



Session IV – Market Outlook

Market analysis and hurdles from the
supplier point of view

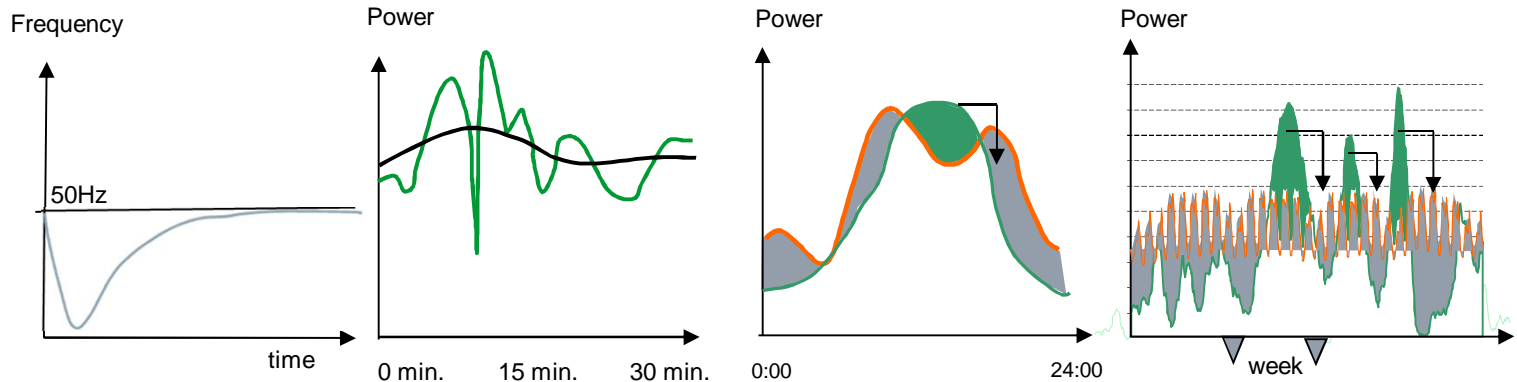
Dr. Rainer Saliger
Siemens AG, Germany



Storage is about balancing production and consumption on different time scales

Applications

- 1 Power System Stability
- 2 Capacity Firming
- 3 Time shift
- 4 Energy Reserve



