Internet of energy – the new efficiency

Cedrik Neike, Member of the Managing Board, Siemens AG
Why do we need it?
Highest Temperatures in Europe 2018

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- **Cedrik Neike, Member of the Managing Board Siemens AG**

**Temperatures (°C):**
- 45.2, **Abrantes** POR
- 44.7, **Badajoz** ESP
- 43.3, **Shannon** IRL
- 42.7, **Patrekstjörður** IS
- 42.2, **Lille** FR
- 42.0, **Arcen** NL
- 41.4, **Bernburg** GER
- 40.7, **Rez** CZ
- 39.9, **Langenlebarn** AT
- 38.8, **Athens** GR
- 37.6, **Sitten** CH
- 36.1, **Lille** FR
- 35.9, **Lille** FR
- 35.2, **Badajoz** ESP
- 34.6, **Uppsala** SWE
- 33.3, **Pasvik** NOR
- 33.3, **Patrekstjörður** IS
- 33.2, **Shannon** IRL
- 33.0, **Motherwell** SCO
- 32.0, **Badajoz** ESP
- 31.7, **Faversham** EN
- 31.7, **Pasvik** NOR
- 31.0, **Bauska** LET
- 30.9, **Keila** EST
- 30.5, **Utsjoki** FIN
- 30.0, **Uppsala** SWE
- 29.4, **Rez** CZ
- 29.0, **Bernburg** GER
- 28.8, **Athens** GR
- 28.2, **Arcen** NL
- 27.6, **Sitten** CH
- 27.0, **Lille** FR
- 27.0, **Faversham** EN
- 26.7, **Pasvik** NOR
- 26.7, **Bauska** LET
1.5 °C
The need for electric power worldwide is rising immensely and quickly ...

Sources: UN Projections 2016, Global insight, IHS Autonomy (July 2018), rounded figures
The energy world is changing fundamentally

Decarbonization
- Renewables $\rightarrow$ Fluctuating infeed
- e-Mobility
- Storage

Decentralization
- Distributed generation
- Prosumerization

Digitalization
- Connectivity esp. grid edge
- Market platforms
- End-to-end cyber security

Generation, Transmission, Industrial and Commercial, Infrastructure, Distribution, Residential
Energy transition works

2018

24% Renewables

2040

40% Renewables

Fossil
There’s a huge potential for further electrification

Final energy consumption EU28 in 2016

Source: eurostat; 1 In thousands

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Share of renewables ~30%

Others (heating) 45%
Power 22%
Transport 33%

12,882 TWh
5,81 TWh
2,81 TWh
4,31 TWh

E-Mobility, E-Highways

Electrical heating/cooling, heat pumps etc.
40% … of all electricity is being consumed by buildings globally. More than 30% of which is wasted!
New businesses: When grids and buildings meet

E-Mobility  DES  Storage  Data Center
The new efficiency: Example Aspern
Vienna 2030

Electric bus fleet
With automated high-power charging stations

Driverless metros
Increase transport capacities and energy efficiency significantly

Energy trading/Blockchain
100% sustainable: PV on all roofs and more offshore wind power

Building automation
80% of the buildings are fully automated; annual savings potential of € 1.2 billion for heat and electricity

Smart grids
Optimize quality and efficiency in all districts of Vienna

Decentral energy generation
Supports Vienna’s energy plan to reduce CO2 emissions by 36 percent by 2030

Intermodal traffic management
Full transparency about traffic flows and infrastructure utilization reduces emissions

1 Basis 2016