



The aim of this chapter is to give an overview of the international standards IEC 61850 that deals with the communication networks and systems in substations. It should be pointed out that it is not intended to give a rigor treatment of this subject but to highlight its relevance to the development of the Smart Grid concept and to discuss its



has developed to become the central foundation for the automation and management of decentralised renewables-based electric grids. From its appearance as a standard for substation automation over twenty years ago, IEC 61850 has evolved as an indispensable underpinning to the development of electricity grids to meet the digitalisation



In this study, a systematic review of the current state-of-the-art of IoE and IEC 61850 has been presented, and it has identified the research gaps and opportunities for future development. The discussion unfolds by illuminating the evolution of smart grids and IoE, shedding light on the benefits and challenges inherent in employing IEC 61850

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Based on our survey and experience in villages in DR Congo (DRC), it is difficult to envisage in the next ten years a smart grid demonstration in which energy and telecommunication networks between neighboring countries are interconnected and interoperable for the sale of energy.



was launched in 2003 as a standard for digital substations and it is widely used in such applications. In principle, however, the Smart Grid is just a regionally distributed system of electrical substations, so IEC 61850 is also very relevant to the Smart Grid and, in fact, the IEC has designated it as one of the core smart grid



This paper discusses use of IEC 61850 communication standard not only to develop cost effective and efficacious substation automation systems but also to realize various goals of smart grid applications and objectives.

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Making the smart grid real, a case study. IEC 61850: multivendor substation with station and process bus. Integrated solution for the smartgrid. Advanced sensors for the smartgrid: how to deal with existing switchgear in secondary substations. Quasi-synchronous noise interference cancellation techniques applied in low voltage plc.



Three of the main standards that are especially needed for smart grid and protection automation are the IEC 61850 series, the IEC 61970 and the IEC 61968 series (Andren et al., 2013, Buchholz et al., 2010). A closer look at these three standards is given in the following chapters to show the basic concepts and the different approaches that they

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Virtualized model and data objects of IEC 61850 as well as its flexibility to cooperate with other important standards (e.g. 61131-3) made it one of the core technology standards in smart grids to guarantee their sustainability.