



HIGH VOLTAGE SMART GRIDS

Summary

How Smart Grid technologies will change the structure, operation and planning of the High Voltage (HV) grids:

- Mitigation of fault levels
- Improved supply reliability
- Reduced investments

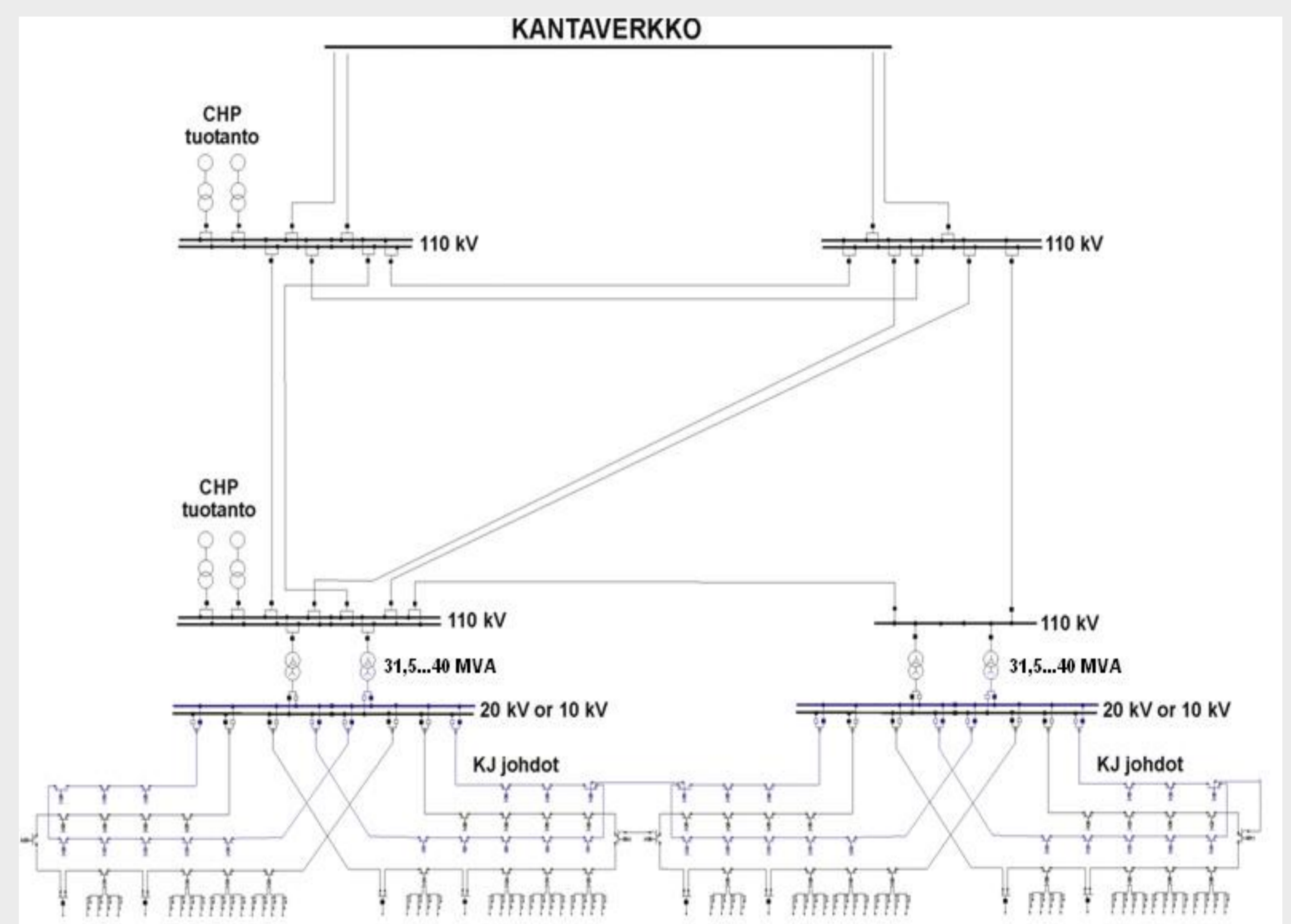
Background

The effects of the following technologies are assessed:

- Demand Response (DR) & Distributed Energy Resources (DER) in mitigating the HV grid reserve requirements
- Scenarios of local generation and its impact on HV grids
- Modern solutions for fault current limitation (FCL) and load flow management
- High voltage power electronics

Solution description

- City-type HV subtransmission grid as a case study
- Optimal division of reserve capacity between voltage levels
- Expected results: possible simplification in HV grids due to DR, DER and FCL capacities



Collaboration and continuation

Topologies of overhead versus cable networks in HV level. True costs of outages and sags in urban areas discovered ⇔ target levels for reliability and corresponding grid solutions

More Information

Matti Lehtonen, Aalto University (matti.lehtonen@aalto.fi)
Bruno Sousa, Aalto University (bruno.sousa@aalto.fi)

