IEEE Indonesia Section Newsletter

"Electromagnetic Compatibility for Reliable Smart Grids"

- Dr.-Ing. Deny Hamdani

Monthly Newsletter

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We welcome all the readers for the 5th edition of our newsletter. This newsletter is from us to us and hopefully it is useful for all Indonesian IEEE members. We hope that the article can inspire you and the changes also the additions that are made in the newsletters will be liked by all of you.

Welcome!

ELECTROMAGNETIC COMPATIBILITY FOR RELIABLE SMART GRIDS

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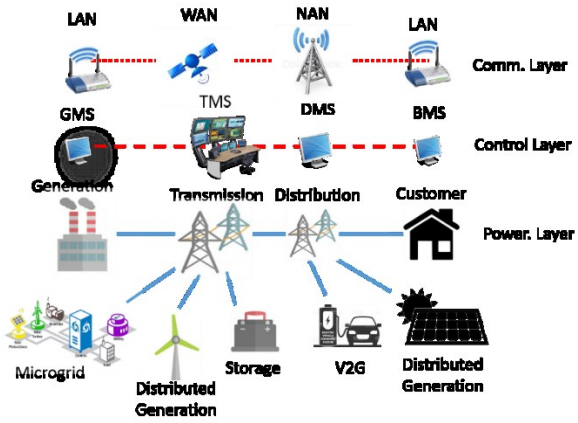
Nowadays, power systems is faced with incredible challenges to deliver the electric power to their customer in new paradigm. With the increasing demand of electrical power in the scarcity of the energy resources, it is mandatory for the utility to modernize their aged infrastructure by employing numerous advanced technology. Higher efficient power delivery and increasing penetration of distributed renewable generations force the utility to manage power systems in smarter way. The inclusion of numerous chunks of renewable power generation in customers has made the customer to take also the role as the power producer or prosumer. In the large scale, this condition breaks the power delivery paradigm from vertical to horizontal one. The deployment of information and communication technology (ICT) become enabling factor for bringing this new paradigm into existence with smarter grids.

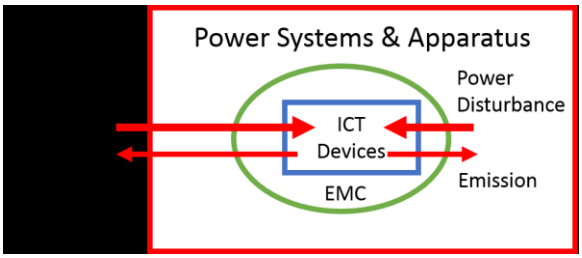
Historically, smart grids technology dated back to the early time as soon as electrical distribution grid existed. An old-fashioned meter device was deployed to measure and monitor power distributed and consumed. Now, this device in more advanced systems become one of the most deployed smart grid technologies in the world. With the increasing demand of observability and controllability of power systems, the huge number of advanced ICT technologies are massively embedded to all functions in power systems operation and control. However, this condition poses potential hazards for the power system reliability. The electronic devices as the heart of the ICT infrastructures, which reside at communication and control layers within Smart grid ecosystems, are prone to electromagnetic

disturbance generated from their harsh environment. Their electromagnetic susceptibility will be the determinant factor of the reliability aspect of smart grids.

