



How Smart Inverter Works in the Solar Photovoltaic (PV) System? (Speaker: Mr. Ng Siew Chun)

by Ir. Wong Jian Choon

Ir. Wong Jian Choon is a committee member of Electronic Engineering Technical Division (eETD).

The Electronic Engineering Technical Division (eETD) has successfully organized an evening physical technical talk on “How Smart Inverter Works in the Solar Photovoltaic (PV) System?” with speaker Mr Ng Siew Chun, Technical Sales Manager SEA from Goodwe Technologies Co. Ltd.

The technical talk speaker Mr Ng Siew Chun, who is a Malaysian and graduated in University of Applied Sciences Heilbronn, Germany. Mr Ng has his bachelor of engineering in Mechatronics and Microsystem, majoring in Control & Automation Engineering. He has more than 10 years working experience in solar inverter industry and he is the expert in the Solar Photovoltaic (PV) field. The technical talk was attended by 16 attendants & 1 moderator.



Introduction briefing by moderator

As history background introduction, Mr Ng has mentioned that the Renewable Energy (RE), especially PV Solar, is gaining a lot of attention and traction in the region due to driving factors like ESG and Paris Agreement. More and more companies in the region are adopting solar PV technologies to reduce their carbon footprint and to be ESG compliant. Being one of the main components of the Solar PV Systems, smart inverter plays a very important role in ensuring the performance, reliability, and safety of the whole system.

Mr Ng started his presentation by introducing the brief overview of the solar PV market. The information shared including the worldwide solar PV market share by different solar inverter brand, the type of inverters used in the market such as residential, commercial and utility. A brief overall how the solar PV system works also been explained to the participants. Various type of inverters have been introduced with their respective specification.



Presentation by the speaker

Then, the most technical part of this technical talk is the introduction to the solar PV inverter topology and inverter control system. Mr Ng has made a very comprehensive explanation on the function of the hardware/component in a solar inverter. Of course, the electronics circuit theory also been explained in very details about converting the solar Direct Current (DC) to the Alternating Current (AC), so that the energy produced can be channeled to the power grid or be used for the home appliances safely.

In the same time, Mr Ng has also introduced the solar inverter control system. The inverter is able to detect all the critical site conditions and react according to prevent any damages to the inverter, it also can control and adjust its performance to the optimum efficiency. With the current smart inverter in the market, the power synchronization ability is ready, the power factor adjustment system also available. The smart storage inverter also been shared, where the inverter is able to priority supply the energy to the consumers usage, then the exceeded energy instead of export to the power grid, it has been channeled to the battery for storage.

At last, the future trend of the solar inverter also been shared, such as smart home concept where solar inverter plays a very important role in energy distribution and storage for the household. Also, the concept of virtual power plant, with the increased number of electric vehicles (EV) in the market, the daytime power consumption will be a headache for the utility companies, where they have to increase the power generation capacity to cater the power demand. However, with the smart solar inverter in the market, it can help to resolve this issue, by exporting the energy generated in day time to the grid to lighten the utility generation burden.

After the technical talk, followed by the Question-and-Answer session, Mr Ng received some of questions from participants such as the solar inverter future technology improvement, the benefits of solar system and etc. It was indeed a fruitful and informative presentation by Mr Ng and at the end of the session, IEM has presented an appreciation certificate to Mr Ng and group photo was taken prior to closing of this technical talk.



Group photo



IEM Appreciation Certificate presented by Ir Chau to Mr Ng

Presentation Slides for the Technical Talk

How Smart Inverter Works In The Solar PV Systems

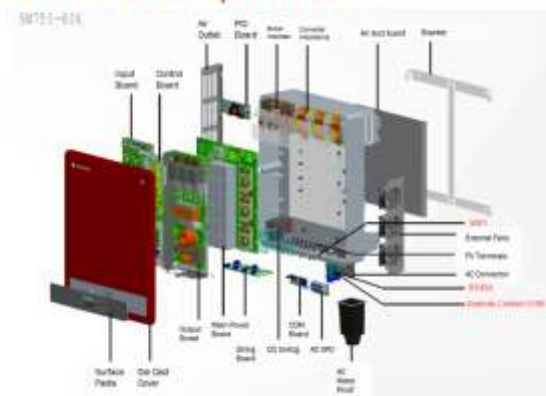
Hg Siew Chun
Country Sales Manager, GoodWe Malaysia
22nd July 2022

GOODWE
Smart Energy Solutions

Overview of PV Solar System

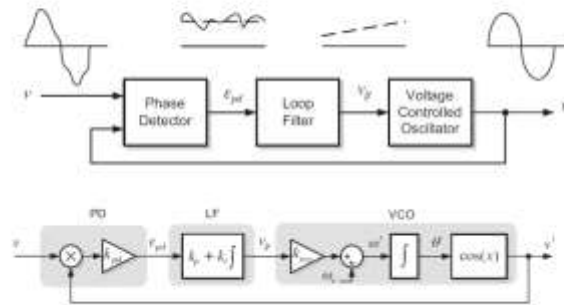


Hardware & Components

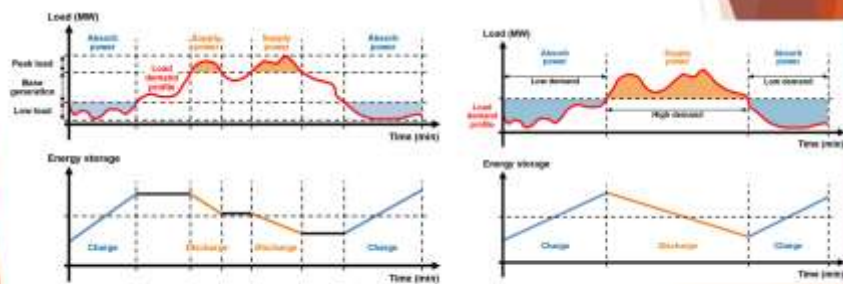


How Inverter Synchronise to Grid?

Phase-Locked-Loop (PLL)



Smart Storage Inverter Peak Load Shaving & Load Levelling / Shifting



Future: Virtual Power Plant