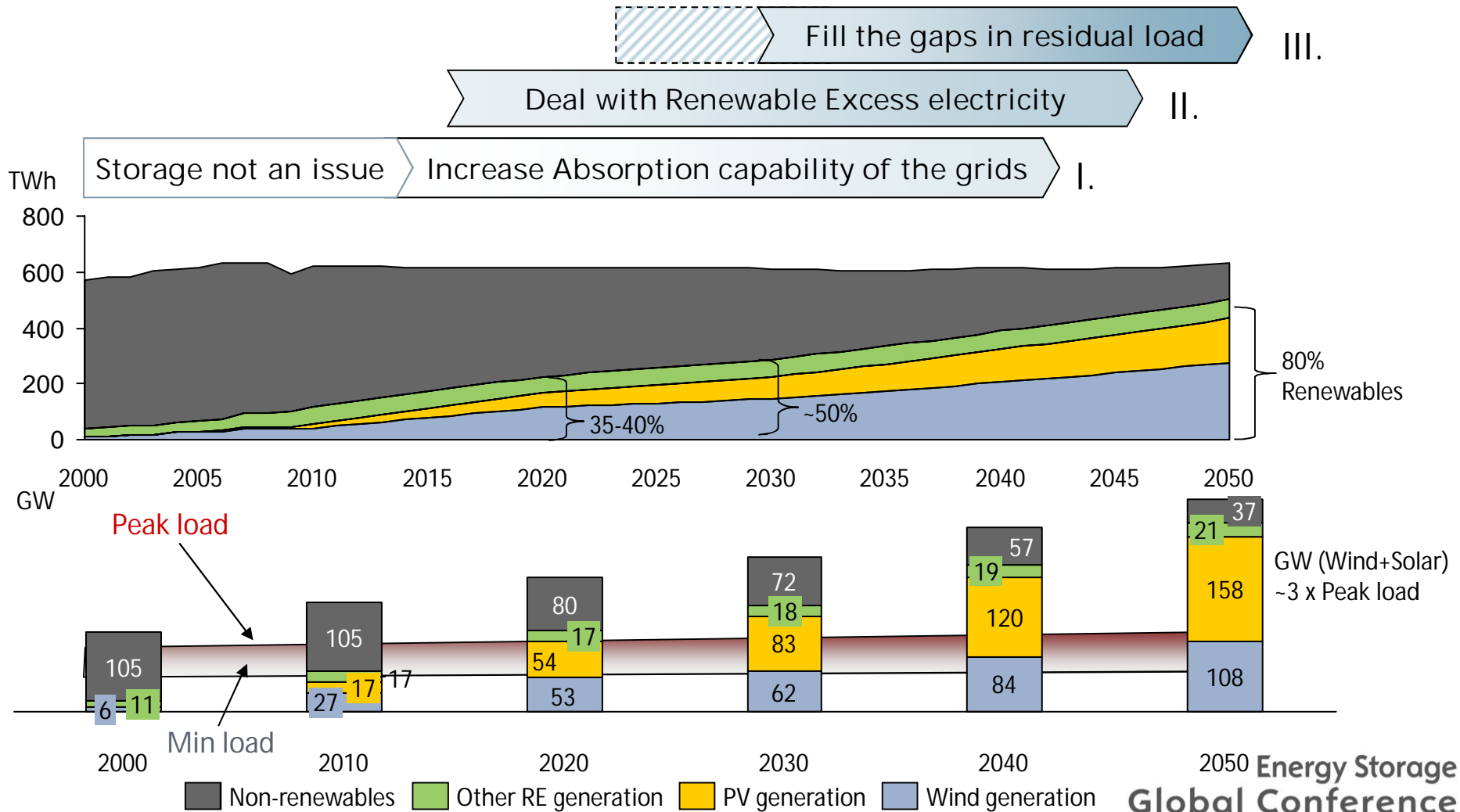
Storage time

- Sec - min
- Intra-Hour
- Intra-Day
- Week+



