



Building a case for value stacking

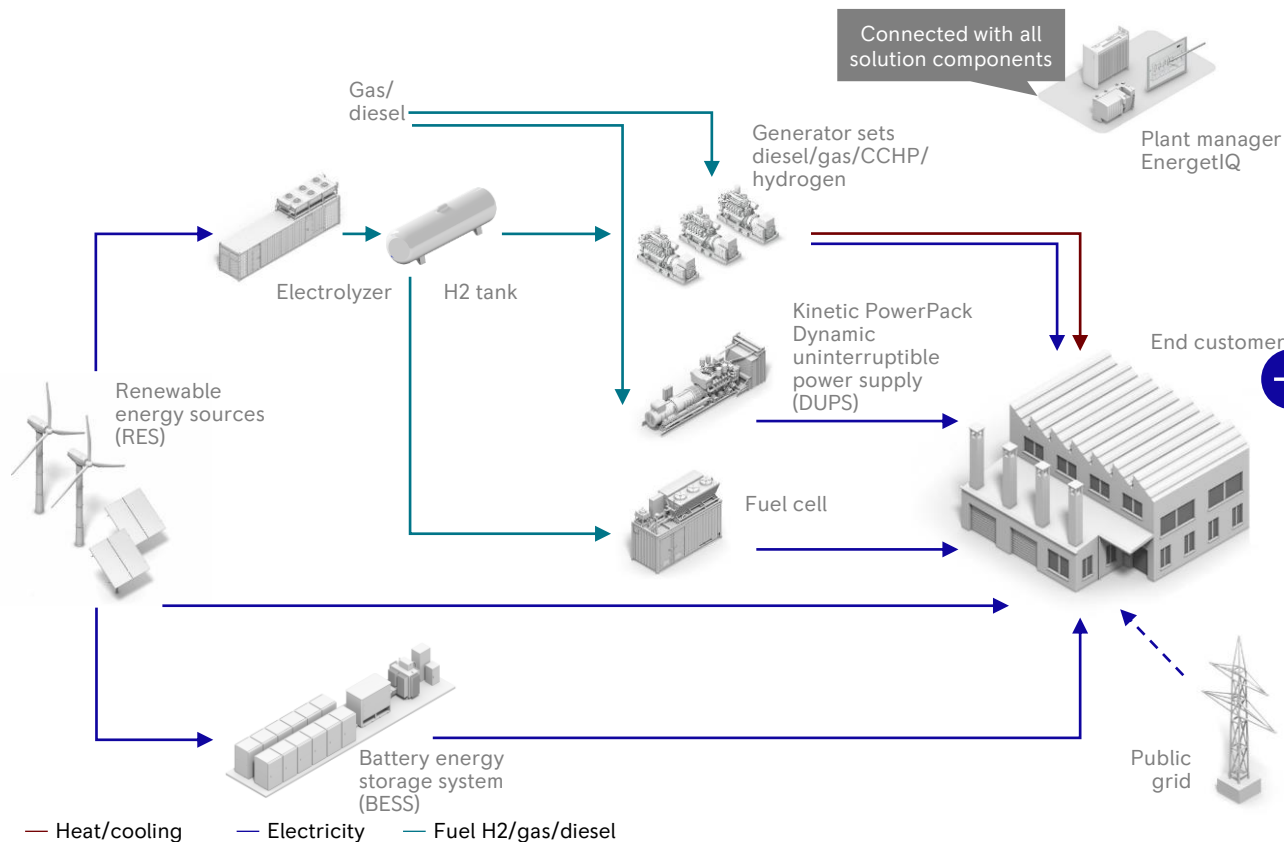
Rolls-Royce @ get inspired! 2023

Maximilian Pöllot

19th September 2023



Portfolio offering



Note: Exemplary display of key solution space and applications – non-exhaustive



E2E service package from a single source

Project simulation and component sizing

+ Energy consulting and EPC

Conceptualisation of solution and system design

On-site commissioning and testing

Vendor screening, testing and pass-through for outsourced components



A Rolls-Royce solution



Solution offering | Battery energy storage systems

EnergyPack QS

"Small and sturdy"



313 kWh 625 kWh



USPs

- Factory-tested **plug-and-play design**
- **Black-start** capability
- Sheltered environment with **high robustness**
- **Relocatable** container
- Digital **connectivity**

EnergyPack QL

"Large and versatile"



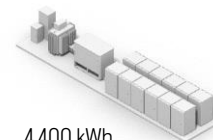
1,000 kWh 2,000 kWh



- **Seamless integration** of a power plant's diverse assets
- **Automated control** of power generation, storage and demand
- Optimised operation: lifts efficiency and **saves money, fuel and emissions**

EnergyPack QG

"Giant and powerful"