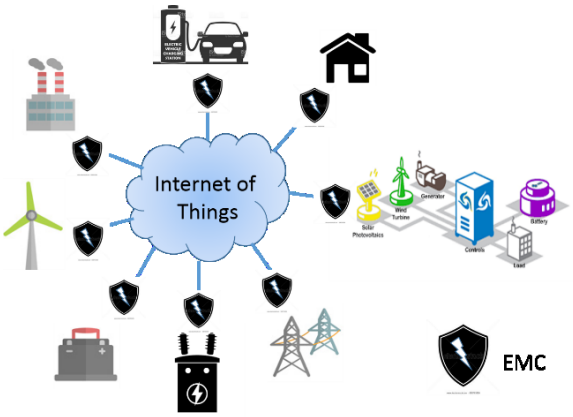


It is frequently reported that numerous undesired incidents occurred in power system elements, ranging from performance degradation, shutdown until large scale failure. In the substation, where ICT devices are massive deployed, the malfunction in busbar protection often happened during disconnector switching. In gas insulated substation, very fast transient overvoltage is a well-known problem that adversely induced the secondary circuits. Transient radiated electromagnetic emission is also recorded in the vicinity of busbar during switching in air-insulated substation. Such emission is also generated by FACTS equipment during the switching of thyristor valves. Electrostatic discharge at the connection between fiber optics and gate control units in a static compensator will lead to false triggering in the control systems. Some high-impact electromagnetic disturbance sources like nuclear blast, lightning strikes, geomagnetic storm or solar flare, shall also possibly shutdown power system elements.

To cope with those detrimental problems, electromagnetic compatibility (EMC) of the smart devices and systems will be of great interest. This scientific framework will prove the ability of them to properly function without significantly disturbing the surroundings. EMC measures start with the identification of disturbance sources, the characterization of the disturbance signal, the discovery of the disturbance path to the victims. Under such diagnostic framework, the proper EMC measure will be taken for each disturbance type. CISPR has considered some categories of EMC events, namely, conducted RF disturbance by mutual interaction of grid-connected devices, radiated RF interferences by wireless transmission and unintentional radiators, impulsive immunity event like electrostatic discharge, fast transients and high-level EMC disturbances, such as lightning surges, geomagnetic storms and even by intentional terrorist acts. In Smart grid the immunity aspects of EMC against either natural or power disturbances will be of the focuses.



However, things will be more complicated in smart grid environment along with increasing number of more sensitive ICT devices, especially with the implementation of IoT (Internet of Things) technology in the near future. In addition to making every single device compatible to the environment, EMC measure shall be able to characterize the electromagnetic interaction between the ICT and power infrastructure on the system level and at the same time and provide the comprehensive mitigation framework as well as harmonized technical standards in the near future.



IEEE R10 WEBSITE CONTEST WINNER

Reported by Evander Christy, Dinda Karlia Destiani
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IEEE Student Branch (SB) Telkom University get the first winner in IEEE R10 Website Contest held by IEEE R10 Student Activities Committee. IEEE Region 10 Website Contest is a website competition for all student branches under the sections of R10. The competition is arranged by IEEE Region 10. As the first winner, IEEE SB Telkom University shows the commitment on its mission statements to become top 20 IEEE SB in Asia Pacific.

The judgement consist of 6 criteria:

1. Content
   IEEE SB Telkom University makes a significant effort to ensure that the content is accurate, up-to-date, proper grammar, and free of copyright violations. The website should be focused more on IEEE in general. The IEEE SB Tel-U contact information, and officer organigram should be included on the website. The website should have current, past, and future branch activities.
2. Navigability
   All links should be up-to-date and no “under construction” links should be presented. Furthermore, keywords used for hyperlinks should be logical and tasteful.
3. Originality
   The website could be enhanced by adding interesting information about the focused program in IEEE SB Telkom University. IEEE SB Telkom University website should reflect the uniqueness of Telkom University and IEEE SB Telkom University itself.
4. Appearance
   The website should consider the use of good presentation elements, such as color, fonts, tables, diagram, chart, etc.
5. Portability
   IEEE SB Telkom University must attempt to make the web pages relatively portable across different browsers, including both text and graphical browsers, and different screen sizes.
6. Loading Time
   IEEE SB Telkom University ensures that the

website loads within a reasonable amount of time because of internet connectivity ranges.

IEEE SB Tel-U website team consist of 3 students, Dinda Karlia Destiani (Bachelor student of Computational Science, Telkom University), Evander Christy (Master student of Electrical and Telecommunication Engineering, Telkom University), and Alifanda Pinkan Ludica (Bachelor student of Computational Science, Telkom University). As a winner, IEEE Telkom University Student Branch proposed to submit our website as a delegation to the IEEE World Website Contest 2017. We always try to improve our skills and give contributions to the student branch, university, and absolutely for Indonesia.