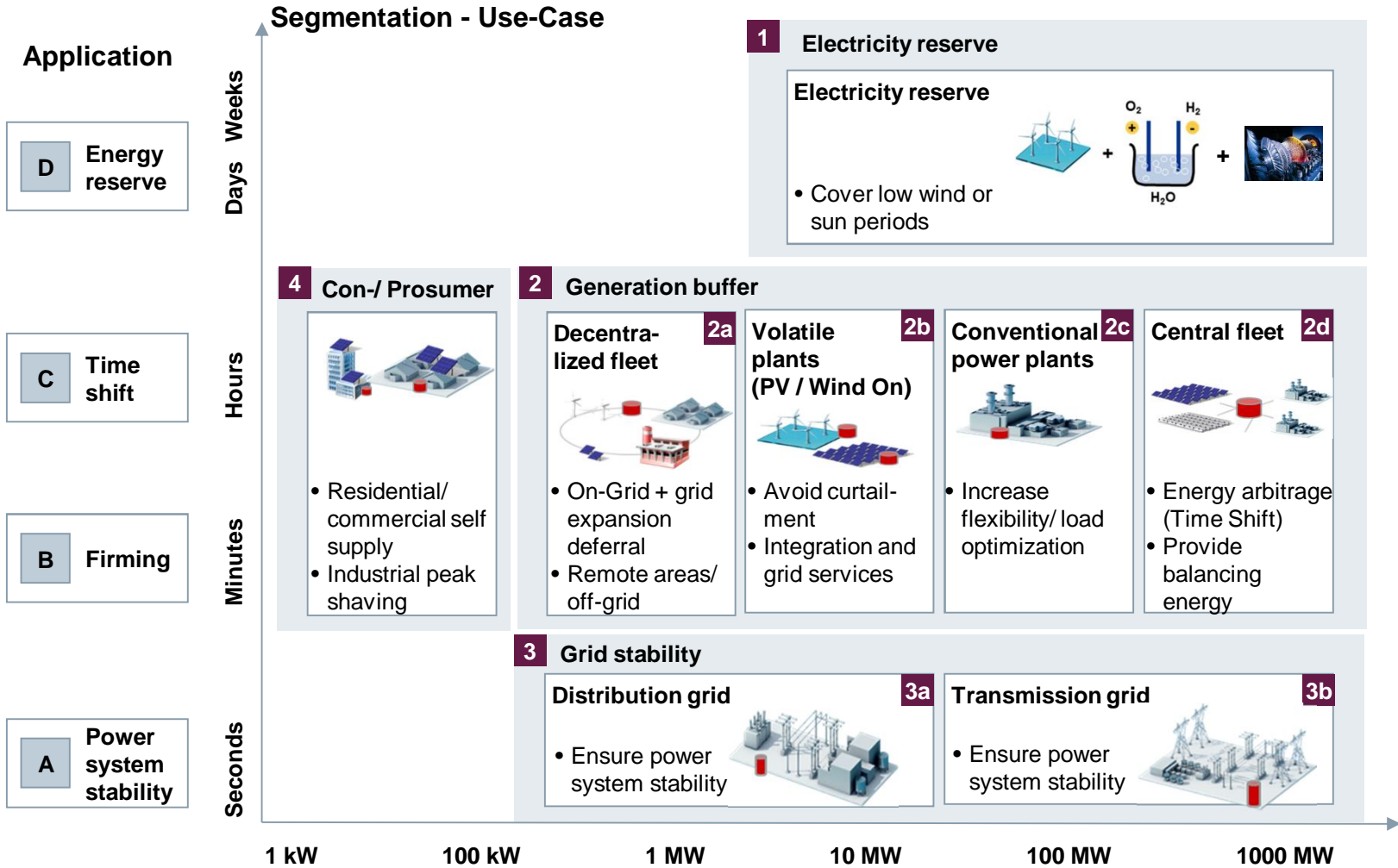
For high shares of fluctuating sources long time storage becomes necessary

