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*Working Group on
Smart Secondary Substations*

**Technology Development
and Distribution System
Benefits
CIRED's point of view**

June, 2018

Summary

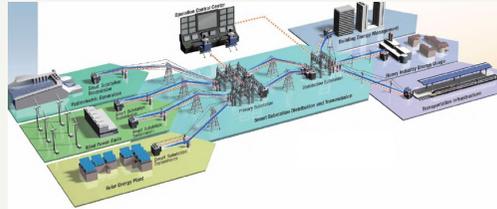
The increasing amount of decentralized generation and the always more strictness of national grid legislation in terms of quality of service, oblige somehow the improvement of secondary substations.

To achieve such improvement, it is necessary to explore existing functionalities of the components currently used by utilities and, consequently, to foresight new substation models with reliable power components, high performance protection schemes, efficient flow monitoring systems and trusty communication infrastructures.

In such a way, the overall control of distribution network could be optimized, in order to manage energy flows and voltage profiles according to load and DER needs; ensure fast reconfiguration after a failure; identify and pursue efficiency opportunities.

Report Elaboration

In a first place, the effort put in this document consists in describing the state of the art of secondary substations, following a structural analysis based on the studies and experiences of all the members of the working group. The structure that has been taken into consideration is composed by five different topics: MV components, LV components, MV/LV transformers, remote control systems and devices, monitoring and protection system and devices.



Secondly, future improvements in terms of reliability, quality of supply, energy efficiency integration from renewable energies and reduction of costs have been considered.

Structure of the final report

- The structure of the report considers both “State of the Art” and “Future Tendencies”. Each of this macro topic contains five different sub-subjects:
- MV components
- LV components
- MV/LV transformers
- Remote control systems and devices
- Monitoring and protection system and devices

Future tendencies of the above mentioned subjects contains a deep dive of network management and control monitoring, fault management and network self-healing, load and energy management.

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