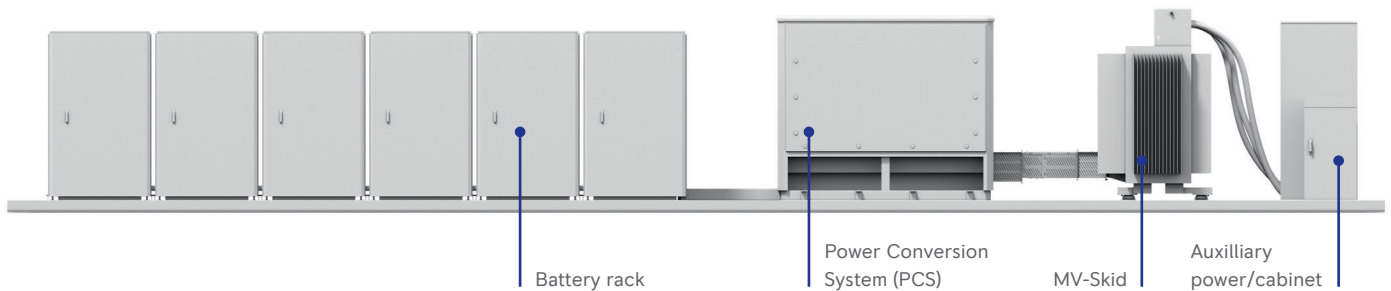




Battery Energy Storage System (BESS)

mtu ENERGYPACK QG



Giant and powerful

The Battery Energy Storage System (BESS) **mtu** EnergyPack QG is a key solution to effectively integrate high shares of renewables, solar or wind, in energy systems.

The scalable design focuses on a front of the meter grid scale battery energy storage system with typical storage capacity ranging from around 4,400 kWh to 100 MWh and more.

- Smooth integration, scalability & fast commissioning
- Up to +40°C without derating
- Ultrafast response
- Digital connectivity

Benefits

Superior level of safety & reliability

- Protection level IP54
- Insulation monitoring device
- Aerosol fire protection system

Excellent performance long service and cycle life

- Market leading supplier of LFP batteries and inverters
- System voltage up to 1,500 volt leads to lower efficiency losses
- Liquid cooling system lowers cell temperature deviations, allows longer lifetime and higher energy density
- Low maintenance

Simple integration for minimal installation risk and time

- Flexible tailoring of base units, scalable to project-specific power and capacity needs
- Modular design & high energy density footprint
- Easy assembly after transport

High performance

- Short downtime, fast charge and discharge rates
- Ultrafast (ms) response and load acceptance, ideal for frequency regulation services
- Standardized and modular for economic design

Intelligent control platform **mtu** EnergetIQ for optimal performance and flexibility