4,400 kWh



- **Seamless integration, scalability** & fast commissioning
- **Black-start** capability
- **Up to +40°C** without de-rating
- **Ultrafast response**, 100% instant load acceptance
- Digital **connectivity**

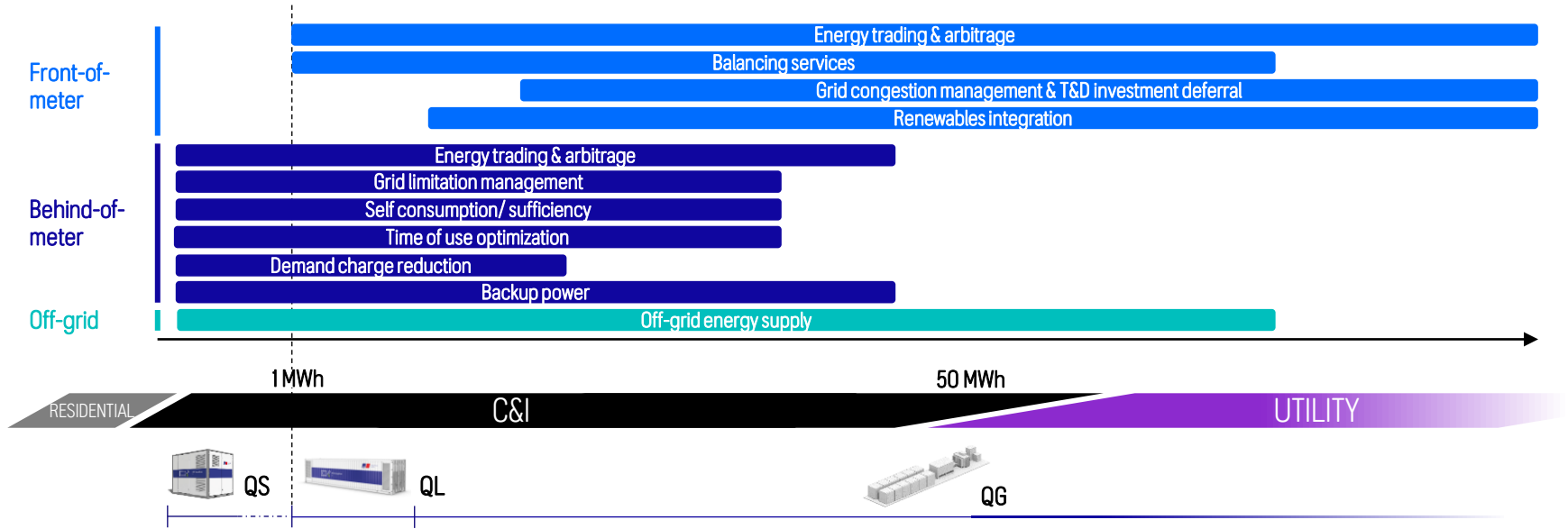


Plant manager EnergetiQ The "brain" of the power plant

- **Seamless integration** of a power plant's diverse assets
- **Automated control** of power generation, storage and demand
- Optimised operation lifting efficiency and **saving money, fuel and emissions**



Broad range of customer applications



- > Broad range of applications with different level of complexity
- > Stacking of applications with additional potential to customer's business cases



Through peak shaving with battery energy storage and an intelligent control system, energy consumers can reduce their peak load to reduce grid costs or avoid grid reinforcement

