

International Webinar FT UPNVJ "Future Energy: Harvesting, Distribution And Saving", 2020.

Sunday, 31 May 2020 12:36 WIB



HumasUPNVJ - In order to take advantage of the momentum of working and studying from home during the pandemic this year and in line with technological developments, webinars are a solution and one of the new options to make it easier for lecturers and students to disseminate the latest information. Likewise with the UPN Veterans Jakarta Faculty of Engineering, they took advantage of this situation to hold an " **International Webinar with the Topic " Future Energy: Harvesting, Distribution And Saving", 2020** ". This activity was attended by 410 participants who registered on *the Google Form link* provided by the committee. 314 participants came from UPNVJ and 96 other participants from outside UPNVJ. Based on the background, the participants consisted of practitioners, lecturers and students. This activity was carried out on Thursday, 28 May 2020 at 14:00-17:00 via a *zoom meeting application*, and also *live*

streaming via the Youtube Channel , Instagram and Facebook , with the full assistance of the Electrical Engineering Student Association (HMTE) and the Electrical Engineering Student Association . Mechanical Engineering Student (HMTM).

This webinar is moderated by Dr. Henry BH, Sitorus and divided into 2 sessions, namely presentation sessions and discussion sessions. The presentation session was filled by 3 speakers, namely:

- M. Arifudin Lukmana, ST,MT (Lecturer of Mechanical Engineering), Title: *Harvesting Energy in Electric Vehicles*)
- Achmad Zuchriadi P., ST, MT (Electrical Engineering Lecturer), Title: Saving Electrical Power with IoT Technology in the New Normal Era)
- Ir. Terklin Sinuligga (*HVDC Senior Bid Manager, General Electric, United Kingdom* (UK), Title: *HVDC VSC and Distribution of Renewable Energy*)

The first speaker, M. Arifudin Lukmana, ST, MT, Lecturer in Mechanical Engineering conveyed about " *Harvesting Energy in Electric Vehicles* ", in his presentation, Arifuddin said that " *Energy losses (Energy losses)* in cars, buses, taxis , trucks, military vehicles can be harvested through RSA (*Regenerative Shock Absorber*) and KERS (*Kinetic Energy Recovery*) technology. RSA technology utilizes the ups and downs of *the Shock Breaker* on the vehicle. The energy that is wasted on *the Shock Breaker* can be used to drive a *flying wheel* or generator to produce electrical power.

KERS technology utilizes the energy that is wasted during braking. Power is usually converted to heat energy by the frictional forces of the brake equipment. With KERS technology, the power generated from the vehicle's thrust is used to turn a generator to generate electricity. Electricity is stored in the battery to be used to increase power when needed to propel the vehicle. Obviously

Then continued with the second material presented by Achmad Zuchriadi P., ST, MT, Lecturer in Electrical Engineering with the material title "Electrical Power Saving with IoT Technology in *the New Normal* Era", he said that "Energy consumption in households increases during *WFH* . It is necessary to make efforts to save electricity usage. On the one hand there is still a lot of Indonesian coal, but coal causes high air pollution or pollution. For example, PLTU with coal power is a contributor to air pollution around 30% of pollution in Jakarta. In addition, coal has a high contribution to the Indonesian economy. However, it is necessary to save energy (*energy savings*) to reduce costs and also reduce the pollution that arises. said Ahmad

"The conventional way to save electricity is to replace energy-efficient electrical equipment or make it a habit to turn off electrical equipment that is not used. Currently savings can be made by using IoT Technology. Mastery of IoT includes mastery of: *Device, Connectivity* and *Platform* (application). IoT technology can monitor usage, provide power usage notifications, turn off and turn on equipment remotely via the Internet. he continued

The third presenter is *Senior Bid Manager HVDC, General Electric, United Kingdom* (UK) , Ir. Terklin Sinuligga who explained about " *HVDC VSC and Distribution of Renewable Energy* ". Terklin Sinuligga in his presentation explained that, "Indonesia has a very high potential for EBT but currently its utilization is still very low. Indonesia has a potential for new renewable energy (EBT) of 441.7 GW, while data until 2018 has only installed power of 8.20 GW. This installed potential is only 1.7% of the total potential that is owned, meaning that there is still approximately 98% potential that has not been utilized.

The distribution or delivery of power from generators to consumers has also been discussed. Delivery can be done using HVAC and HVDC, where both of these technologies have advantages and disadvantages. Power delivery with HVDC technology has many advantages over HVAC. This presentation also discusses in detail the working principles of the HVDC-VSC. Converter technology is an important tool in HVDC technology in NRE distribution. In this presentation, EBT sources are focused on two EBT sources, namely wind power plants (PLTB) and solar power plants (PLTS) (*solar cells*). In PLTS the minimum wind speed needed to be able to rotate the wind vane is 3 " 25 m/s. The potential for wind power in Indonesia is still very little utilized. Terklin Sinuligga explained.

In this session there is also a discussion related to *solar cells* . *Solar Panels* (*Photovoltage*) can be grouped into two types, namely: *un* - organic and organic types. Meanwhile, shipments from generators to consumers can be carried out in the following ways: *on grid connected system, off grid connected system and hybrid system* .

"The weakness of EBT with conventional generators is that the cost of constructing EBT generators is more expensive than conventional generators. However, speaker 3 said that the calculation of costs is not enough to only take into account development costs but must calculate *the Leverage cost of electricity* (LCoE), which takes into account development costs and operational costs over a certain range, for example the next 10 years. It is known that the operational costs of EBT generators require very low operational costs compared to conventional ones. Close it

Terklin Sinuligga also provided advice to the Government of Indonesia and PLN to be more focused and serious about building renewable energy power plants by providing guarantees, import relief, legal guarantees and incentives for investors investing in the EBT sector. In terms of potential, Indonesia has the

opportunity to sell EBT to neighboring countries.

The activity was followed by a question and answer session and discussion.



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