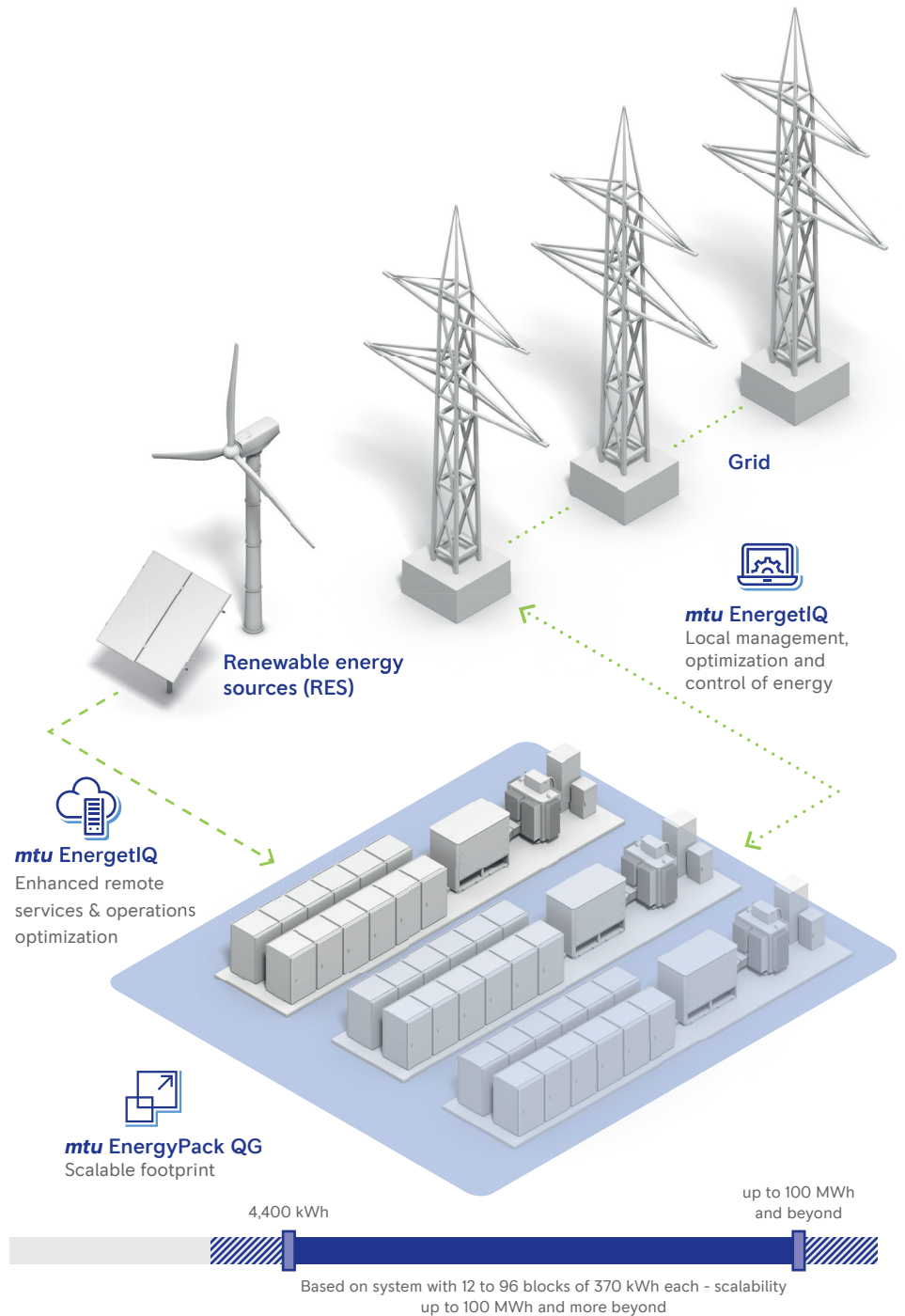
- Automated control of power generation, storage and demand for an optimised operation
- Cloud data storage for performance analysis and optimization
- Easy integration of assets
- Monitoring of asset and system performance for a range of energy sources



A Rolls-Royce solution

BATTERY ENERGY STORAGE SYSTEM (BESS)

DESIGNED FOR UTILITY SCALE APPLICATIONS



Applications



Grid services



Energy trading



Renewable energy integration



Backup Power

Options

- **mtu EnergetIQ**

Standards

- IEC 62619, IEC 62477-1, IEC 61000-6-2
- Power conversion system:
IEC 62109-1, IEC 62109-2, IEEE 1547:2018, IEC 62116:2014, IEC 62933, IEC 61000-6-3 or IEC 61000-6-4, IEC 62485-5, CE

Support

- Global product support

Three basic system configurations are available: QG025 (4h storage) / QG05 (2h storage) / QG1 (1h storage)

Name of System	QG025	QG05	QG01
C-rate of the system	0.25	0.5	1
C-rate of the used battery	0.5C or 1C		
Maximum number of battery racks with 372.7 kWh each	24 / 48	24	12
Total capacity of batteries in MWh	8.94 / 17.89	8.94	4.47
Number of ESS-Controllers (1 per 12 battery racks)	2 / 4	2	1
AC output power MVA @40°C	2.19 / 4.39	4.39	4.39
Operating grid voltage VAC	6.6 kV / 11 kV / 13.2 kV / 15 kV / 20 kV / 22 kV / 23 kV / 25 kV / 30 kV / 33 kV / 34.5 kV		
DC voltage range VDC	976 - 1500	976 - 1500	976 - 1500

