Next Kraftwerke

Emerging approaches for sector-coupling

IEA REWP Workshop: "The Role of Storage beyond Electricity" 29/9/2020
(Virtual Workshop)



NEXT KRAFTWERKE IN A NUTSHELL

Aggregator, electricity supplier, Balancing Responsible Party (BRP) and electricity trader

NEXT KRAFTWERKE

- Founded in 2009
- BRP services and flexibility on all markets:
  - System services
  - Short term electricity markets
- Largest Virtual Power Plant (VPP) in Europe
  - > 9500 units connected
  - > 8 GW in our Next pool
  - ~170 employees
  - >1,5 GW R1/R2/R3
  - Traded volume (2018): 15,1 TWh
  - Sales (2018): 628 million

ACTIVE IN THE FOLLOWING COUNTRIES

- Germany (2009)
- Austria (2013)
- Belgium (2014)
- France (2015)
- Poland (2016)
- Netherlands (2016)
- Switzerland (2016)
- Italy (2017)
- UK (trading operations, 2018)



EY Entrepreneur Of The Year Finalist 2015 · eurelectric award 2015 · 2015 Global Cleantech 100 TOP 100 COMPANY · GOOD PRACTICE OF THE YEAR · HERMES AWARD 2015 · inter solar award 2017 WINNER · WE'RE IN! KlimaExpo.NRW Engine for Progress · FT 1000 Europe's Fastest Growing Companies 2017 statista · 2020 GLOBAL CLEANTECH 100

What does a VPP practically do?

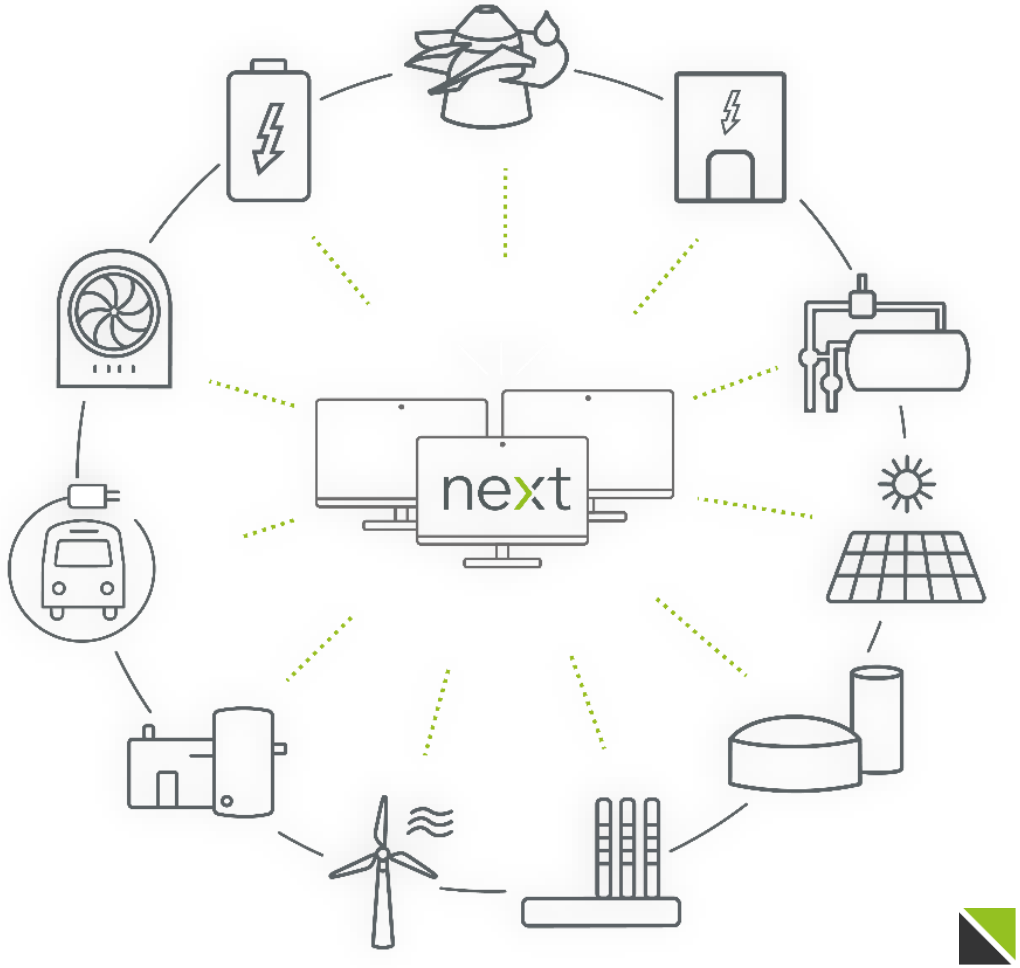
VPP use cases

Renewables live monitoring & forecasting:
Improve your trading through forecasting based on live data

Asset Dispatch & Control
Control decentral assets through schedules based on wholesale market prices

Demand Response:
Triggering demand-side flexibility for grid support & additional revenue

Balancing Services:
Provide ancillary services to grid operators



Sector Coupling and Storage?

