

YOUNICOS

Let the fossils rest in peace.

A photograph of a server room with rows of server racks. The racks are filled with server units. The room has a walkway in the center and overhead lighting. A purple banner is overlaid on the top half of the image.

Grid-scale energy storage – The key technology for future energy systems

Alexander Schönfeldt, Head of Sales EMEA, Younicos AG

April 27, 2016

Younicos at a glance

Founding of the Company

2005

Younicos Inc.
Austin, Texas, USA

Younicos AG
Berlin, Germany

>68 gigawatt-hours
charged and
discharged

Experience from
battery storage **97** Megawatts
installed

Total number of
employees: **163**

22 Storage
projects
worldwide



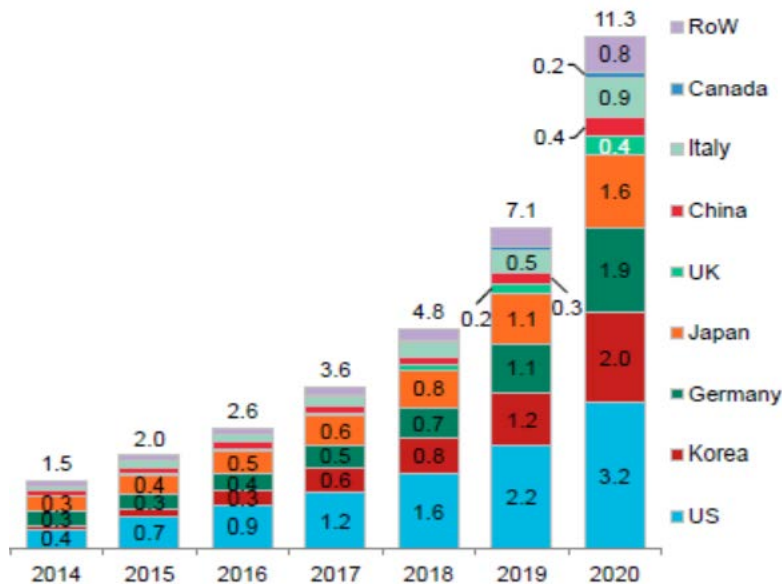
More than 3 terabytes of
field performance data
collected



hours of operating run time
on integrated power control
& battery systems

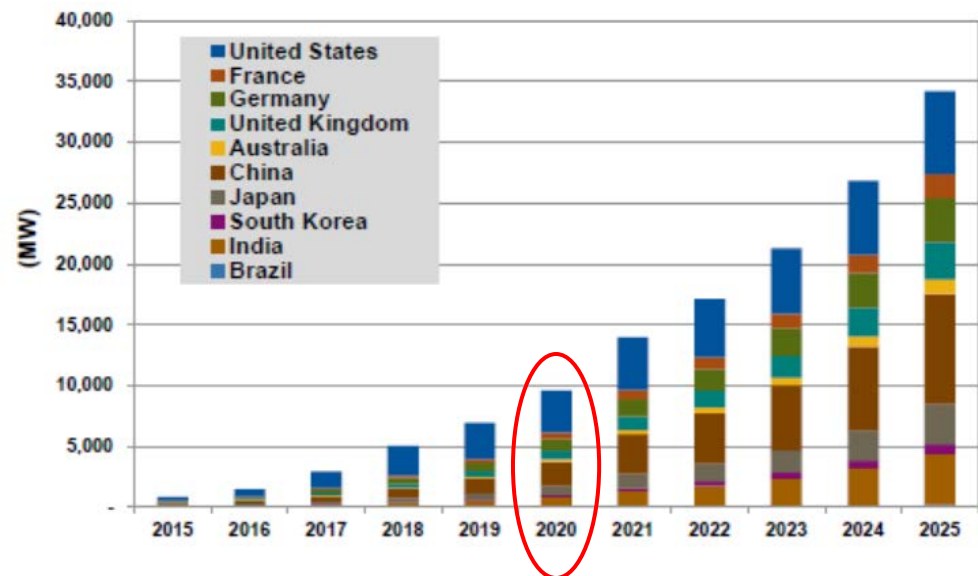
3rd Party Market Analysis showing ESS installations to reach 10 GW by 2020

