

IEEE SmartGridComm 2018

Aalborg, Denmark

29-31 October 2018

The IEEE international conference on Communications, Control and Computing Technologies for Smart Grids (SmartGridComm) was held at Aalborg, Denmark from 29th to 31st October 2018. SmartGridComm provides a forum to discuss all aspects that are relevant to smart grid communication and information technologies. The scope of the 2018 edition of the conference was more towards general cyber-physical systems and Internet of Things, which are research topics that are inseparable from the future smart energy.

Many interesting talks were given during the days of the conference. For each day of the conference a keynote speech was given and the topics of the three keynote speeches were on reliable power electronics-based power systems – challenges and opportunities, smart grid: moving from automated billing to grid optimization and end user involvement, and blockchain in the energy market - recent development.

On day 01, I attended a tutorial session on 'reliable control using unreliable communication media'. It gave me the opportunity to revisit the fundamentals of reliability in communication with the application to smart grid domain. Then the presentation sessions started. I will mention a summary of few presentations during the rest of the conference which I found very interesting.

- Research work based on NS-3 simulations for optimisation of different neighbourhood area networks (NAN). They had considered a hybrid communication network for NAN smart grid communications, which means they assume that communication can be provided with either ethernet, WiMAX, WiFi etc.

- Performance evaluation of IEC 61850-90-5 (routable version) over latency optimized LTE by ABB Sweden. They have evaluated both latency and availability over a uncommercialized and optimised version of LTE.
- Cellular network coverage analysis for smart grids: They have considered the scenario of smart metering and analysed the base station attenuation with global SIMs.
- Using smart meter data for distribution grid operations other than for billing purposes and how to schedule the smart meter (SM) data access.

On day 02, I joined a workshop on 'Future distribution grids'. Several research groups presented their work; most of them were focused on aggregating smart meter data and making use of that.

- RemoteGRID project (Aalborg university) - This project uses SM data to make the LV grid more visible to the DSO. They collect SM data, then describe, preprocess and filter them. Then forecasting and correlating models are used to diagnose and detect any risks to the LV grid. A selective set of smart meters (critical nodes) for critical state estimation are chosen while most will be still used for billing. They have found that there is a certain no. of SMs that maximise the accuracy of the estimation while minimising the delay.
- Net2DG project (Horizon 2020): Topic was on 'fault diagnosis and operation efficiency based heterogeneous measurements'. They also focus on making use of the measurement data from smart meters and smart inverters (connecting storage or distributed generation devices.) in LV grids. Approach: Grid measurement data from various sources are delivered to the ICT Gateway to allow an estimation of the LV grid. On the basis of this data, the Grid Control Coordination can actuate the appropriate control action.
- Persistent wifi for home customer network access to DER: At the edge of the grid, there are an increasing number of connected devices supporting load control, as well as Distributed Energy Resources such as PV generation with smart inverters, and storage. This project uses persistent WiFi : a method for providing virtual WiFi network with

secure tunnelling; for customer premises. A separate network is created, which makes the connection independent of the customer Wi-Fi settings.

- Risk and fault analysis in ICT infrastructure: This speaker talked about the impact of ICT (when it does not work as expected) in the distributed grid operation such as, inaccessibility, excessive delay, network disconnection, congestion, poor network performance, false information injection, Cyber attacks (DDOS, Manipulation, Eavesdropping). He highlighted the fact that latency has a minor impact, but cyber attacks critically impact.

On the last day of the conference I attended for a Panel discussion on privacy issues with smart meters.

I am very grateful to COINS that gave me the financial support to attend this conference which is very useful in my PhD context.

