Integration in the Electricity Network

Overview of Electric Power Systems

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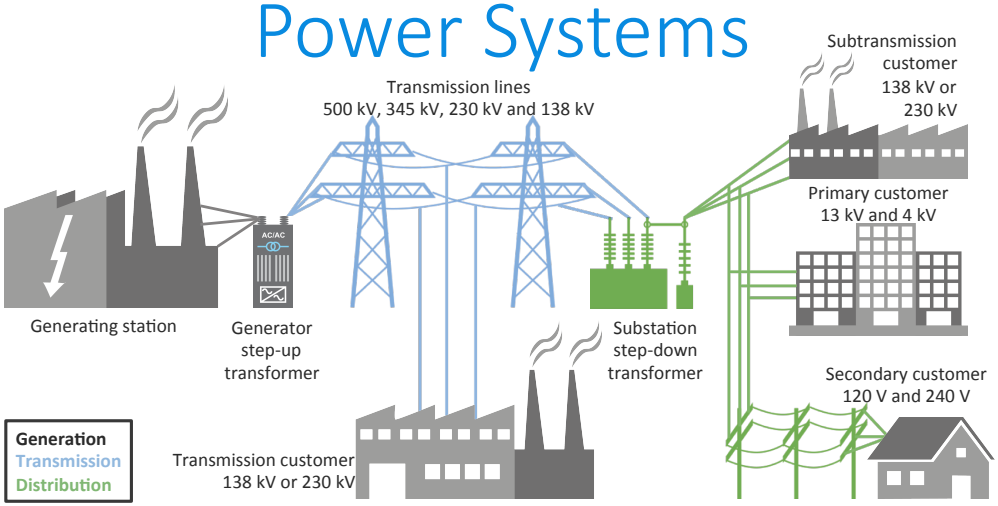
