hamdani¹, Rahman Azis Prasojo², Suwarno Suwarno², and A. Abu-Siada³</td>
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<td>¹PT. PLN (Persero), Indonesia</td>
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<td>²Institut Teknologi Bandung, Indonesia</td>
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ORAL SESSION TS-11: *Power System Protection*

**Date & Time:** Thursday, October 3rd, 2019, 13.30 – 15.30

**Venue:** Agung Room-3

**Chair:** Evy Haryadi (PT. PLN (Persero) – Indonesia)

**Co-chair:** Kevin Marojahan Banjar-Nahor (ITB – Indonesia)

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| 2   | 129                  | The Impact of The Auto-reclose using Leader-Follower Control Scheme on Transmission Power System Stability Enhancement  
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                ²Universitas Ichsan Gorontalo, Indonesia  
                ³Universitas Hasanuddin, Indonesia |
| 3   | 69                   | Implementation of Over Current Relays with Non-Cascade Scheme on Medium Voltage Switchgear as Busbar Protection: Study Case in PT PLN (Persero) UIT JBB  
                *Hedi Purwanto, Hikmah Prasetia, and Idam Firdaus*  
                *PT. PLN (Persero) UIT JBB, Indonesia* |
| 4   | 52                   | Development of Fault Location for Distributed Parameter Transmission Lines of a Power System  
                *Duy C. Huynh¹, Thanh H. Truong¹, Anh V. Truong², and Matthew W. Dunnigan³*  
                ¹Ho Chi Minh City University of Technology, Vietnam  
                ²Ho Chi Minh City University of Technology and Education, Vietnam  
                ³Heriot-Watt University, United Kingdom |
| 5   | 9                    | The Challenge of Automatic Disturbance Analysis Methods: new method of collecting, automating, combining and processing disturbance data  
                *Reza Widya Hutama*  
                *PT. PLN (Persero), Indonesia* |
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| 6   | 64                   | Fault Locator Analysis With Differential Impedance Method  
     |                      | Alfi Yulianta  
     |                      | PT. PLN (Persero) UIT JBT, Indonesia |
| 7   | 93                   | Analysis on Fault Location of TCSC Lines with Travelling Wave Method: Korean Case  
     |                      | Chur Hee Lee¹ and Seung Wan Kim²  
     |                      | ¹KEPRI, Korea  
     |                      | ²Chungnam National University, Korea |
| 8   | 55                   | Case Studies of Magnetizing Inrush Current Effect on Differential & REF Transformer Protection  
     |                      | Muhammad Fadli Nasution, Fajli Mustafa, and Shaga Shaulgara  
     |                      | PT. PLN (Persero) UIT JBB, Indonesia |

**ORAL SESSION TS-12**: Power Electronics

- **Date & Time**: Thursday, October 3rd, 2019, 13.30 – 15.30
- **Venue**: Baris Room
- **Chair**: Pekik Argo Dahono (ITB – Indonesia)
- **Co-chair**: Waluyo (ITENAS – Indonesia)

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| 1   | 43                   | Active clamped two-switch forward converter with secondary side resonant ZCS  
     |                      | Chih-Chiang Hua and Cheng-Hao Hsiao  
     |                      | National Yunlin University of Science and Technology, Taiwan, R.O.C. |
| 2   | 171                  | Analysis and Control of Modified DC-DC Cuk Converter  
     |                      | Sofyan M. Ilman, Andriazis Dahono, Muhammad Aji, Bintang Antares, Arwindra Rizqiawan, and Pekik A. Dahono  
<pre><code> |                      | Institut Teknologi Bandung, Indonesia |
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| 3   | 53                  | An active clamped two switch flyback Zeta converter with reduced switch voltage stress | Chih-Chiang Hua and Chung-Yu Huang  
National Yunlin University of Science and Technology, Taiwan, R.O.C. |
| 4   | 145                 | dSPACE Improved Direct Torque Control of Induction Motor Using Fuzzy Logic Self-Tuning Proportional Integral Controller For Electric Vehicle Propulsion Chain | Chaymae Laoufi, Ahmed Abbou, and Mohammed Akherraz  
Mohammed V University Agdal, Morocco |
| 5   | 44                  | Interleaved Voltage-Double Boost PFC With Coupled Inductor | Chih-Chiang Hua, Li-Kai Chou, Chih-Wei Chuang, and Ching-Chun Chuang  
National Yunlin University of Science and Technology, Taiwan, R.O.C. |
| 6   | 26                  | A DC To DC Step Converter With IC LT 1615 | Cekmas Cekdin¹, Zainuddin Nawawi², and Muhammad Faizal²  
¹Muhammadiyah University, Indonesia  
²Sriwijaya University, Indonesia |
| 7   | 120                 | Analysis and Control of Cascade Multiphase DC-DC Boost Converters with Very Low Input Current Ripple | Bintang Antares, Faris H. Makarim, Sofyan M. Ilman, Arwindra Rizqiawan, and Pekik A. Dahono  
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| 8   | 126                 | Analysis and Control of Modified DC-DC Cuk Converter | Sofyan M. Ilman, Andriazis Dahono, Muhammad Aji, Bintang Antares, Arwindra Rizqiawan, and Pekik A. Dahono  
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| 1   | 173                 | Health Index Model for Gas-Insulated Switchgear Operating in Tropical Environment  
A.P. Purnomoadi\textsuperscript{1}, Gugun Bonar M.J.D\textsuperscript{1}, A. Rodrigo Mor\textsuperscript{2}, J.J. Smit\textsuperscript{2}, and B.S. Munir\textsuperscript{1}  
\textsuperscript{1}PLN Research Institute, Indonesia  
\textsuperscript{2}Delft University of Technology, Netherland |
| 2   | 48                  | Audiosonic Acoustic Detection of Air Corona Discharge based on Fast Fourier Transform  
Mochammad Wahyudi\textsuperscript{1}, Tumiran\textsuperscript{1}, I Made Yulistyga Negara\textsuperscript{2}, Noor Akhmad Setiawan\textsuperscript{1}, and Bambang Sugiyantoro\textsuperscript{1}  
\textsuperscript{1}Universitas Gadjah Mada, Indonesia  
\textsuperscript{2}Institut Teknologi Sepuluh Nopember, Indonesia |
| 3   | 144                 | Characteristic of PD Phase Patterns, PD Pulse Sequence Patterns and PD Frequency Spectrum in Air Insulation Measured by RC Detector  
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| 5   | 79                  | The Influence of Silicon Rubber Cover to the Ampacity and Sagging of Overheadline  
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\textsuperscript{2}Universitas Sriwijaya, Indonesia  
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| 7   | 39                   | Finite Element Simulation of a 126 MW Salient Pole Synchronous Generator with Rotor Eccentricity  
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\textsuperscript{1}PT. PLN (Persero), Indonesia  
\textsuperscript{2}Institut Teknologi Bandung, Indonesia  
\textsuperscript{3}Curtin University, Australia |
| 8   | 116                  | The Effect of Thermal Aging on Dielectric Properties and Tracking Erosion Test of Micro Bn Composites  
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\textsuperscript{1}Bandung Institute of Technology, Indonesia  
\textsuperscript{2}PT. PLN (Persero), Indonesia  
\textsuperscript{3}Chungbuk National University, Republic of Korea |