VPP Examples



mFRR with Greenhouses (CHP and lights)



mFRR with an industrial electrolyser



$P2H_2$ flexibility optimisation



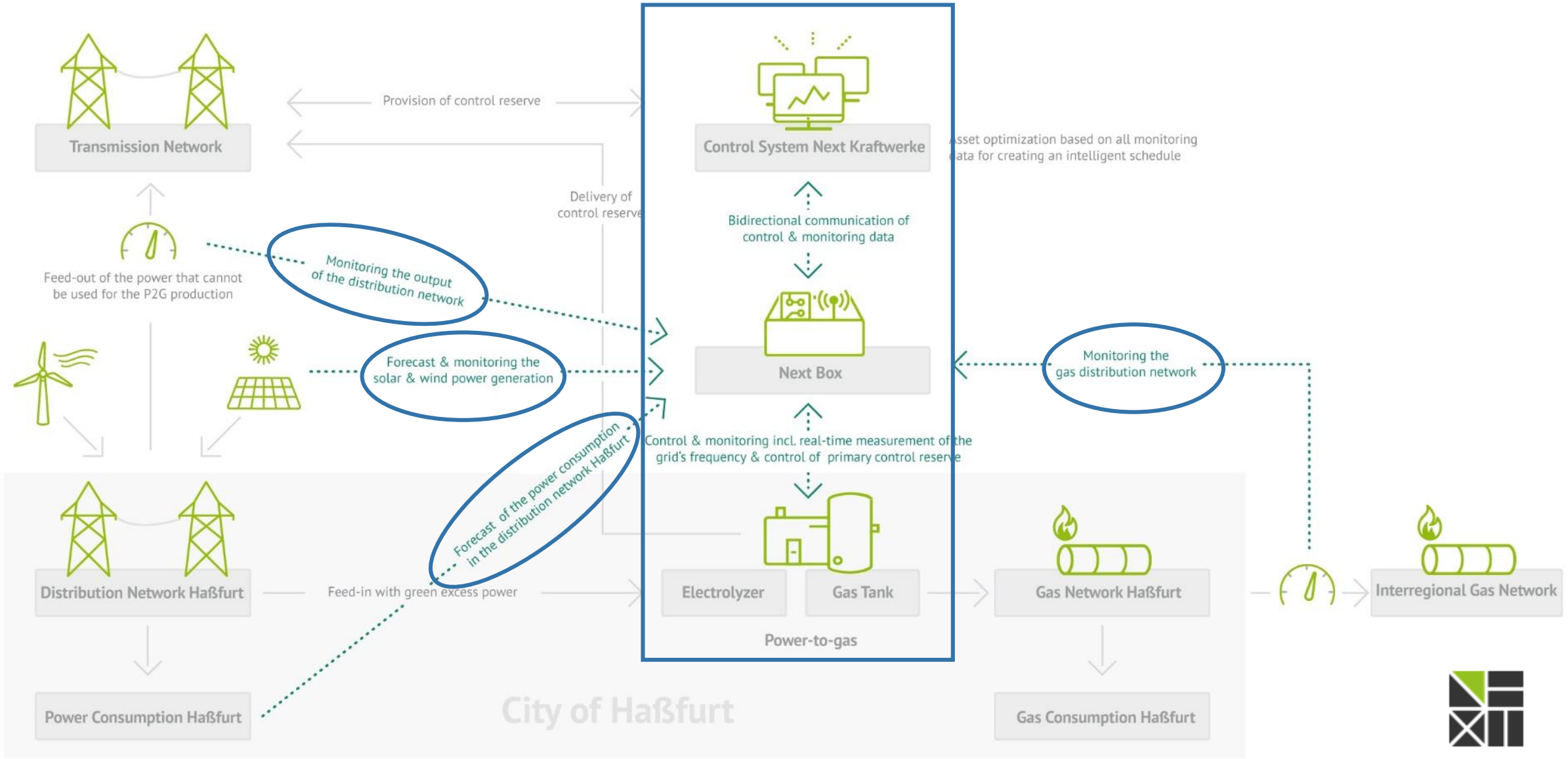
aFRR with EVs

