



ENTSO-E NC HVDC Connections

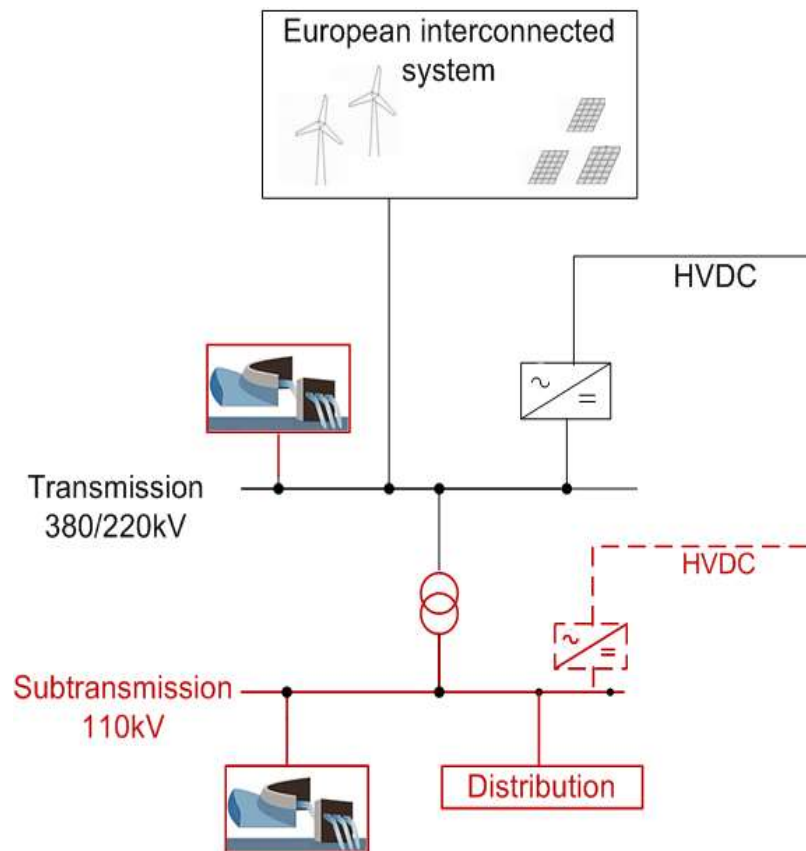
1st User Group Meeting, Brussels
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Organisation

Swisselectric: Association of the largest electricity utilities in Switzerland

- Shareholders of the Swiss Transmission System Operator (Swissgrid) - 380/220kV
- Network Operators of the Swiss Subtransmission and Distribution System - 150/110/50/16kV
- Long experience in Transmission and Distribution Systems and in power plant operation
- Generation: more than 80% of Swiss power production – Pumped-storage projects (+3GW until 2020)
- Involved in the development of national and international codes and standards – consultation processes
- Support of Swissgrid through engineering and studies

Impact of HVDC on the Swiss electricity sector



Ensure the overall **system security**

- Harmonised operation of the systems (grid and power plants)
- Quality and security of supply of the subtransmission system
- Security of grid connection of power plants
- Market access for the **pumped-storage schemes** – balancing of the volatile generation of RES in the European system

Contribution of Swisselectric

Expertise and experience of Swisselectric members

- **Swisselectric Research**
- **Technical support** to Swissgrid – long experience in building and service
- **Power system planning and development:** consulting services to Swissgrid - long experience in planning and developing of the Transmission, Subtransmission and Distribution Systems
- **Merchant lines:** Planning and studies
- **HVDC Lines:** Involvement in grid connection studies
- Excellent international relations and cooperations with neighboring Network Operators
- Participation in **CIGRE Working Groups**

Involvement in national code development processes

- Active contribution to national consultation and approval processes representing the Swiss electricity sector
- Proposals to adapt national codes and standards

Evaluation of the economic impact of HVDC Code on:

- 110-kV-Subtransmission System
- Power plants

Benefits for the Swiss electricity sector

HVDC projects are of high priority for Swisselectric members

- Important geographical position of Switzerland - enabling transits
- Congestion reduction
- Access of Swiss pumped-storage schemes to the European interconnected system – enhancement of security of supply
- Merchant lines must be based on HVDC schemes in Switzerland

European standards

- Considering of Swiss system needs
- Harmonisation of Swiss standards with the European system
- No independent, special solutions for Switzerland

Standards are necessary to develop new HVDC schemes and to expand/ adapt existing ones accordingly

- Harmonisation of the systems
- Enhanced market access for Swiss power plants
- Contribution to the security of supply for the Transmission and Subtransmission System