Bloomberg, 2015



➤ Ref. Bloomberg Global Outlook for Energy Storage, June-2015

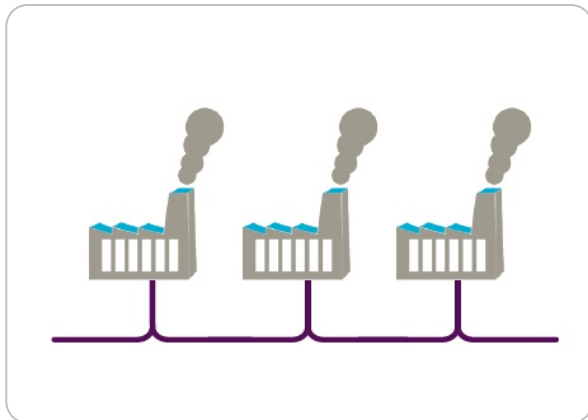
Navigant, 2015



➤ Ref. Top-10 Country Forecasts for Grid-Tied Energy Storage, Q4-2015

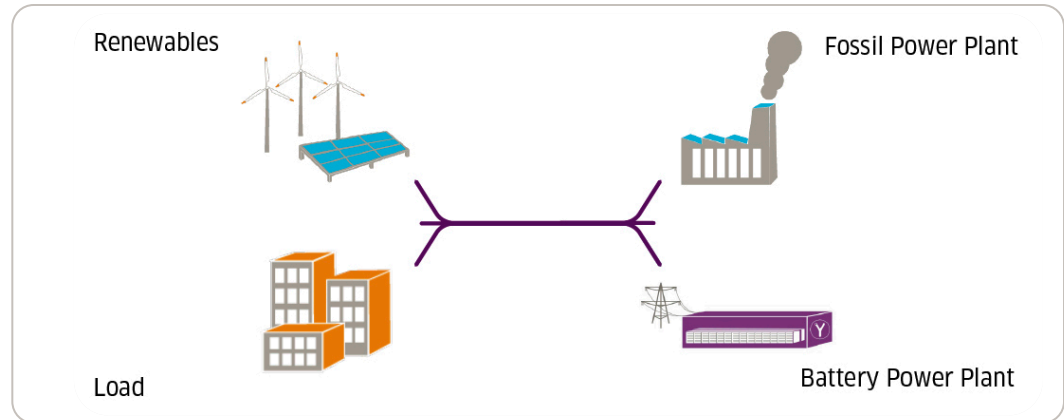
Energy storage is the key technology for a transforming energy system

“Good old days” for utilities



- Centralized, inflexible grid design
- Energy-only (produce & sell)
- Only one business case

Next generation energy system



- Decentralized, flexible grid design
- Energy and grid services
- Multiple business cases

Most important trends on the storage market



Trend I: The market wants flexible and scalable products rather than individually tailored-solutions