P2G Project in Haßfurth



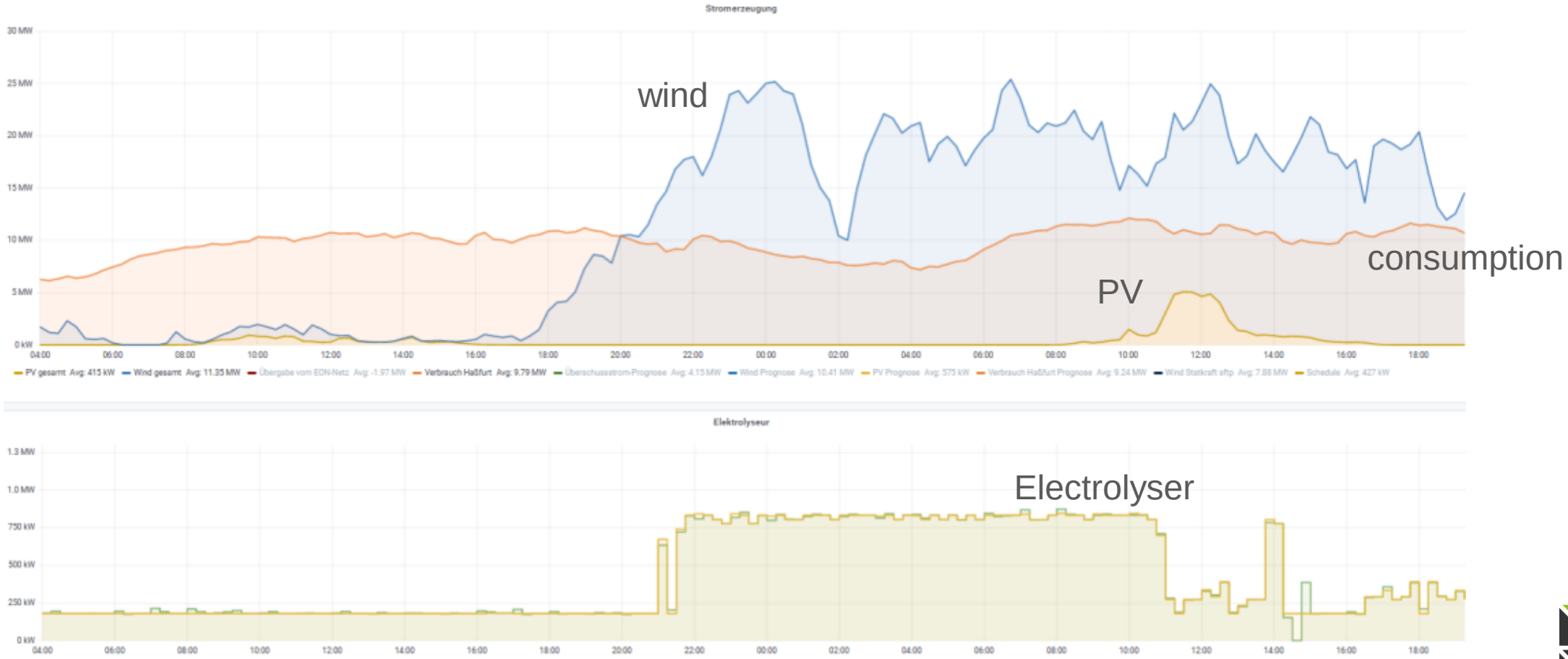
„Next möchte für den Verkauf von Regelenergie optimieren, wir möchten möglichst günstig Gas erzeugen – das geht nicht immer zusammen. “