Contribution of Renewables to electricity consumption of Germany



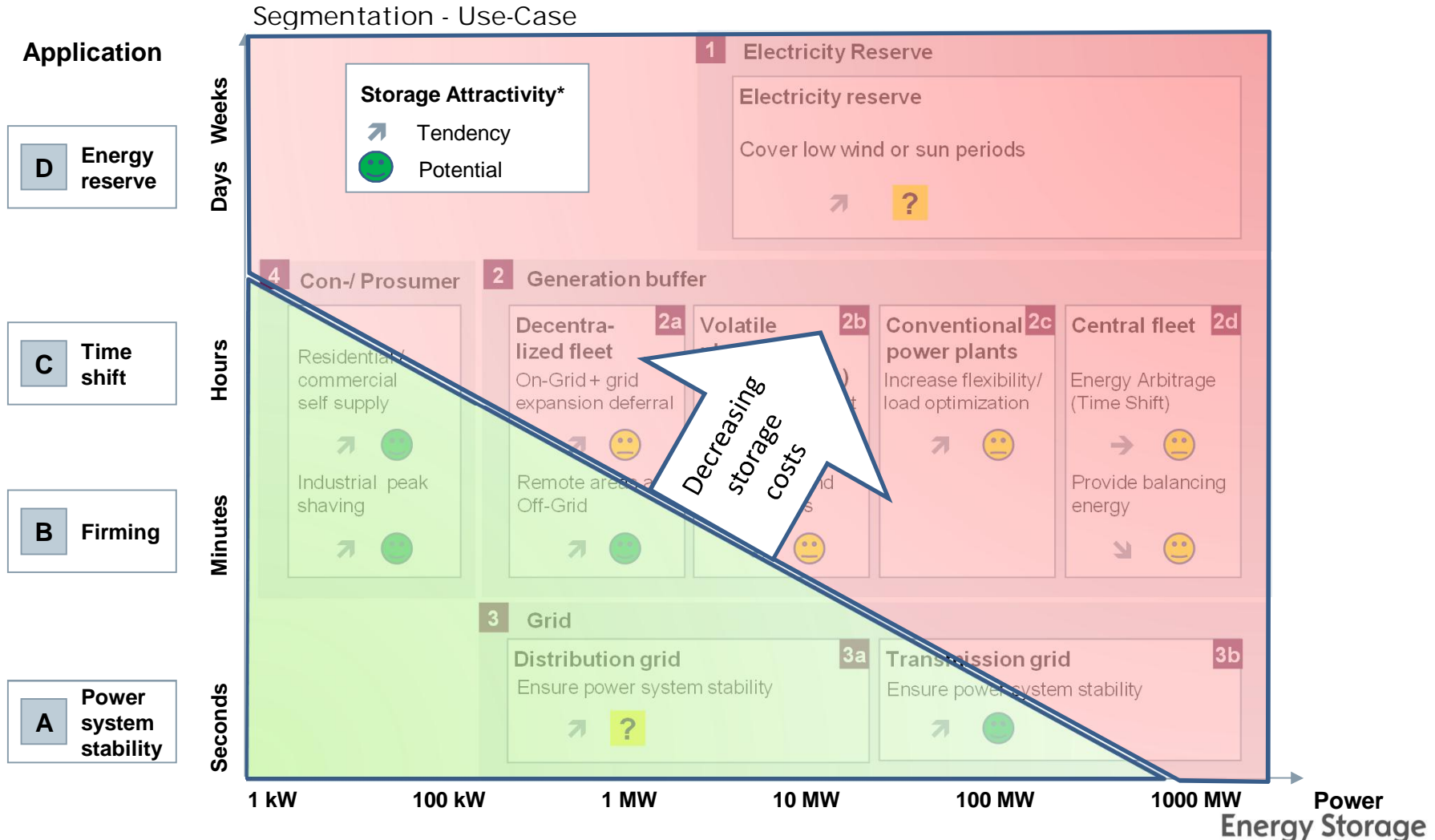


Storage used for very different purposes – Power to Power use-cases





