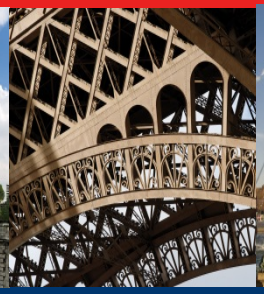
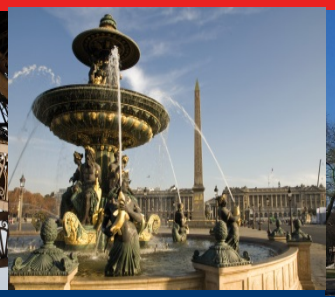
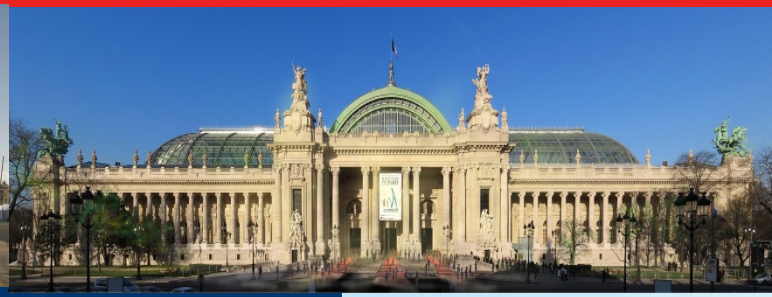
26th World Gas Conference

1 – 5 June 2015, Paris, France

Strategic Panel 8 : How smart and digital are shaping the future of utilities

Intelligent Management of Energy by the "SMART OPERATOR"

Dr. Jürgen Grönner
RWE Deutschland AG / Westnetz GmbH, Germany

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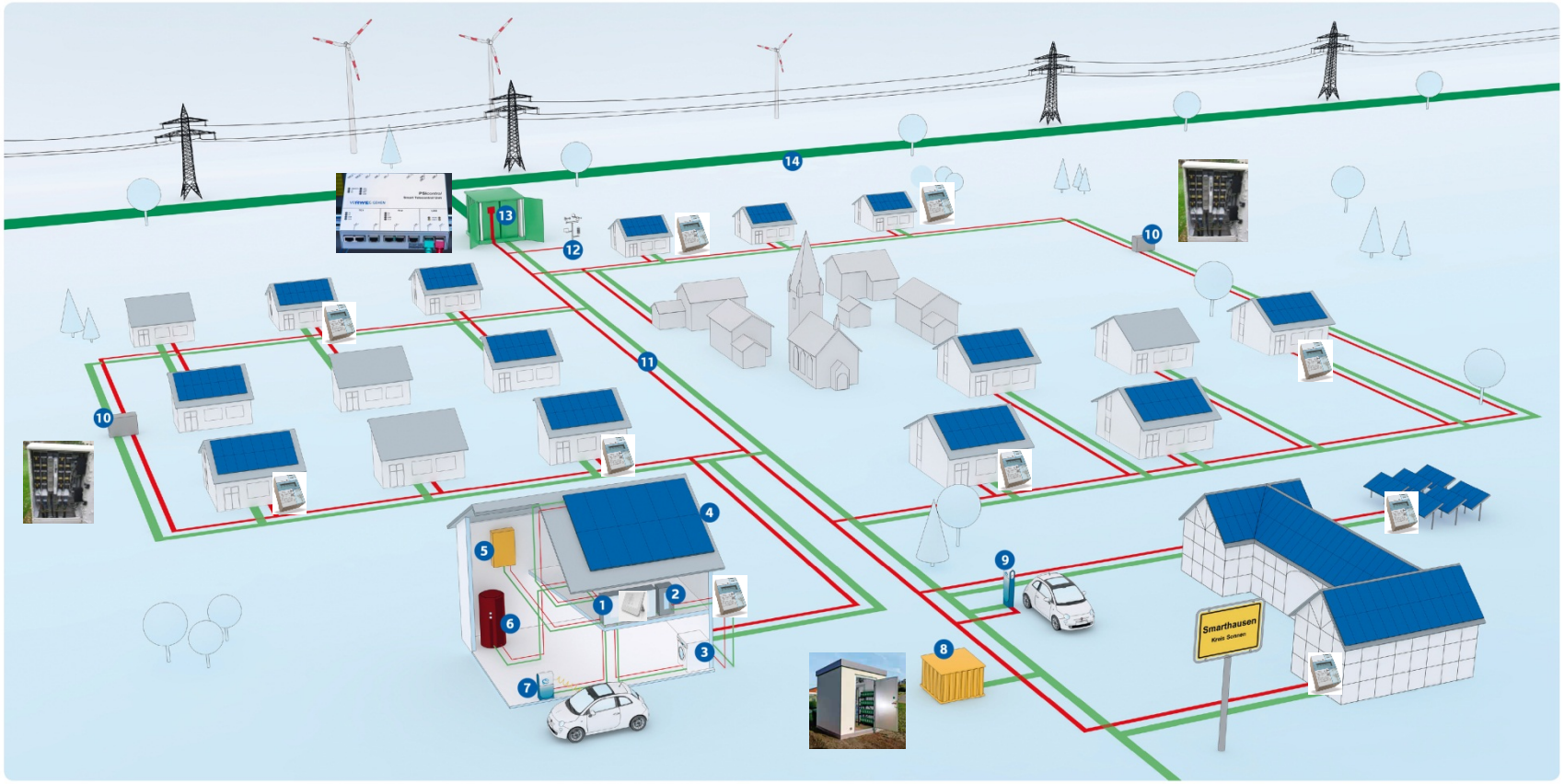
150.000 renewable generators, approx.8 GW installed power, challenging currently the Westnetz Grid, more is expected to come !

