

Integration in the Electricity Network

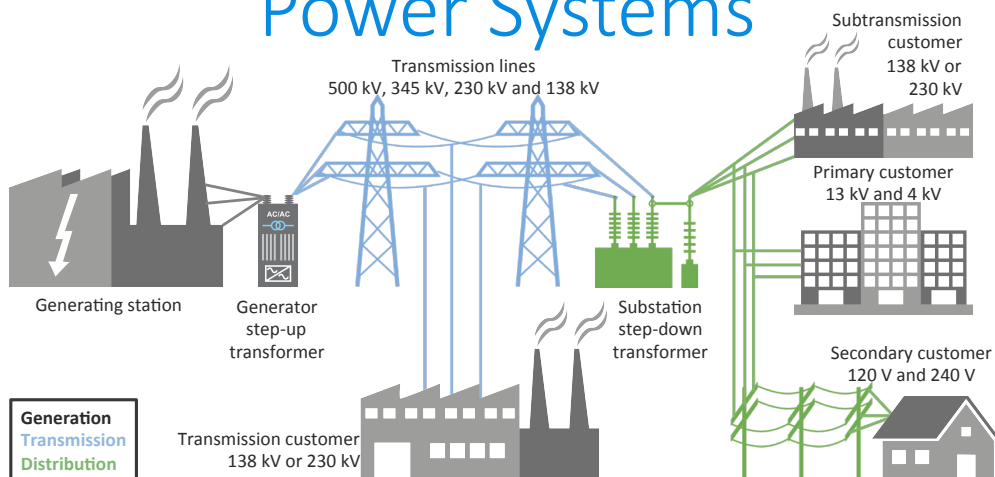
Overview of Electric Power Systems



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Power Systems





Transmission Lines

Typical voltages
10 kV to 1,100 kV

A photograph of a landscape with several high-voltage transmission towers and power lines stretching across a valley. The towers are made of metal and are spaced out along the lines. The background shows a hazy, mountainous landscape.

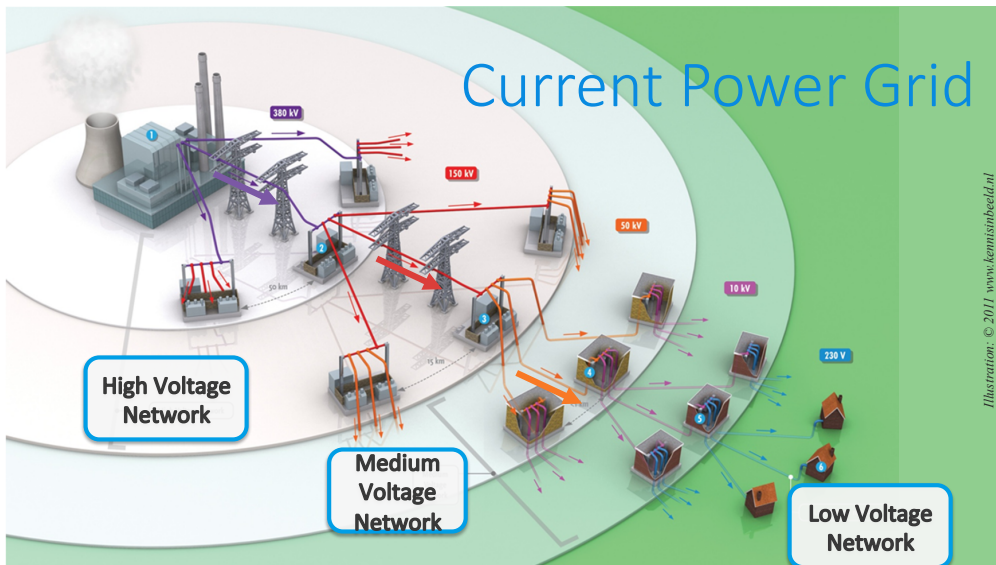
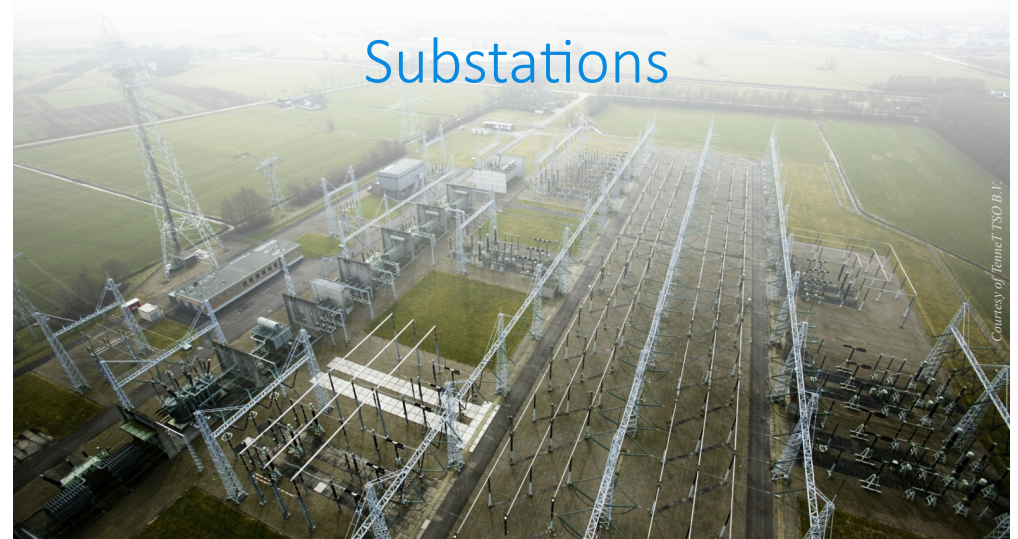
Distribution System