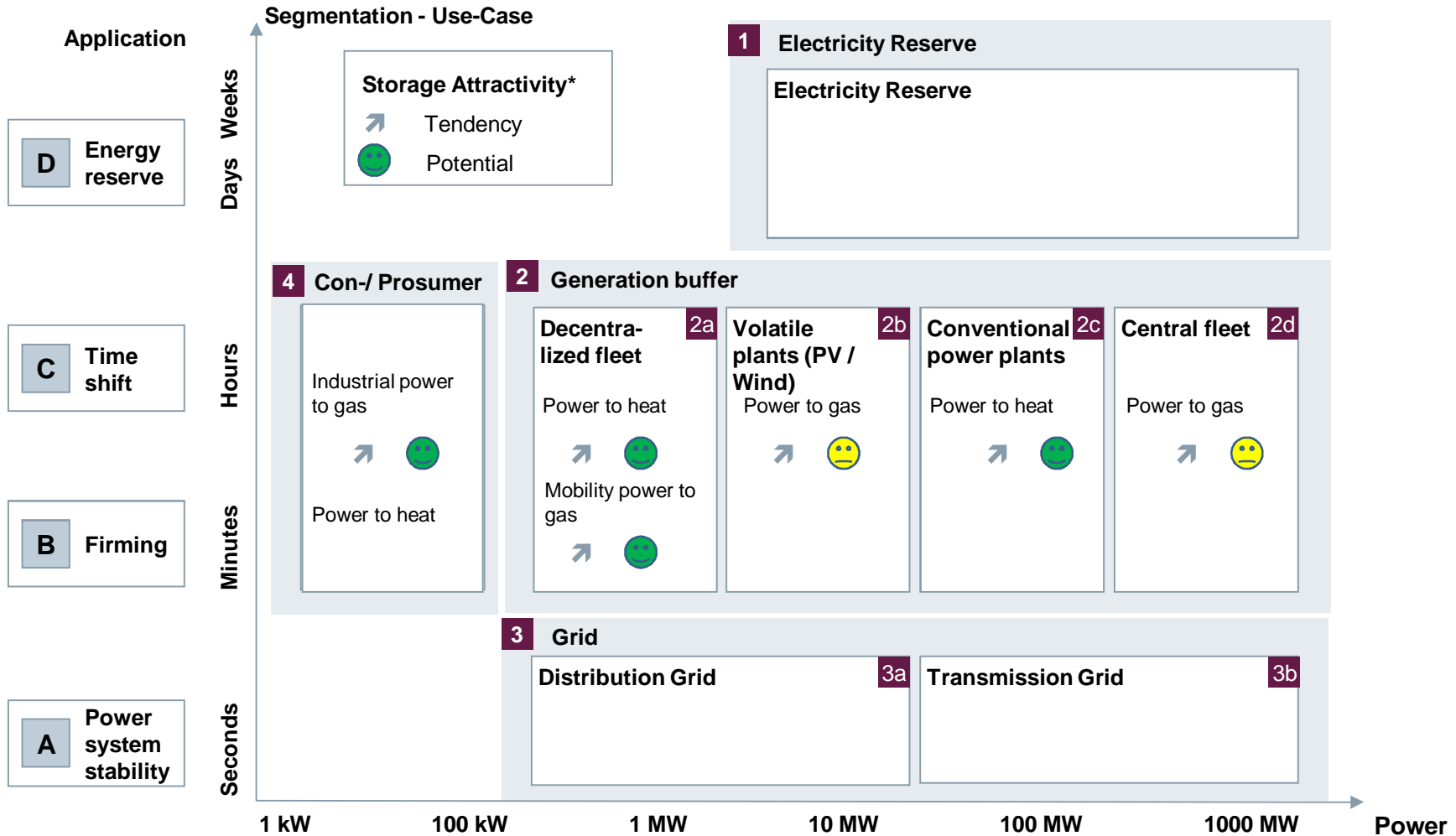
Electricity Storage attractive today in use-cases with high power prices or grid quality issues