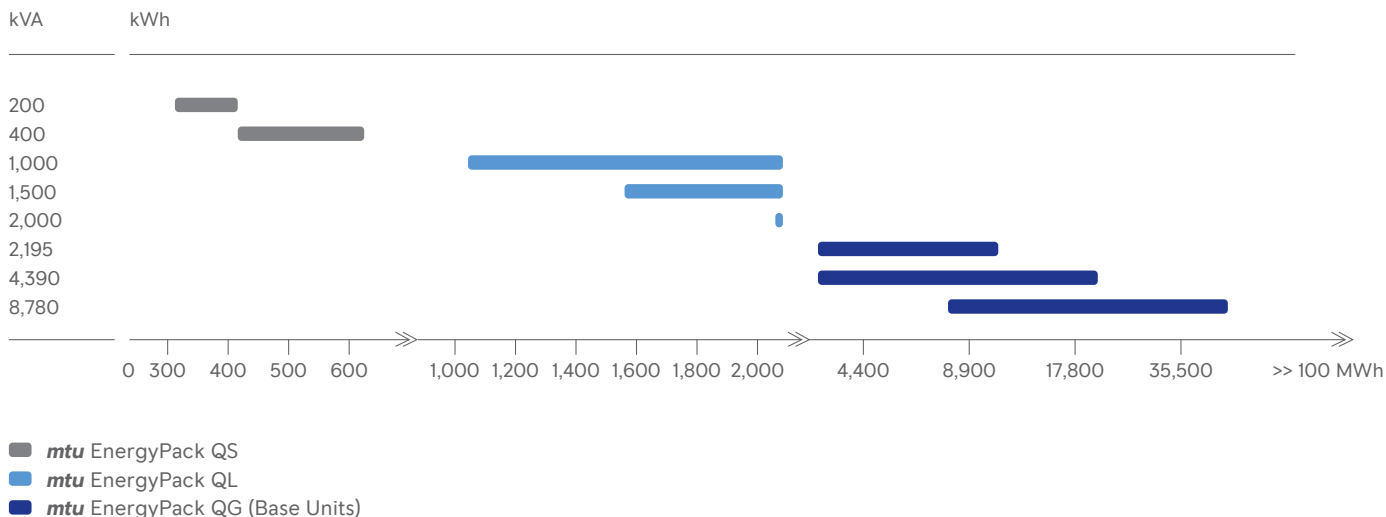
Technical data - *mtu* EnergyPack QG ¹ based on one fully assembled base unit

Sections	Value	<i>mtu</i> EnergyPack QG05
System	Cell chemistry	LFP
	Nominal capacity at 0.5 C	8.94 MWh
Ambient conditions	Min. ambient temperature	-20 °C (-30 °C)
	Max. ambient temperature	+40 °C (+55 °C)
	Humidity	< 95 %, non-condensing
	Maximum operation altitude	≤ 1,000 m (≤ 2,000 m)
Electrical	Nominal apparent power	4.39 MVA
	AC short circuit capability	16 kA, 1 s; other options on request
	Grid frequency	50 Hz / 60 Hz
	Power factor range	-0.5 .. 0.5; other options on request
	Black start capability	Optional
Housing	Corrosion protection	C4
	Protection class	IP54
	Footprint of one fully assembled base unit	7,1 x 18 m
MV-Skid option	Voltage	6.6 to 34.5 kV
Interface	Supported communication protocol	OPC-UA, Modbus TCP, other protocols on request

1) Product options in brackets

Power capacities

The **mtu** EnergyPack is available in different sizes: The QS and the QL, ranging from 200 kVA to 2,000 kVA, and from 312 kWh to 2,084 kWh, and the QG for grid scale storage needs, ranging from 4,400 kVA and 8,900 kWh to virtually any size.



Warranty and performance guarantee

Consult your local distributor for information about warranty and performance guarantee.

Materials and specifications are subject to change without notice. Please consult your local distributor for further product information.

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