**ORAL SESSION TS-14** : *Transient Phenomena and Protection*

**Date & Time** : Thursday, October 3\textsuperscript{rd}, 2019, 15.45 – 17.45

**Venue** : Agung Room-2

**Chair** : Reynaldo Zoro (ITB – Indonesia)

**Co-chair** : Franco D’Alessandro (LPI – Australia)

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  *Reza Widya Hutama*  
  *PT. PLN (Persero), Indonesia* |
| 3   | 86                  | Lightning Protection System in 70 kV Transmission Line in Indonesia  
  
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| 5   | 153                 | Optimal Design of Grounding System Substation, Case Study : 275/150 kV Sigli Substation  
  
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| 6   | 166                 | Lightning Protection System Analysis on Palembang Light Rail Transit Station  
  
  *Farid Pambudi and Reynaldo Zoro*  
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| 7   | 138                 | Simulation of Filter and Load Influence on 1-Phase Inverter Against Voltage and Current Harmonic  
  
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| 1   | 56                   | Optimizing Under-voltage Load-shedding Using Genetic Algorithm in Microgrid  
Yuli Astriani¹, GM Shafiullah², and Farhad Shahnia²  
¹BPPT, Indonesia  
²Murdoch University, Australia |
| 2   | 95                   | Implementation of Backward-Forward Sweep Method on Load Model Variation of Distribution Systems  
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| 3   | 7                    | Non-dominated Sorting Genetic Algorithm III for Multi-objective Optimal Reactive Power Dispatch Problem in Electrical Power System  
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| 4   | 61                   | Novel Runner-Root Algorithm based Maximum Power Point Tracking Approach for Permanent-Magnet Synchronous Generator Direct-Driven Wind Energy Conversion Systems  
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¹Ho Chi Minh City University of Technology, Vietnam  
²Heriot-Watt University, United Kingdom |
| 5   | 100                  | The Optimization of SVC Placement in Sulselbar Transmission System Using Inertia Weight Particle Swarm Optimization  
Fauzia Haz¹, Giri Angga Setia¹, Handoko Rusiana Iskandar¹, Sri Mawar Said², and Yusran²  
¹University of Jenderal Achmad Yani, Indonesia  
²Universitas Hasanuddin, Indonesia |
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| 6   | 103                  | Optimal Capacitor Placement For IEEE 118 Bus System By Using Genetic Algorithm  
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| 7   | 152                  | A Literature Survey of Optimization Technique of Unit Commitment Implementation in Microgrid Electricity System With Renewable Energy Sources  
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| 8   | 167                  | Design of IoT Based Monitoring System for Miniature Smart Grid  
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**ORAL SESSION TS-16**  
Date & Time : Thursday, October 3rd, 2019, 15.45 – 17.45  
Venue : Baris Room  
Chair : R. Sarathi (IIT Madras – India)  
Co-chair : Arunachalam Natarajan (CSL Silicones – Canada)

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| 1   | 181                  | Generation of Nickel Oxide Nanoparticles by Wire Explosion Process and Its Interaction with Glucose  
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²Nagaoka University of Technology, Japan |
| 2   | 183                  | Combating of severe pollution problems on transmission lines without the need for composite insulators  
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*Schedules are subject to change without prior notice*