



Technologies reshaping the electricity supply industry
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Smart Meter and Distribution Data Integration and Practices

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Abstract

Many utilities are implementing Advanced Metering Infrastructure (AMI) programs as a part of their grid modernization efforts. The AMI automatically collects interval smart meter data from customer locations and sends them to the utility. This results in a large amount of data, which can be analyzed for many different purposes. Combining with other measurements from distribution SCADA and grid sensors, the data offers utilities many opportunities to apply data analytics to potentially enhance their operational efficiency. For instance, smart meter data can be used for enhancing and estimating Voltage and Var Optimisation benefits, evaluating distribution line losses, identifying and quantifying energy thefts, and enabling improved load forecast, outage management, and distribution system analysis. There are also data analytics which specifically address the distribution topology and connectivity problems, such as phase identification, transformer identification and secondary modelling. Those data analytics developed by utilities in recent years are mainly categorised in grid analytics, customer analytics and asset analytics, which have already brought great benefits for power utilities. This presentation will give an overview of the current status and practices of development and application of data analytics in power utilities with the emphasis the combination of smart metering data and distribution system data from legacy distribution system monitoring devices. Some current works on smart meter data and distribution data integration undergoing in State Grid of China are briefed and presented as well.