*Analysis done with focus on German market environment



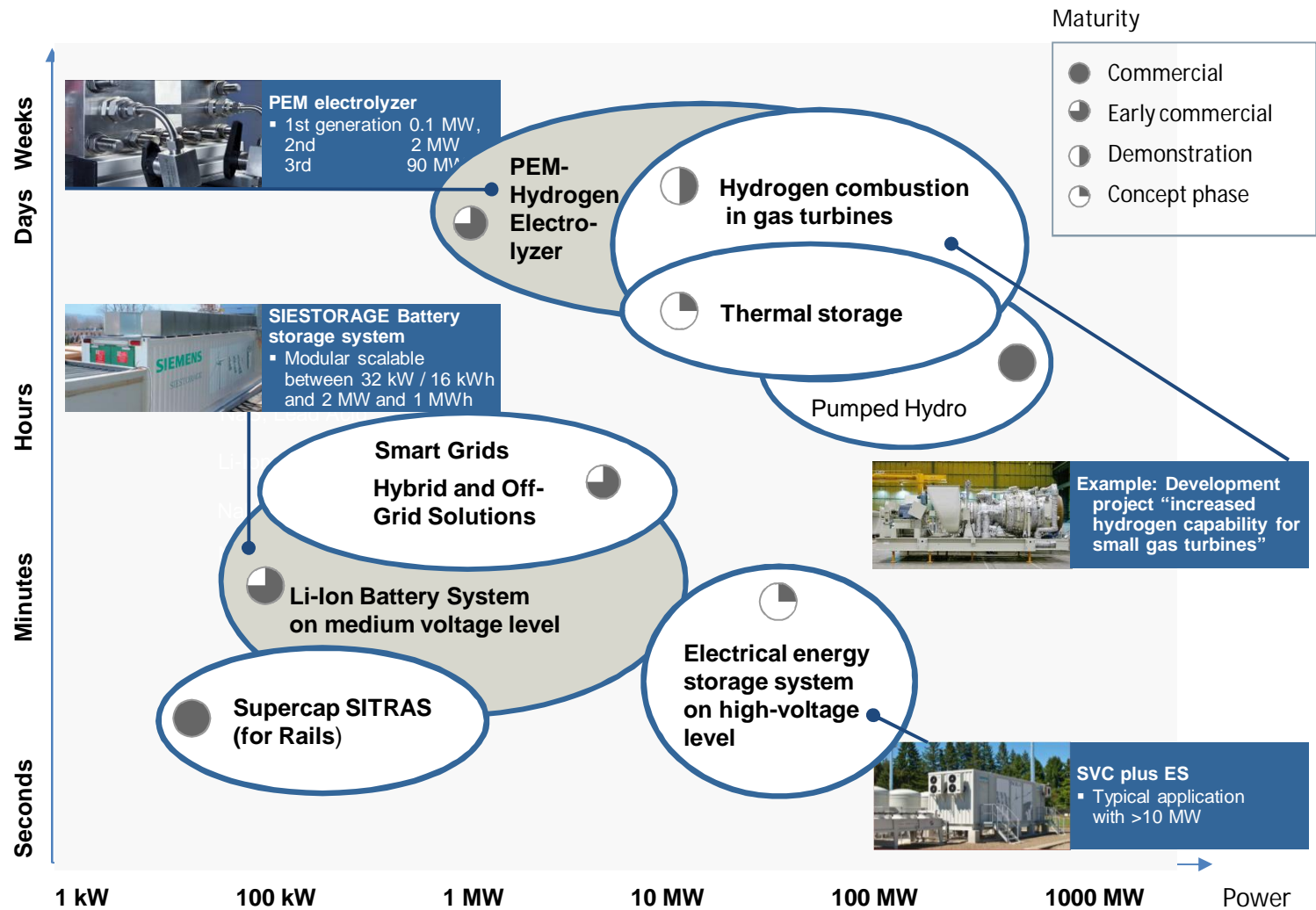
Cross-Overs to heat and gas as important flexibility measure for surplus electricity



*Analysis done with focus on German market environment



Siemens activities cover wide range of application areas





Battery Storage System SIESTORAGE



Reference projects up and running since 2012



SIESTORAGE installation as standard container at the grid of ENEL, Italy for network stabilization with infeed of power from decentralized, renewable sources

Commissioning in 2012
1MVA/500 kWh



SIESTORAGE installation in existing modernized substation of VEO* Eisenhüttenstadt, Germany for black start in the steel and rolling mill of Arcelor Mittal GmbH (AMEH)
Commissioning in 2014
2,8 MVA /720 kWh



One-stop-shop:

- From planning and installation through to commissioning and services
- Possibility of integration into prefabricated standard container or existing building

