Linz, Austria

World's largest H2 pilot plant

Hydrogen production using electricity from renewables and water

Joint collaboration of Siemens, VERBUND, voestalpine, Austrian Power Grid, K1-MET and ECN

Customer value:

- Planned capacity: **6 MW capacity**
- **1,200 cubic meters** of H2 per hour
- Production start of **green hydrogen in 2019**
- **Start up time** from cold stand-by **< 10 sec**

Buildings are becoming an active part of the energy system

Vienna, Austria

Smart City Living Lab Aspern

Holistic analysis and optimization of the interplay between smart user/ building/ grid in the new Vienna district, Aspern

Joint collaboration of Siemens with Wien Energie, Wiener Netze, Wirtschaftsagentur Wien and Wien3420

Customer value – project objectives:

- **Reliability of supply** through system integration and intelligent control of renewable and low voltage grid
- **Energy savings** with intelligent control of distribution networks and buildings

Digital buildings in practice – Sello Shopping Center, Finland

Connection of 1,500 data points for error detection and diagnostics.

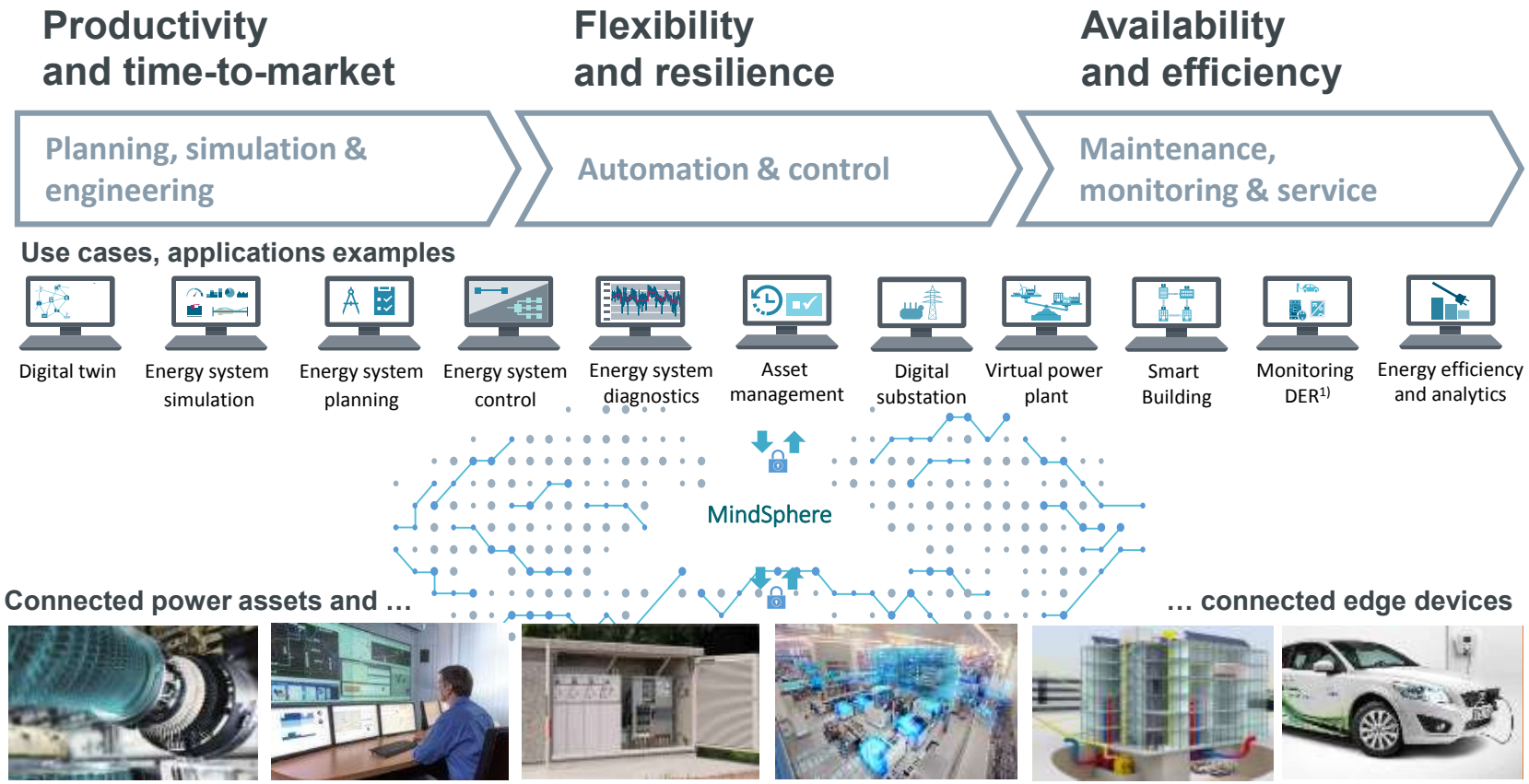
Cloud-based transparency and reports with dedicated operations manager.

State-of-the-art electrical engineering with e.g., energy storage integration, building automation and micro grid controller.

