INTERVIEW

Smart grid progress: slow but steady

'Not predict, let's invent the future' says Reji Kumar Pillai, President, ISGF, as he talks about emerging technologies and their impact on the electric grid in India. Excerpts...

What according to you are the driving factors for smart grid technology in India? What is the current progress?

The increasing share of renewable energy on the grid has made it very important to have flexibility in demand and generation. The flexibility can be achieved through a combination of systems such as demand response and other demand management systems, grid integration of distributed generation resources including behind the meter resources at customer premises, electric vehicles and grid connected energy storage systems.

Digital technologies will play crucial role in integration of these different systems for the stable grid operations. Emerging technologies such as Artificial Intelligence, Machine Learning and Advanced Analytics, Blockchain, Augmented Reality and Drones can also be leveraged by utilities for various applications.

In the past one year, five smart grid pilot projects have been successfully completed with encouraging results – Mysore, Shimla, Panipat, Tripura and Gujarat. The latest generation of PLC technology trials in Panipat and Tripura are very successful and have made us reconsider the efficacy of PLC for smart grid applications in India.

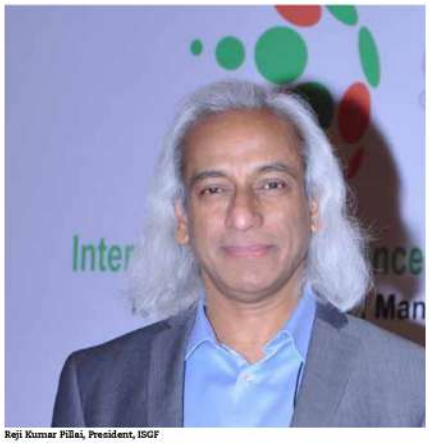
What have been the hurdles and challenges for smart grid systems in India?

The Government of India (GoI) had originally allotted 14 smart grid pilot projects in 2012. These projects took few years to commence owing to a variety of problems related to procurement, testing and certification of meters and related issues. Four of the 14 projects were cancelled, and of the remaining ten (as of January 2019) five projects have been completed, while the other five are in various stages of progress.

The aim of these pilot projects was to carry out technology trials for developing technology selection guidelines and building business cases for adapting these technologies in India. Since they could not be completed in the stipulated time, it is not relevant anymore as rollout of large projects has already started.

The lowest bidding route has shown good results for regular utility projects, but has proved to be a flawed approach for executing smart grid pilot projects. Another important point is the need for standard architecture and integration blue prints for smart grid projects with existing IT and automation systems in utilities. Most Utilities commissioned billing systems under the R-APDRP projects and integration of the smart meter data with those billing systems faced serious difficulties in almost all smart grid pilot projects.

Initially the pilot projects were funded with 50 percent grant from the Ministry of Power (MoP), now the grant component has been reduced to 30 percent for National Smart Grid Mission (NSGM) funded projects which is making it less attractive to Utilities. This has slowed down the progress of the projects under NSGM.



Reji Kumar Pillai, President, ISGF

What are the different smart technologies in play vis-à-vis the Govt's various energy related plans?

Apart from the smart grid pilot projects, several smart metering projects have been awarded in different states. The entry of Energy Efficiency Services Limited (EESL) in the smart metering and electric vehicles domains has been an important development this year.

Smart technologies are also being implemented in bits and pieces under the ongoing programs like IPDS, DDUGJY, UDAY and SAUBHAGYA. The 10MWh battery energy storage system (BESS) commissioned in February 2019 at Tata Power Delhi Distribution Limited (TPDDL) is the largest grid connected BESS in South Asia. Another notable development is happening in the EV arena, beginning with the release of EV policies and EV charging tariff in many States.

What is the potential for SG in the years to come?

Predicting the future can be rather risky, we would go for inventing the future! The grid in the next couple of decades will be very different than the present-day grids in most parts of the world. Clean energy from solar and wind which could be stored cheaply and transported as well will very much be a possibility.

Under SAUBHAGYA scheme about 25 million households were electrified in 17 months which is a world record. This would add load to the rural distribution network which needs to be fortified for uninterrupted and quality power, so medium voltage (MV) and low voltage (LV) network strengthening is the next big challenge which should be taken up on fast track.

In order to substantially increase renewable energy share, plans for 350 GW of solar generation by 2030 have been made. Getting rooftop PV systems have now also become more viable with the cost down to less than INR50,000 per kW. We expect a rooftop PV revolution in the coming years. The rollout of EVs and the rooftop PV units both connected to the low voltage grid will drastically change the picture of the grid in next 5-10 years.

What is the role of India Smart Grid Forum (ISGF)? What has been its focus and what are the future plans?

The main objectives of ISGF is to help the Indian power sector deploy smart grid technologies in an efficient, cost effective, innovative and scalable manner by bringing together all key stakeholders and enabling technologies. We have been actively involved in standards development and enabling regulations for grid modernization. Presently we are working on an comprehensive Energy Storage Roadmap for India in consultation with Central Electricity Authority (CEA) and Ministry of New and Renewable Energy (MNRE). India Energy Storage Alliance (IESA) is our partner in this task.

From the various activities, projects, whitepapers, technical reports, advisory services and training programs undertaken by ISGF in the recent past, the most important work was the study report 'Implementation Plan for Electrification of Public Transportation in Kolkata'. Globally appreciated and considered as a first of its kind, the recommendations of this study are being implemented by the State Government. ISGF is working closely with BIS for the finalization of standards for EV charging infrastructure in India.

We have also published a white paper on EV Charging Infrastructure Business Models for India in September 2018. ISGF has also prepared Smart Grid Roadmaps and EV Roadmaps for SAARC Countries on behalf of SAARC Energy Center. Based on the work ISGF pursued with Department of Telecom and the recommendations for free spectrum for machine to machine (M2M) communication, TRAI has allocated 7 MHz of license free spectrum for smart grid and smart city applications.

Our annual event India Smart Grid Week in 2018 attracted over 2000 participants from around 38 countries. We have conducted several workshops and training programs, and also organized the second edition of Distribution Utility Meet (DUM) in November 2018 in Mumbai which was hosted by Tata Power Company Limited. The objective of DUM is to bring all DISCOMs under one umbrella to discuss issues of common interest and also to learn from each other.

Another significant achievement is ISGF's MOU with Think Smartgrids, the smart grid association in France, which was signed during the visit of President Macron to India in March 2018.

As a result of our Smart Grid Workshops with European Commission, a smart grid demonstration project (IElectrix) under grant from Horizon 2020 Program has been allotted with one of the demonstration sites at Tata Power Delhi Distribution Limited. We are also drawing a very ambitious plan to interconnect the regional grids in Asia – the ASEAN Grid, the SAARC Grid and the GCC Grids.

We are expanding our activities to city gas distribution and city water distribution domains. The primary objective for this is to leverage the digital assets of electric utilities for water and gas distribution domains as well at marginal cost.

ISGF has signed MOUs with Energy Web Foundation (EWF) and Energy Blockchain Consortium (EBC), and will soon be launching an Indian chapter of EBC. We are in advanced stages of finalization on select blockchain pilots in India which will radically change the electricity markets in the country. ETN