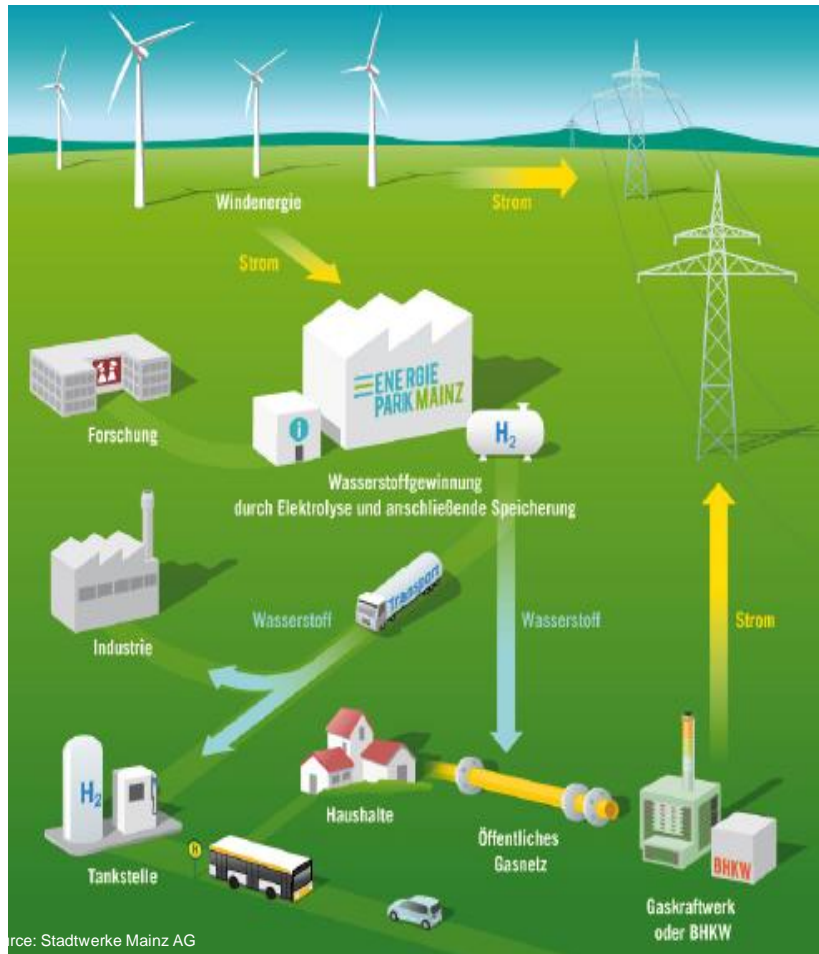
* (Vulkan Energiewirtschaft Oderbrücke GmbH)



Hydrogen Production via SILYZER

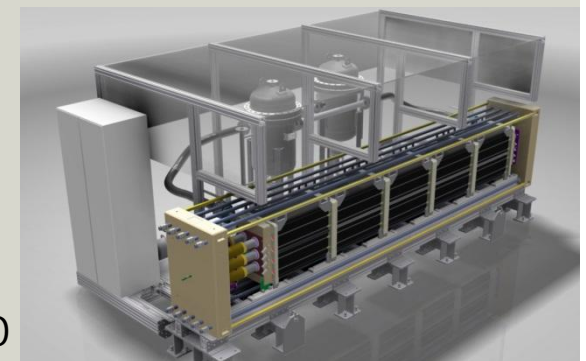
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Power to Gas project at Energie Park Mainz



Project features

- 3-times MW-class PEM electrolyzers peak power of 2,1 MW_{el.} each
- Connection to 10 MW wind-farm
- 1000 kg H₂ -storage (33 MWh)
- Multi use, Trailer-filling station, gas grid injection
- High dynamic operation at all load ranges (ramp speed 10% PN/s)



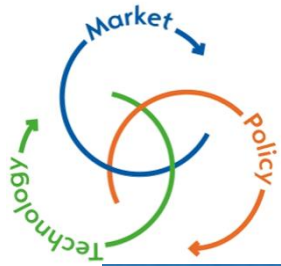
SILYZER 200

Energy Storage
Global Conference
 Explaining | Exchanging | Enabling
 Paris | 19th to 21st November 2014



Summary

- Storage is the missing link for ambitious renewable energy targets
- Storage Technologies are available – it's about making them fit for the market
- Today's economic market segments for storage may not sufficiently support achievement of RE targets
- Full value for storage systems should not be hampered by regulation
- Siemens prepared to serve different market needs for storage
- Launch of new products and systems needs stable regulatory boundary conditions
- Clear and sustainable long term political vision will assist to develop right storage technologies in time



Thank you for your attention !



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