Smart Operator works within the local distribution

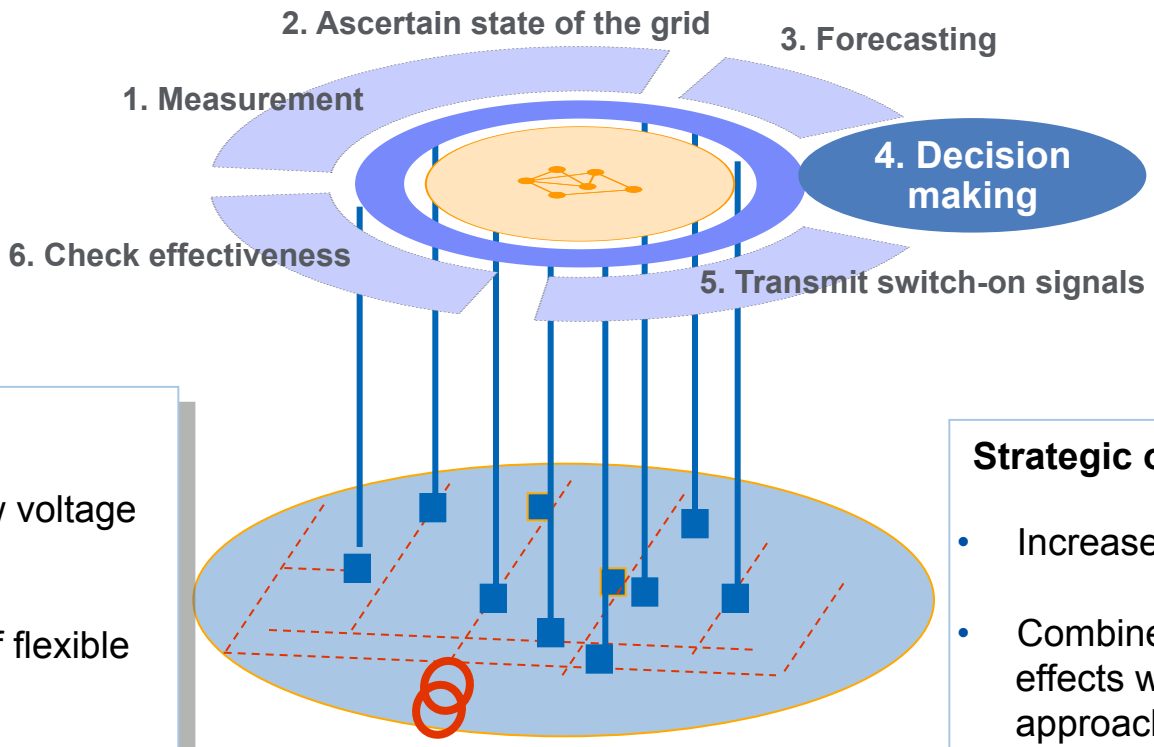


1. Home Energy Controller
2. Intelligenter Zähler
3. Intelligente Hausgeräte
4. Photovoltaik
5. Stromspeicher
6. Heizung / Wärmespeicher
7. Ladebox
8. Netzstromspeicher
9. Ladesäule
10. Niederspannungsschalter
11. Niederspannungs- und Kommunikationsnetz
12. Wetterstation
13. Smart Operator in Trafostation
14. Mittelspannungsnetz

VORWEG GEHEN PSI RWTH AACHEN UNIVERSITY UNIVERSITY OF TWENTE. MR HOPPECKE POWER FROM INNOVATION HORLEMANN STIEBEL ELTRON Technik zum Wohlfühlen

Smart Operator is one solution for low-voltage grids

Decentralized intelligence in the grid controls network conditions autonomously and optimizes grid usage