E-COMMERCE TRAINING FOR WOMEN EMPOWERMENT IN DENPASAR CITY

Reported By Luh Ika Dhivtyasari Suryani, Linawati
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In collaboration with the Women's Empowerment, Child Protection, Population Control, and Family Planning of Denpasar City Government, IEEE Women in Engineering - Student Branch Udayana University held E-Commerce training to empower micro and small business women in Denpasar City. The theme of activity was Denpasar Women Empowerment through E-Commerce. The training lasted for two days which was held on 7-8 September 2017. By presenting three speakers in their field, this activity was able to reap the positive response from the trainees. The speakers who share their experiences in this event were Dr. DM Wiharta, Dr. IMO Widyantara, and I Ketut Kartika Tanjana.

In his presentation on the first day, Dr. Wiharta provided general understanding about the internet and e-commerce in Indonesia. In addition to explaining about the internet and e-commerce, he also explained about the ethics of social media usage in social interaction in cyberspace, be it in conducting sale and purchase transactions. Then at the same day, Dr. IMO Widyantara brought practical materials on the use of social media and e-commerce in marketing of the products owned by participants which have business background. The presentation in the first session by the two speakers was warmed welcomed by the participants, evident from the enthusiasm of the participants in following the directions of social media usage practice from the speakers.

On the second day, the presentation of materials on tips and tricks in buying and selling transactions through social media and e-commerce was delivered by the third speaker I Ketut Kartika Tanjana. Participants were again given additional insights into the use of social media and e-commerce in today's digital age to

redevelop their existing and newly pioneered businesses. All participants in two days training were assisted and accompany by Young Instructors which were from IEEE WIE – Udayana Student Branch. Through this training, the expectation of women especially in Denpasar City can take advantage of technological progress to assist daily effort so that empowerment of women in this digital era can be implemented well. Finally the Instructors can have very worth experiences too.

THE EXCITEMENT OF THE ICCEREC 2017 EVENT

School of Electrical Engineering - Telkom University in collaboration with IEEE Communications Society Indonesia Chapter has organized the 3rd International Conference On Control, Electronics, Renewable Energy, And Communications 2017 (ICCEREC 2017). ICCEREC provides an international forum for researchers, academicians, professionals, and students from various engineering fields and with cross-disciplinary interests in Control, Industrial Automation, Bio-Medical Electronics, Renewable Energy, and Machine-To-Machine Communications to interact and disseminate information on the latest developments.

The event was successfully held on 26-28 September 2017, in Yogyakarta – Indonesia. The first day started with an Opening Ceremony by speech from Mr. Sigit Yuwono, Phd as the Chair of ICCEREC 2017, continued with Keynote Session by expert speakers from respective fields. Keynote Speech 1 was done by Assoc Prof. Dr. Jiwa Abdullah from Universiti Tun Hussein Onn Malaysia with the theme of WSN/IOT Integration Towards Seamless Cyber-Physical Systems. After 15 minutes break, the session continued with Keynote Speech 2 by Prof. Dr. Zoran Bojkovic from University Of Belgrade Serbia who presented Current Technological Advances to Smart Grids.

The next session was Keynote Speech 3 by Dr. Eng. Takayuki Nozaki from Yamaguchi University about Introduction and Recent Results of Fountain Codes. All of them were surprisingly inspiring and opened our mind about the theme presented. After lunch break, the event continued with technical session and the day ended with an extravagant Gala Dinner event that showed traditional dance performance from Yogyakarta and there was also a Door prize session.

In the second day, Tutorial Session of interesting topics was held. The first one was from Prof. Dr. Zoran Bojkovic who brought up a

topic about Impact of Latest Communication Technologies on Smart Grid Applications. The second tutorial was by Assoc Prof. Dr. Jiwa Abdullah about MANET/WSN, Perspectives, Analysis, Education and Research Potentials. The second day ended with technical session.