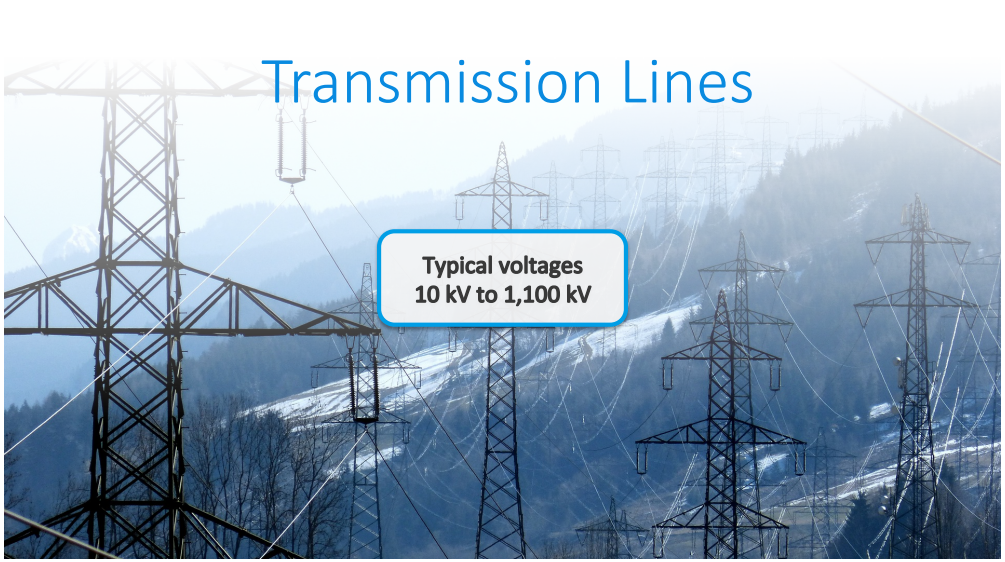
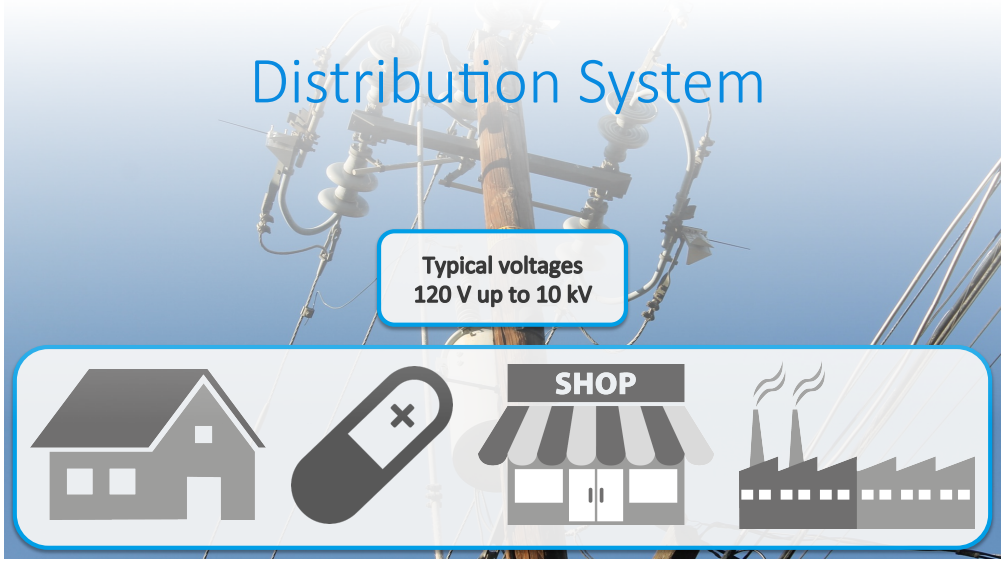
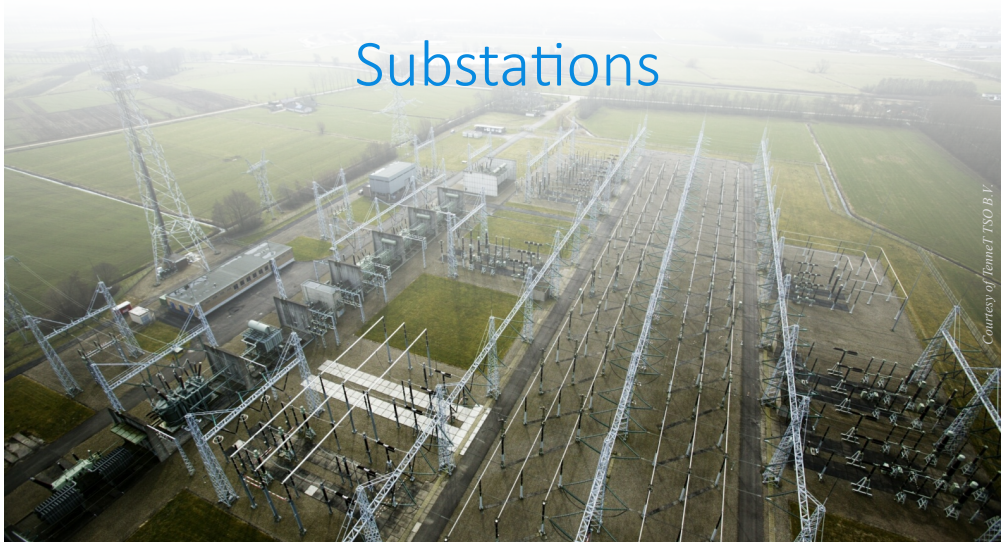
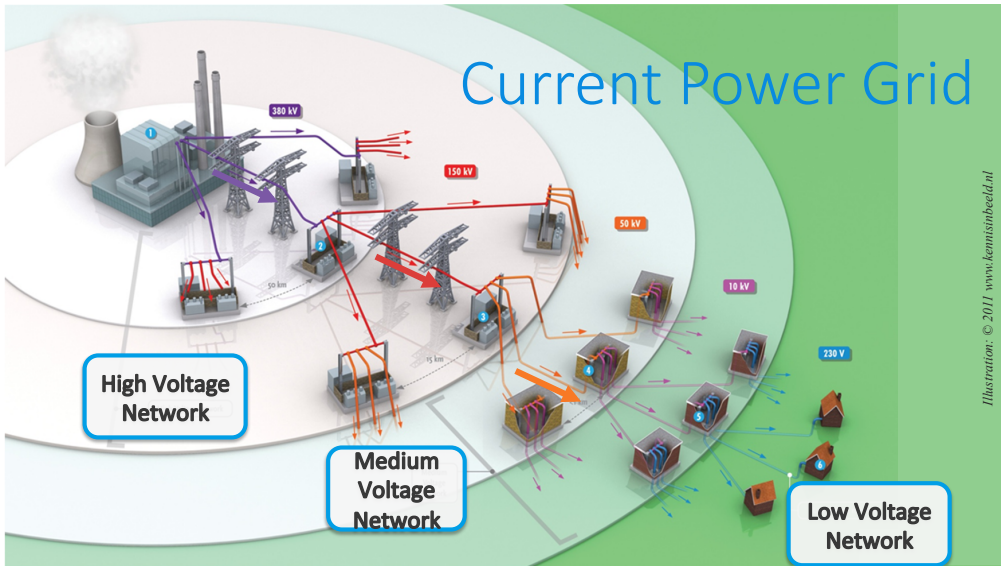
Power Systems