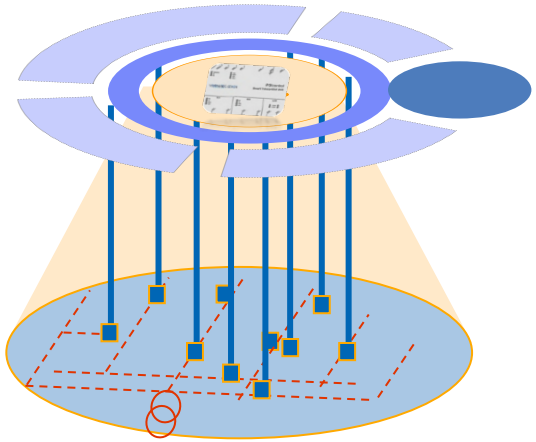
Technical objectives:

- Transparency of low voltage grid
- Optimized control of flexible loads in households
- Ability to react to fluctuating load and generation

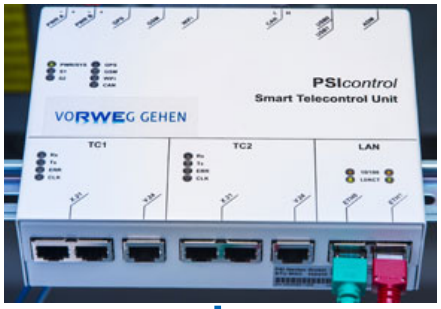
Strategic objectives:

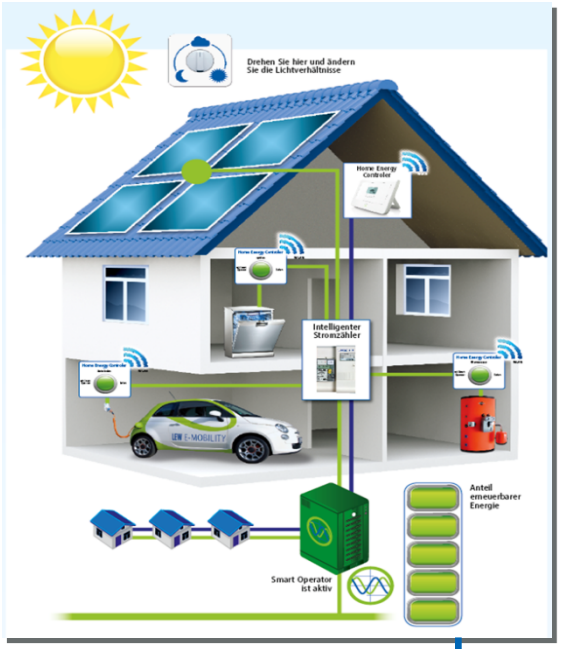
- Increase grid capacity
- Combine physical grid effects with smart grid approaches
- Bottom-up approach offers new solutions

Smart Operator communicates bilateral with intelligent components



Smart Operator





- Intelligent transformer

- Grid Storage

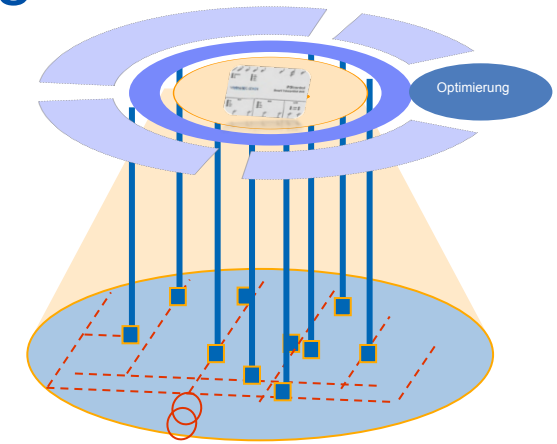
- E Mobility

- Intelligent meter

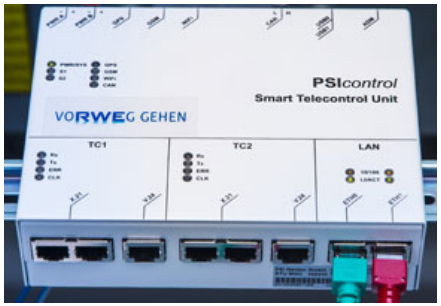
- Remote switches

- Home Energy Controller (HEC)

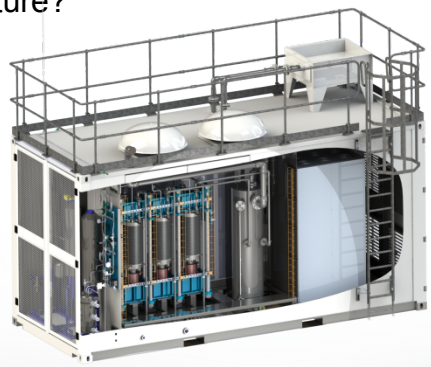
Is the „Smart Operator“ concept also valid for gas-grids, enabling the convergence of electricity and gas?



Smart Operator



Power to Gas in future?



Micro CHP

biogas storage

heat storage

Electricity production by gas expansion

Gas heat pump