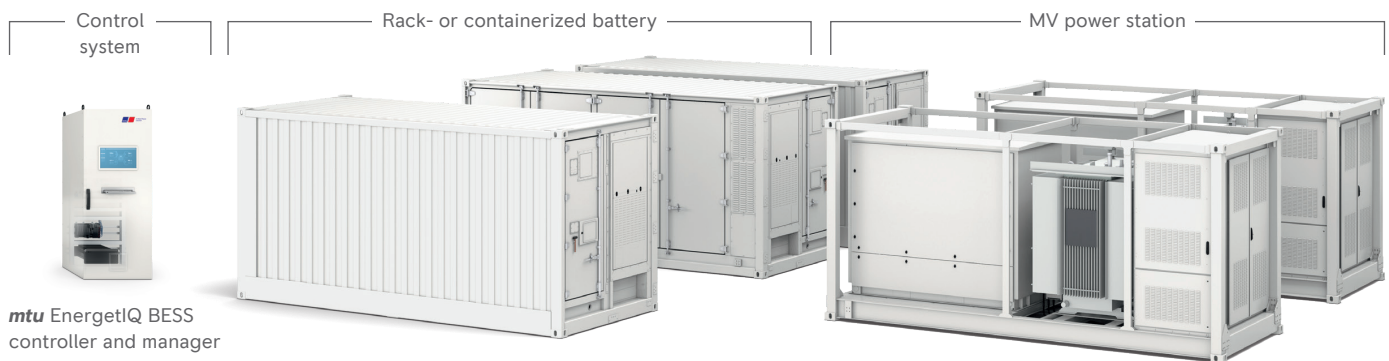




## Battery Energy Storage System (BESS) for grid-scale applications

# mtu ENERGYPACK QG



### Tailored turnkey solutions for your business

Our grid-scale Battery Energy Storage System (BESS) meets your business needs from MWh to GWh. Built with modular, Tier 1 components—battery systems, power conversion systems (PCS), MV transformers, and switchgear—our integrated system ensures flexibility for grid services, energy trading, renewables integration, and more. At its core, our proprietary **mtu EnergetIQ** Manager software provides advanced monitoring, battery diagnostics, cybersecurity, and optimized performance for maximum availability. Rolls-Royce is your end-to-end partner from planning to operation, taking out complexity and risk and ensuring bankability.



#### Highest level of safety and performance

- Comprehensive testing and compliance with international fire and safety standards
- Multi-level protection on module, rack, container, site, and control levels, featuring deflagration panels and dry pipe option
- Advanced grid support: Grid-forming capability, virtual inertia, and black start functionality
- Ultra-fast response: 150ms reaction time



#### All-in-one solution with MV/HV integration

Your partner throughout the entire project lifecycle, incl.

- Planning: Conceptual design, permitting support, detailed design
- Execution: Procurement & logistics, installation, construction & commissioning (incl. MV/ HV scope)
- Operation & maintenance: Longterm Service Agreements (LTSA), warranty extensions, augmentation
- End-of-life: Battery-recycling



#### Intelligent Rolls-Royce control system for highest availability and optimal efficiency

- Automated power management for seamless operation
- Customizable to fit your project's needs
- Cloud-based monitoring, real-time data analysis, battery health diagnostics (SOC and SOH optimization) and predictive maintenance
- Advanced in-house safeguards for reliability & data security, certified according to IEC 62443-4-1 ML2 and aligned with ISO 27001 and NIST2 requirements



#### Strong reliability and longevity

- Tier 1 components ensure top performance
- New generation cell technology with self-repair feature for zero degradation for up to five years and up to 15,000+ cycle lifetime
- Remote monitoring, diagnostics, and expert service ensure peak battery health, enabling proactive maintenance and maximized profitability



A Rolls-Royce  
solution

## System specification sheet (All given data depend on the system configuration)

General	Battery type	Latest LFP cell chemistry with zero degradation as an option
	Cooling	Battery: Liquid cooling / Inverter: Forced air or liquid cooling
	Safety features	Battery: Proactive safety (comprehensive testing, extensive quality control) / preventive fault detection / no propagation technology (cell to module) / multi-sensor detection (heat, gas, smoke) / multi-level suppression (exhaust ventilation system, aerosol, optional dry pipe) / fire rated enclosure. MVPS: electrical protective devices. Overall site safety design: e.g. clearances according to NFPA 855 / emergency response protocol / extinguishing water supply / physical access control
	Warranties	Extended warranties up to 15 years available
	Operational & maintenance	Customized Longterm Service Agreement (LTSA) including preventive and corrective maintenance, performance and availability guarantees available
Electrical	System capacity	Scaleable from MWh to GWh systems based on base units of 3 - 36 MWh
	Discharge duration (C-rate)	1 - 4 hours (0.25 - 1 C)
	System rated power	Scaleable from MW to GW systems based on base units of 3 to 9 MVA
	Output voltage	10 - 33 kV (other voltages available upon request)
	Grid frequency	50 Hz / 60 Hz
	Power factor range	1 / 0.8 C overexcited to 0.8 C underexcited (larger ranger possible upon request)
	System response time	> 150 ms (depending on application)
	Black start capability	optional
Mechanical	Dimensions	Transported in 20 to 40 ft container, overall system dimensions depending on specific system configuration
	Weight	Battery: Rack based ~3.5 t, container based 36 - 50 t / MV station skid: 13 - 23 t
	Corrosion protection	C4 (C5)
	Protection class	IP54 - IP56
Ambient conditions	Operating temperatue	- 20 to + 40° C (- 30 to + 55° C)
	Humidity	< 95 % non-condensing
	Altitude	< = 1,000 m (< = 2,000 m)
Communication & Controls	<b>mtu EnergetIQ BESS Controller:</b>	
	Functionality	BESS control and protection functions, asset data management and analytics, visualization
	Controller options	Fiber optic
	Communication protocols	OPC-UA, optional: Modbus TCP
	<b>mtu EnergetIQ Manager:</b>	
	Functionality	SCADA system, switch gear- and power plant controller, application manager, microgrid controller
	Controller options	Controller redundancy, ethernet redundancy, I/O redundancy, fiber optic, energy measurement modules (w or w/o synchronization), remote I/O, customer field bus interface, 3rd party plant interfaces
	Communication protocols	OPC-UA, optional: Modbus TCP, Profibus DP, Profi Net, Ethernet UDP, Modbus RTU, DNP3, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850
Main standards	Operational modes	On-grid, off-grid, on- & off-grid
	Battery	UN38.3, UL1973, IEC62619, UL9540A, NFPA855, IEC 62477, IEC 62619, IEC 62933-5-2, IEC 61000-6-2/6-4
	Inverter	IEC 60076, IEC 62271, IEC 62109-1
	Quality	ISO 9001:2015, ISO 14001:2015, ISO 45001:2018
Main component suppliers	Cyber security	IEC 62443-4-1 ML 2
	Battery	Latest CATL technology
	MV Station	Tier 1 supplier, SMA, PE, Nidec, ABB, Hitachi among others

All information is for general guidance only and may change without notice.