Benefits

- 50% reduction in district heating
- €118,000 per year energy cost savings
- 281 fewer tons of CO_2/a in emissions

Digitalization - The energy system will be an element of an economy-wide IoT infrastructure



Key areas to step up

Enhanced electrification

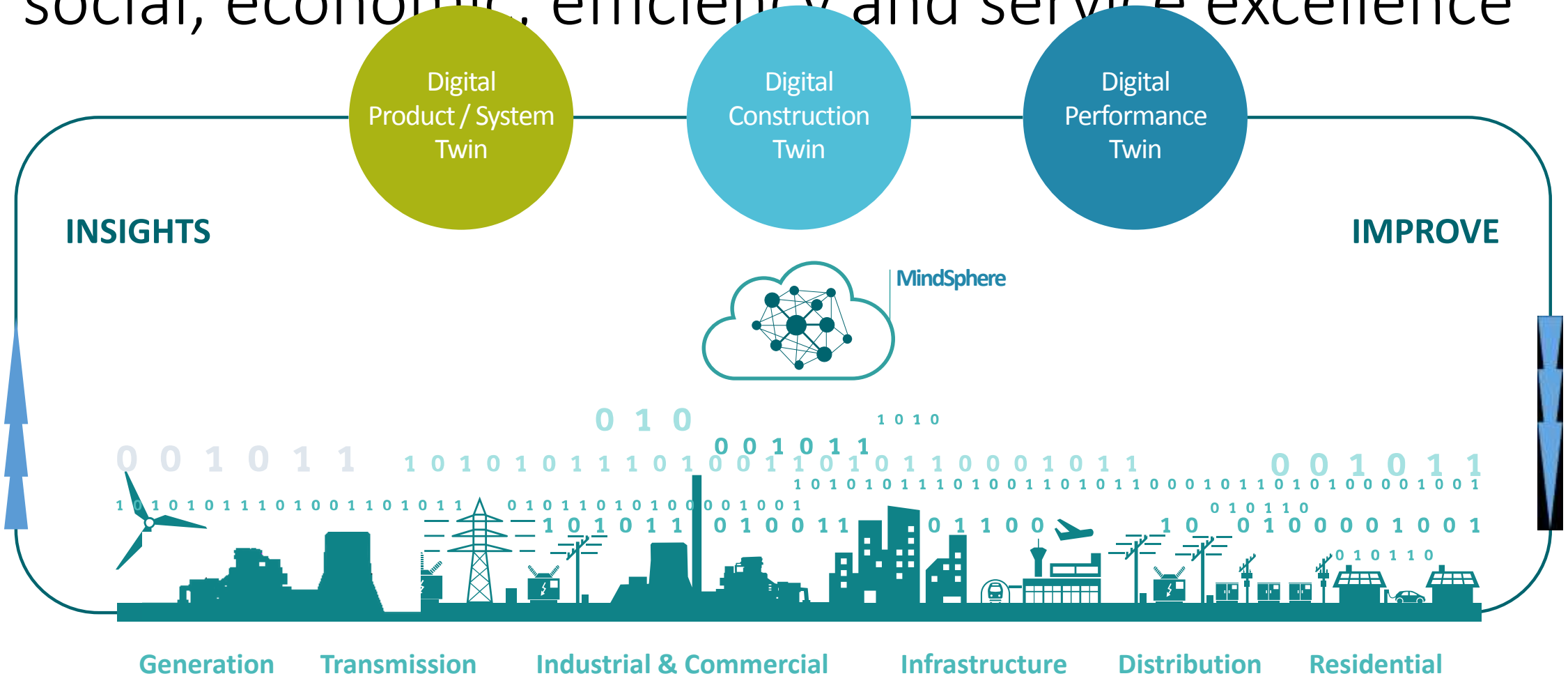
Automation

Digitalization

- Sensing
- Connectivity / IoT
- Monitoring
- Controlling
- Managing
- **Digital twin**

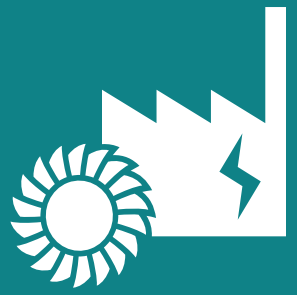
1) DER: Distributed energy resources like smart meters, inverters for photovoltaics, e-mobility assets, storage systems, microgrids, …

Closing the digital loop for disruptive improvements in social, economic, efficiency and service excellence



The decarbonization will transform the entire energy value chain –
with strong growth rates and a complete electrification

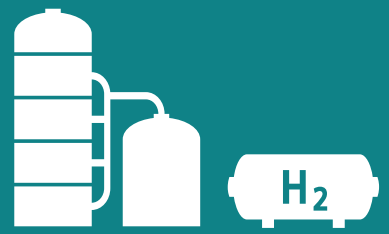
Strong demand for highly efficient power plants, flexibility and lower emissions



Massive trend towards distributed generation and renewables

Digitalization as new driver for technology progress and new business models

Energy storage innovation shaping the future power industry landscape



Electrification of applications, especially in the transport sector

P… site – Ministry of Energy, E…

First of its kind local energy solution – supporting Ecuador's goal of "Zero Fossil Fuels on the Galapagos Islands".

This 1.2 MW hybrid power plant on Isabela Island is based on 100% renewables, i.e. solar power and biodiesel with a battery storage system.

Benefits

- Designed to run completely carbon-neutral
- 99% availability
- Average monthly CO_2 reduction of 80 t
- 30 dB noise reduction

Creating environments that care

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