Transmission Lines
Typical voltages
10 kV to 1,100 kV

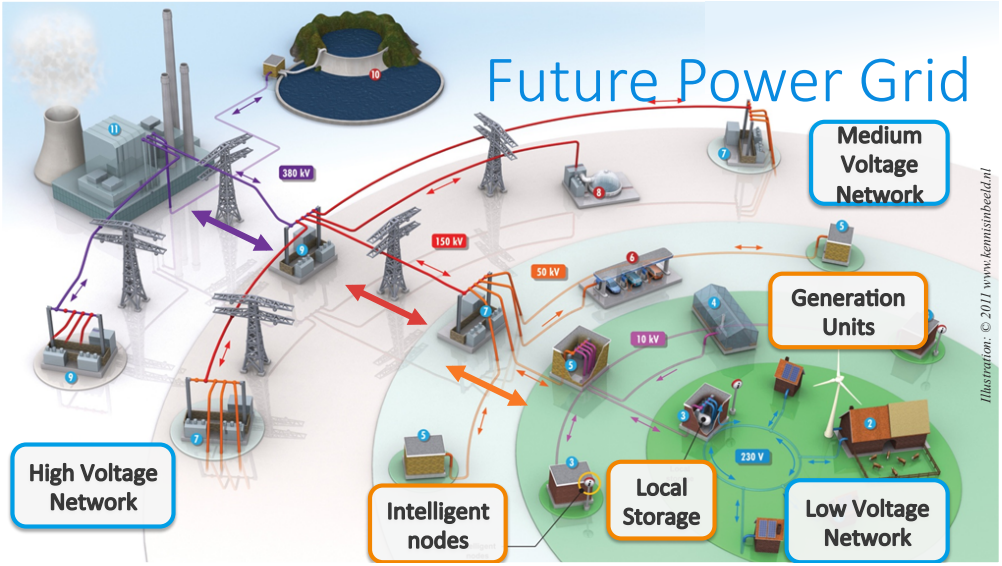

Distribution System
Typical voltages
120 V up to 10 kV
SHOP





Traditional Power Systems

- Generation and consumption at different places
- Controllable
- Transformers
- Alternating current



Smart Grid

A smart grid is an electricity network that can *intelligently* integrate the actions of all users connected to it – generators, consumers and those that assume both roles – in order to efficiently deliver sustainable, economic and secure electricity supplies

Future Power Systems

- Uncontrollable
- Use of direct current
- Relatively low power generation
- Bidirectional power flow
- Storage is very important
- Smart grids concepts will be introduced