Typical voltages
120 V up to 10 kV

A photograph of a utility pole with power lines and various electrical components. The pole is made of wood and has several cross-arms with insulators and wires. The background is a clear blue sky.

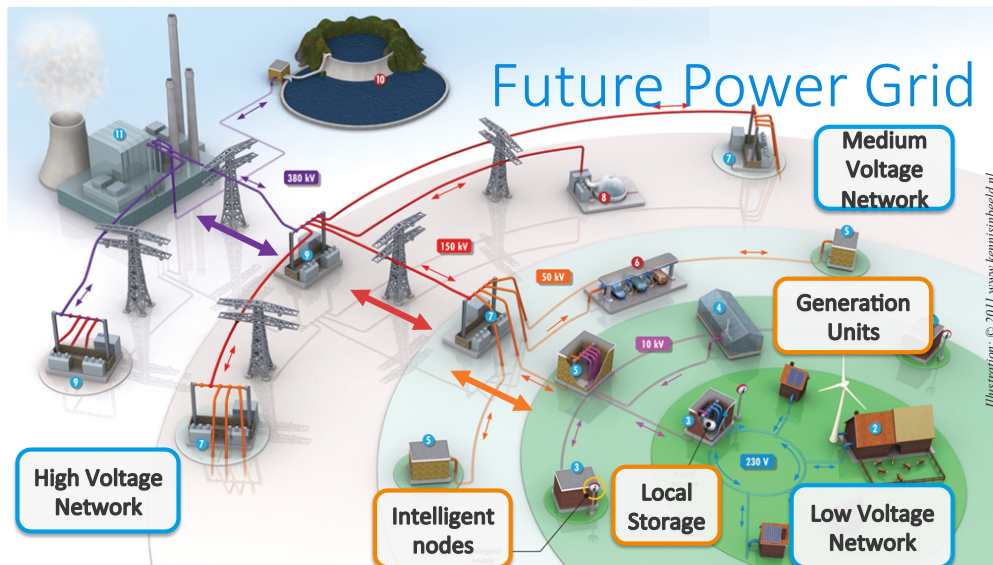
SHOP

A row of four icons: a house, a medical cross, a shop with a striped awning, and a factory with smokestacks.



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

Thanks for your attention!