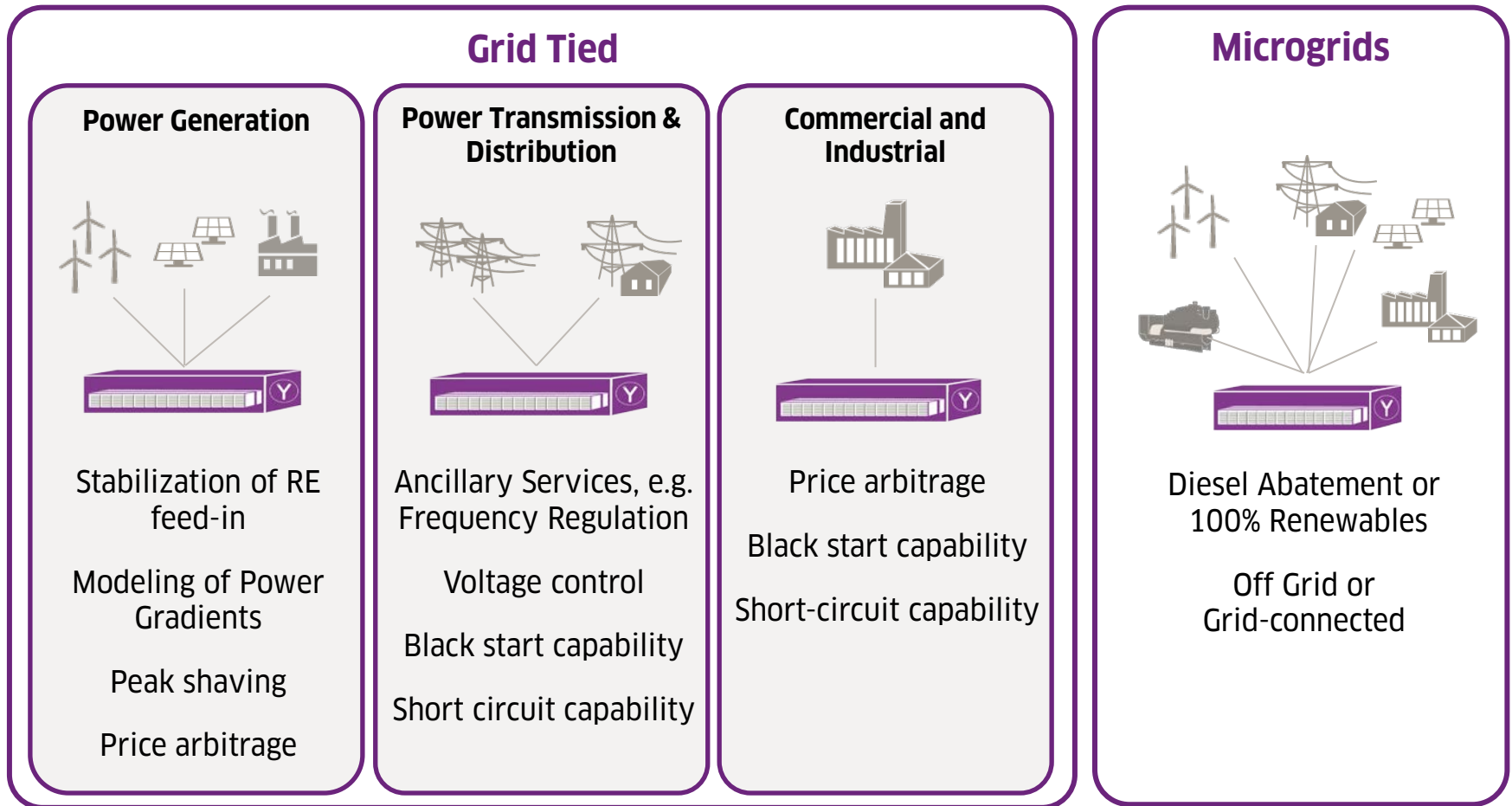


Trend II: Smart data makes the difference



Trend III: Storage becomes increasingly important for C&I customers

Storage markets and business cases are evolving fast



Yunicos products – scalable solutions for grid-tied and microgrid applications

Y.Cube



PCS Systems



Solar Panel System



HVAC Systems



Y.Station



Security & Surveillance Systems



Battery Modules & BMSS



Two recent examples of Yunicos products and controls capabilities

Why Younicos?



Scalable solutions for every market player



Highly intelligent software



Experience from more than 97 MW installed power



Battery Expertise: Optimization from the cell to the grid



Younicos Technology Centers: Simulation of optimized grids

Further questions? We are looking forward to hearing from you!

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Current state of the storage market

Market Dynamics

- Energy storage component costs have all dropped in price materially during later half of 2015
- Regulatory changes and political uncertainty have impaired PRL markets (Germany, Turkey)
- Primary selection criteria for customers includes price and availability of project financing
- Market size and speed being distorted by new entrants / competitors buying market share
- Battery manufacturers have excess LI capacity being released into stationary storage market at alarming rates
- Commercial & Industrial markets appear to be moving faster than Grid Scale PRL storage