$P2H_2$ - Optimisation with various constraints

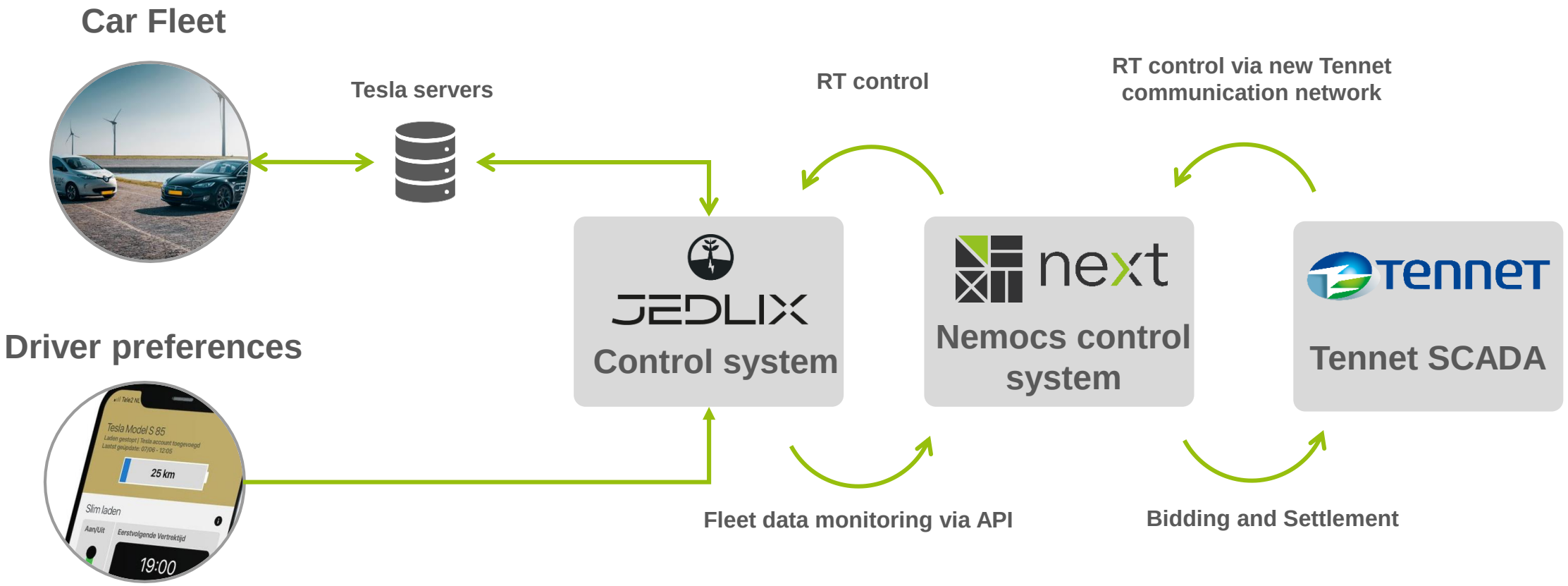


Optimal Electrolyser Schedule

Generation from wind + Generation from PV – consumption of Haßfurt = excess electricity



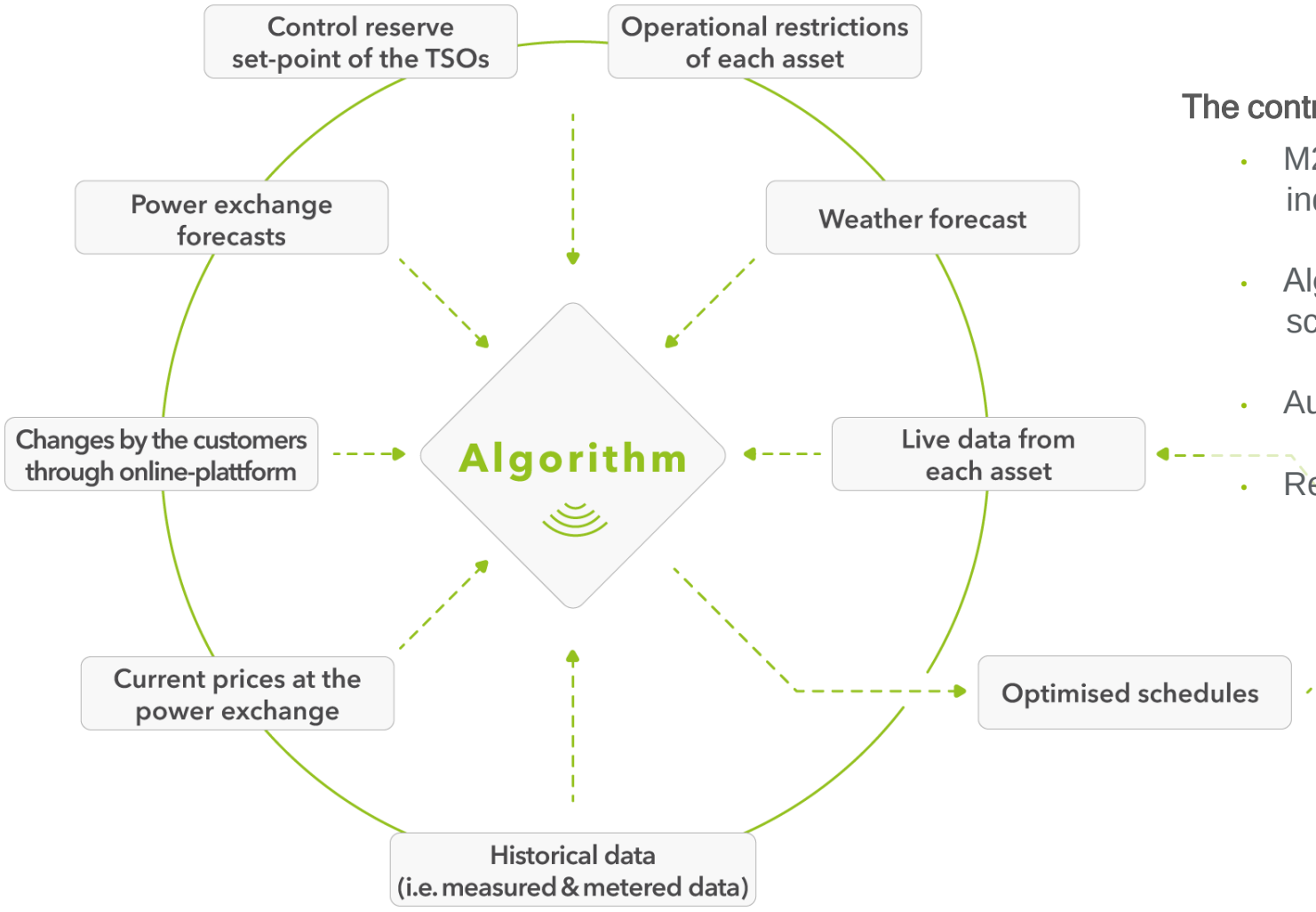
Electrical Vehicles providing Reserve Power