The microgrid solution in our case study



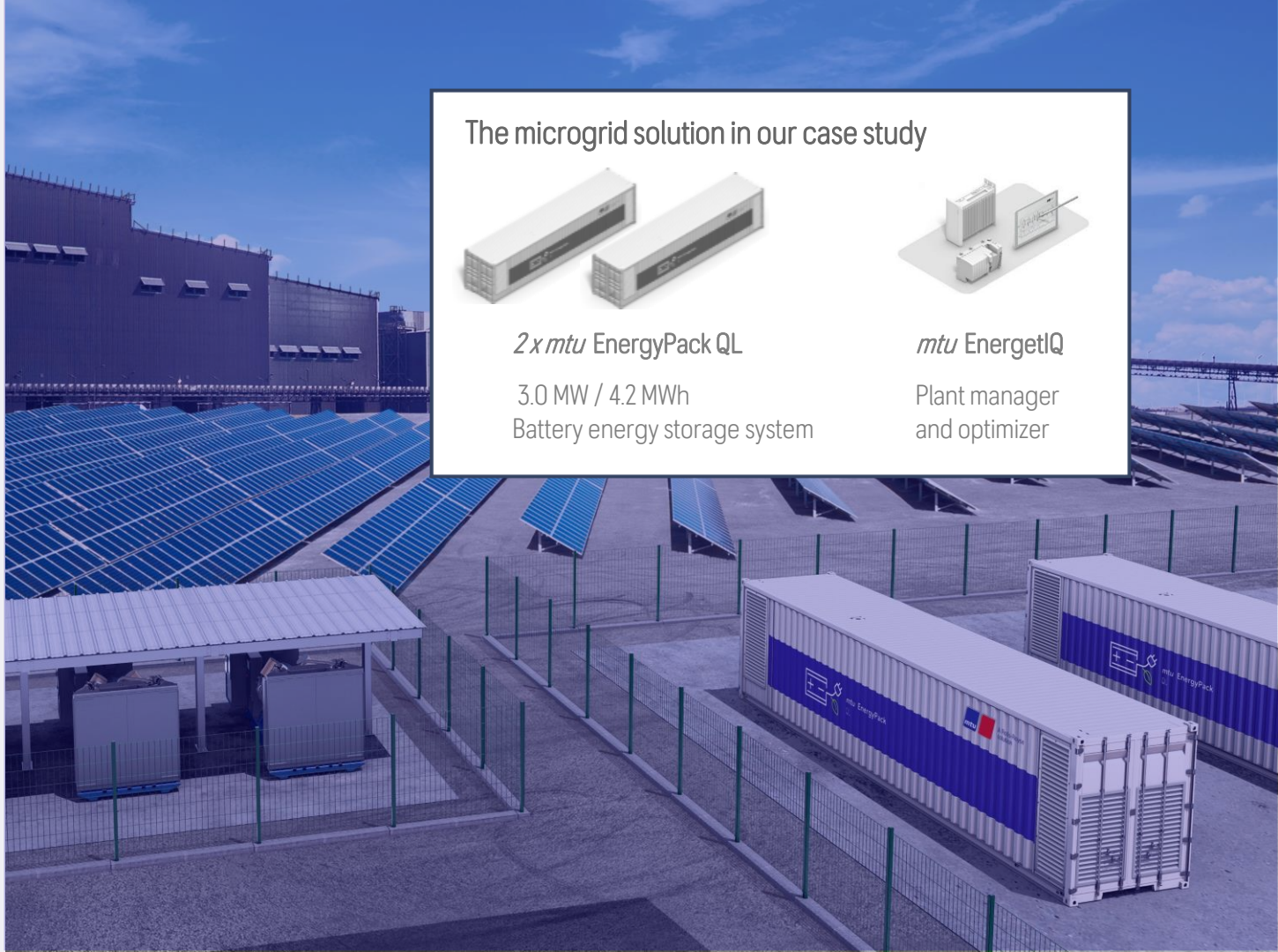
2x mtu EnergyPack QL

3.0 MW / 4.2 MWh
Battery energy storage system



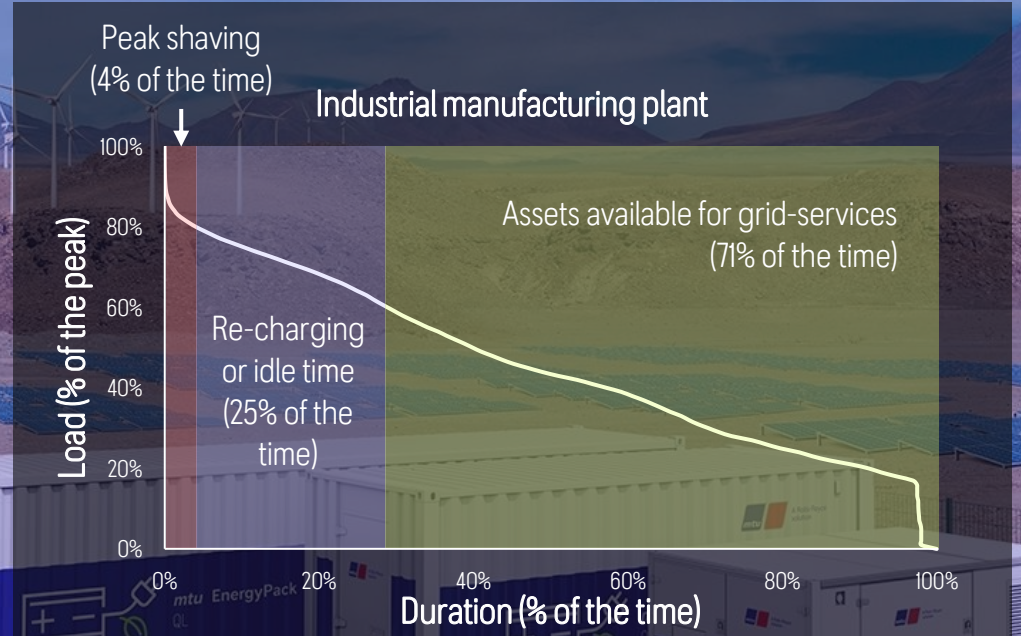
mtu EnergetIQ

Plant manager and optimizer





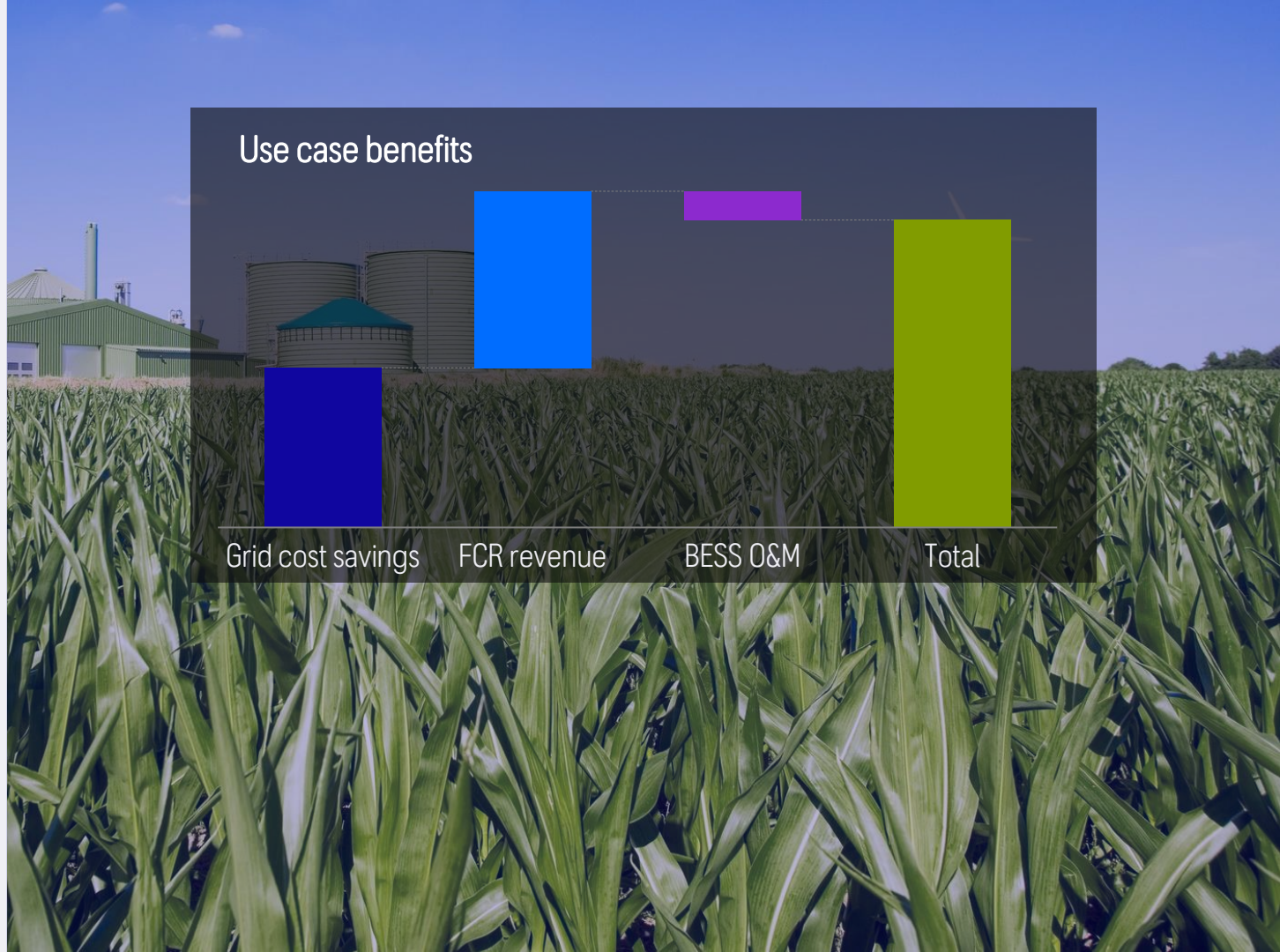
In the peak-shaving case, an energy storage asset would be available 71% of the time to create additional value.





In an optimized business case, grid cost reductions make up about half the benefits of the BESS use case.

Grid services make up the other half.



Use case benefits





Value stacking is key for the efficient use of resources assets:

Increase utilization, reduce payback time

Peak shaving



83

Full load cycles per year

11.5 years

Payback time of investment

Peak shaving & Grid services



216

Full load cycles per year

5.0 years

Payback time of investment



Key take-aways

- Value stacking improves business case of storage asset significantly
- Customers need to be consulted on possibilities
- Close partnership between asset provider, project developer and trading technology provider is key



Thank you



Maximilian Pöllot

Expert Strategy & Projects



Gerbert van der Weijde

Head of Solution Sales