



Technologies for future electrical energy transmission grids

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Important components of electric power grid



Important components of electric power grid

Overhead Power Lines



[swissgrid.ch]

Solid Insulated Cables



[nkt.com]

Gas Insulated Cables



[electrical-engineering-portal.com]
[forwind.de]

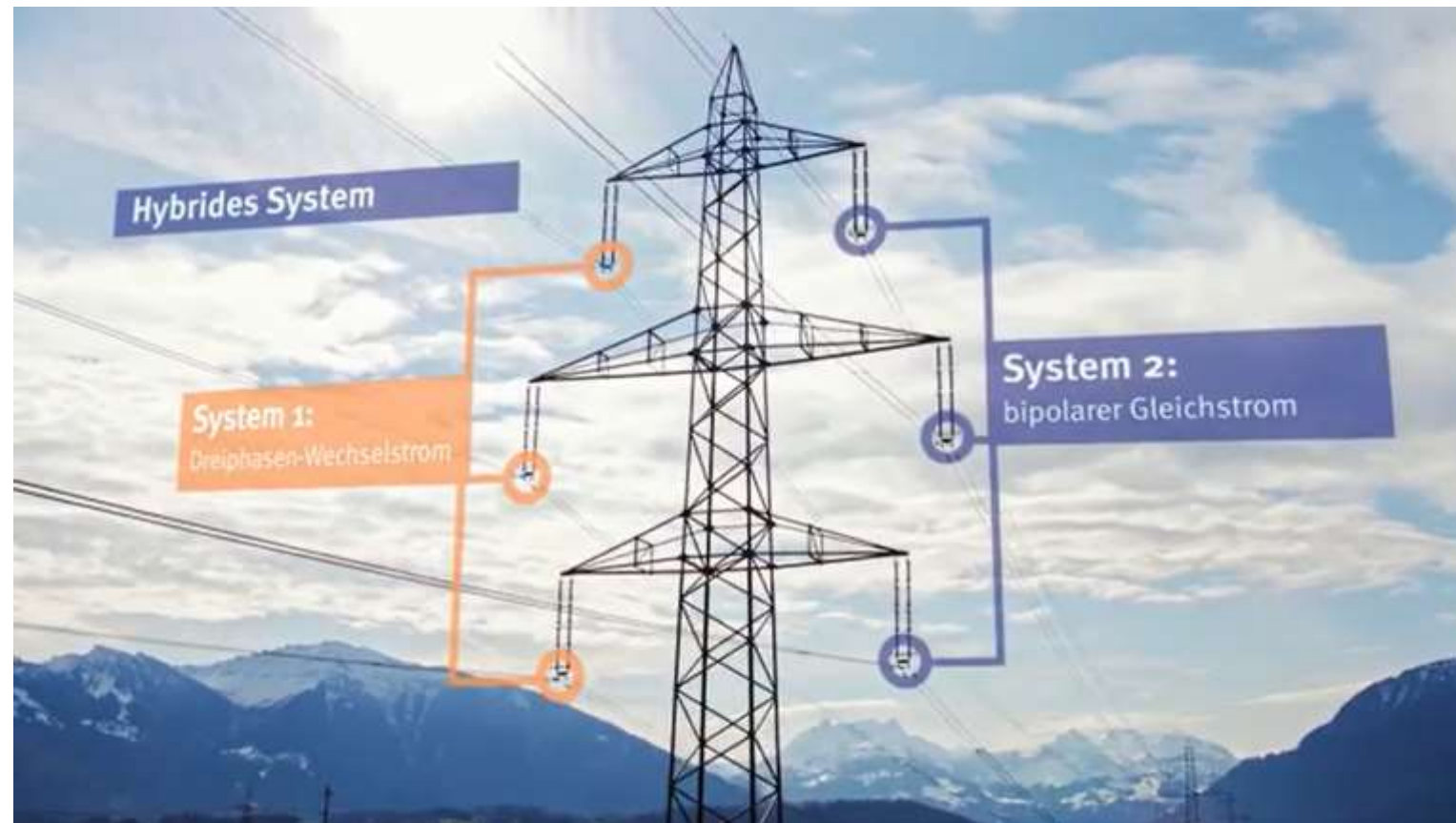
Main Challenges

- Technological
 - grid renewal and extension with
 - environmentally friendly components

- Societal
 - objection against new infrastructure projects

Solutions – new technologies

- Hybrid HVAC/HVDC overhead power lines



Solutions – new technologies

- Hybrid HVAC/HVDC overhead power lines
- Long-distance underground HVDC cables
- Recyclable cable insulation material

SüdLink



[haz.de]

PP Insulation



[hvcs.eu]

Solutions – new technologies

- Hybrid HVAC/HVDC overhead power lines
- Long-distance underground HVDC cables
- Recyclable cable insulation material
- **Gas Insulated Cables**



[hivoduct.com]

Solutions – new technologies

- Hybrid HVAC/HVDC overhead power lines
- Long-distance underground HVDC cables
- Recyclable cable insulation material
- Gas Insulated Cables
- SF₆ replacement gases



[High-Voltage Laboratory ETHZ]

Conclusion

- New solutions are being developed and partly ready.
- Public needs to accept that energy delivery is not «wireless»
- Political consent on balance between cost / visual impact / (availability?)
- Historical timescales on technology change in power industry need to be shortened.

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