Upward activations on a typical night

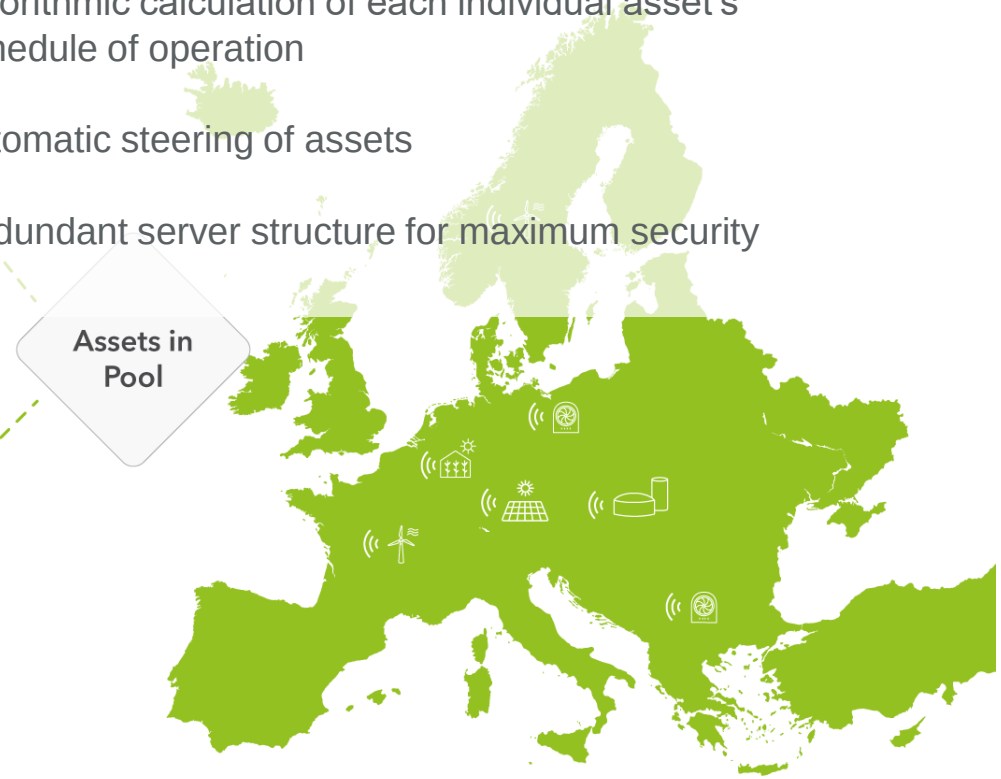


Virtual Power Plant (VPP)