One-day tour was held on the last day for both participants and committee, which visited Borobudur Temple and Malioboro. The participants were so excited learning about Indonesian culture and were amazed by the beauty of Borobudur Temple. The tour ended with photo session as a sign that ICCEREC 2017 has ended.

ICCEREC 2017 was very lively, thank you so much for everyone who made this event and hope the best to all of us. See you again in ICCEREC 2018.

BRAIN, BEAUTY, BEHAVIOUR: TALKSHOW

Gender issues has always been a high importance topic that receives worldwide attention. This topic symbolizes the way our world should function. Since it was established in 2016, Women of Engineering of IEEE Student Branch Universitas Indonesia has been trying to run work programs those are focus in raising awareness on women and gender issues.

On 28th of September 2017 at Auditorium Soeria Atmadja, Faculty of Economics and Business Universitas Indonesia, WIE of IEEE SBUI in collaboration with Schneider Electric successfully held talk show about gender issue with theme of “Brain, Beauty, Behaviour: Talk show”. The presence of this event is expected to inspire and opened women mind about gender issue problem.

This event was led by some great ladies. For the first is Livia Ellen from the Professionalism and WIE Division of IEEE SBUI 2017 as MC who opened this event, continued with greetings from Fatimah Sirin as Chairwoman of IEEE SBUI 2017 and Vhania Maulia as Schneider Electric Campus Ambassador, also from External Affairs and WIE Division of IEEE SBUI 2017. The talkshow was led by Yudhistira Oktaviandie (Mapres UI 2016) as moderator. The speakers of the talk show were Astri Ramayanti as Country IT Industry Director of Schneider Electric Indonesia and Astania Budianti as Talent Acquisition and Employer Branding Lead of Schneider Electric. The talk show concerned on discussing about the role of women, and the society’s perspective on women of career and how we should act about it.

The talk show was then continued with a question and answer session and closed with announcement of winners of the essay competition, which theme was “The Importance

of Educated Women in Changing The Society's Perspective on Gender Roles". Hopefully, this event gave enough inspiration especially to women to not limit themselves due to their gender.

For every woman, "Never doubt that you are valuable and powerful and deserving of every chance and opportunity in the world to pursue and achieve your own dreams." —Hillary Clinton.

DISTINGUISH LECTURE PROGRAM FROM INDONESIA TO INDONESIA

One of the IEEE Indonesia Section (IEEE IS) programs this year is Distinguish Lecture Program from Indonesia to Indonesia. This program means that the distinguish lectures are professors and Senior Member IEEE from Indonesia. This program is held to reach the vast territory of Indonesia and is aimed primarily to the regions in Indonesia as one of the efforts of equitable distribution of knowledge that can be done by IEEE IS for the Indonesian nation. For Campus / educational or research institutions in Indonesia, we welcome you to contact the distinguish lectures from the website: ieee.id/distinguish-lecture-program/.

The IEEE IS will cover the cost of transportation, but other expenses such as accommodation and local transportation are borne by the host as the speaker's invitees. For campus / educational institution or research in Indonesia, we welcome you to use this program. Hopefully this Program brings many benefits!

EDITOR

The 5th edition of the IEEE Indonesia Section 2017 newsletter includes activities which have been conducted in September 2017. The first article is a technical article about Electromagnetic Compatibility for Reliable Smart Grids. The second article is great news from SB Telkom university about winning the first prize in the IEEE R10 Website Contest, A big congratulations to SB Tel-U! We have articles and other information that are also interesting. Hope you enjoy this newsletter edition!

Happy reading!

Casi Setianingsih & Hugeng,
Editor - IEEE Indonesia Newsletter

Official Website

http://ieee.id

IEEE Indonesia Section

We are waiting for the participation of Chapters and Student Branch in Indonesia to share the information of completed and ongoing activities and the participation of Chapters in Indonesia to share the regarding technical articles. For members IEEE who want to share information and articles please email to :

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