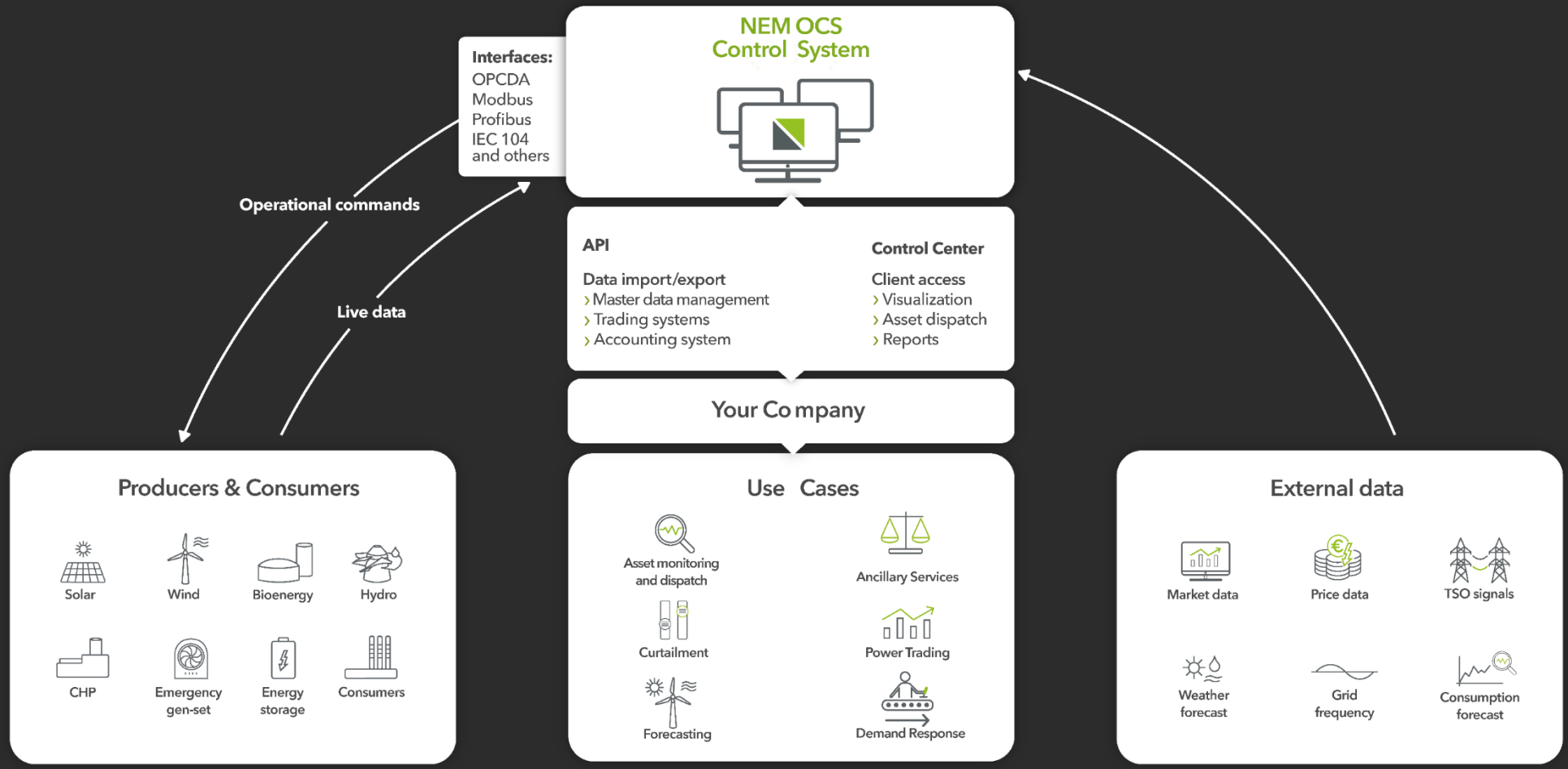
The control system – heart of the VPP

- M2M-communication between the control system, individual assets, the TSO and the power exchange
- Algorithmic calculation of each individual asset's schedule of operation
- Automatic steering of assets
- Redundant server structure for maximum security



Virtual Power Plant as a Service

NEMOCS as platform for your VPP & DR use cases



Next Kraftwerke
Paul Kreutzkamp
CEO Next Kraftwerke Benelux
Kreutzkamp@next-Kraftwerke.be

Next International
info@next-Kraftwerke.com
www.next-kraftwerke.com

