

600 V

RUG

powered by **LTW**

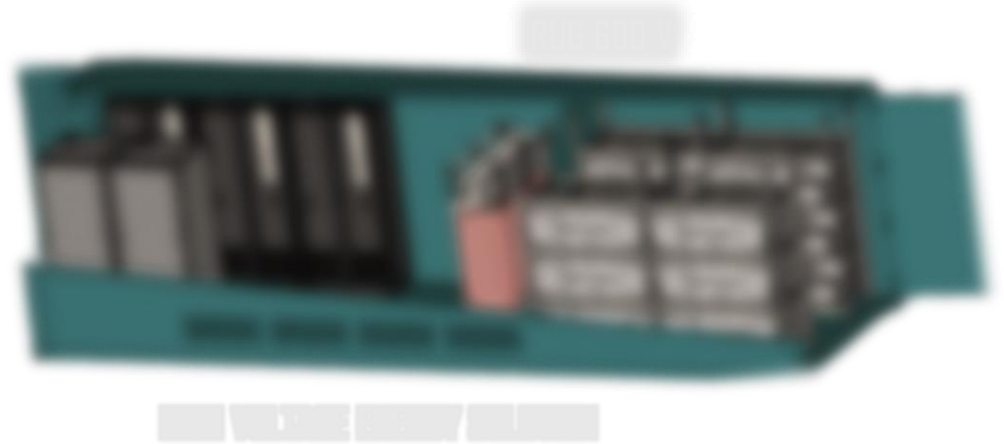
HIGH VOLTAGE SOLUTION

η

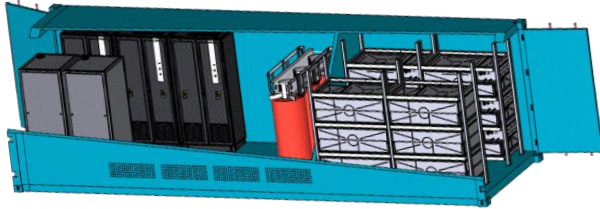
μ

IF YOU EVER THOUGHT ABOUT RTBR, THEN YOU MIGHT CONTINUE

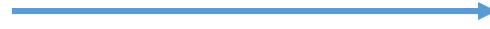
- Any type of Power Plants
- Renewable Energy Installation Storage
- EV Charging Stations
- 2h back-up systems
- Microgrids/Island Grids
- Price arbitrage
- Regulation of voltage & frequency
- Demand Side Response (DSR) auctions
- Microgrid mode possibility
- Black start capability
- Reducing Peak Demand costs (Distribution Power Costs)
- Reactive power compensation (for asynchronous motors and transformers which need reactive inductive power)



RUG 600 V $\mu \wedge \eta$



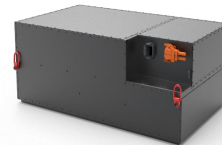
HIGH VOLTAGE ENERGY
SOLUTION FOR THOSE,
WHO WANT TO BE
PREPARED



Inverter
By Vonsch



η Industry
Battery



μ Magnum
Battery



...THIS IS HOW IT LOOKS LIKE



μ 125kVA η
158 kWh / 124,6 kWh



μ 250kVA η
316 kWh / 249,2 kWh



μ 400kVA η
388,2 kWh / 373,8 kWh



μ 500kVA η
633 kWh / 498,4 kWh



μ 1000kVA η
1108 kWh / 996,8 kWh

	High-Energy Magnum container (10 ft.)	High-Energy Magnum container (12 ft.)	High-Energy Magnum container (16 ft.)	High-Energy Magnum container (20 ft.)	High-Energy Magnum container (40 ft.)
Configuration	2 units x 180S01P (max)	4 units x 180S01P (max)	8 units x 180S01P (max)	8 units x 180S01P (max)	14 units x 180S01P / 16 units (η)
Dimensions	3030x2438x2891	3636x2438x2891	6058x2438x2891	6058x2438x2891	12100x2438x2891
Weight	4850	7500	11900	11900	~19 000kG
Nominal capacity@ 25°C, 1/3C (min) (100% DOD - 4,2V ... 2,7V / ogniwo)	μ Magnum 158 kWh η Industry 124,6 kWh	μ Magnum 316 kWh η Industry 249,2 kWh	μ Magnum 388,2 kWh η Industry 373,8 kWh	μ Magnum 633 kWh η Industry 498,4 kWh	μ Magnum 1 100 kWh η Industry 996,8 kWh
Nominal voltage	660 VDC	660 VDC	660 VDC	660 VDC	660 VDC
Nominal voltage	0,37kA (2x180A)	0,75kA (4x180A)	1,44kA (8x180A)	1,44kA (8x180A)	2,5 kA (14x180A)
Output voltage range	486 – 756 VDC	486 – 756 VDC	486 – 756 VDC	486 – 756 VDC	486 – 756 VDC
External voltage	24VDC	24VDC	24VDC	24VDC	24VDC / 486 - 756 VDC
Maximum constant discharge current	0,435kA	0,87 kA	1,75 kA	1,75 kA	3,5 kA
Maximum constant charge current	0,185kA	0,37 kA	0,75 kA	0,75 kA	1,5 kA
C-rate	μ Magnum 0.5 C / η Industry 1.5 C				
Certification	UN 38.3				
Charging norm	IEC61851-23				
Work temperature	-10 – 60st C				
Communication interface	Modbus TCP / CAN-BUS				
Remote control / access	YES				
Installation type	Outdoor				
Cooling system	Liquid type with internal battery heat exchangers				
Fire protection system	Sprinkler system				
Heating system	optional				
Inverter type	VONSCH GSE CENTRAL 400 / 125 x 1	VONSCH GSE CENTRAL 400 / 125 x 2		VONSCH GSE CENTRAL 400 / 125 x 4	VONSCH GSE CENTRAL 400 / 125 x 8
Inverter power	125kVA per single panel				

* Data shown here are used to show the differences between configurations. Exact specification and size is determined by the Project documentation

** Project documentation must be prepared within 30 days

600 V / η Industry Λ μ Magnum OPTIONS									
Inverters Units		1			2	3	4	8	16
Battery units	kWh			125kVA	250kVA	375kVA	500kVA	1000kVA	2000kVA
RUG 3/5/48-14	14	12kVA							
RUG 3/15/48-30	30		24kVA						
RUG 3/15/48-60	60			36kVA					
2 x Magnum 79,2kWh	158			μ					
2 x Industry 62,3kWh	124,6			η					
4 x Magnum 79,2kWh	316			μ	μ	μ			
4 x Industry 62,3kWh	249,2				η	η	η		
8 x Magnum 79,2kWh	633			μ	μ	μ	μ		
8 x Industry 62,3kWh	498,4					η	η	η	
12 x Magnum 79,2kWh	950			μ	μ	μ	μ		
14 x Magnum 79,2kWh	1108			μ	μ	μ	μ	μ	
16 x Industry 62,3kWh	996,8						η	η	
21 x Magnum 79,2kWh	1 633			μ	μ	μ	μ	μ	
28 x Magnum 79,2kWh	2217			μ	μ	μ	μ	μ	μ

	10"		12"		16"		20"		40"	
	μ Magnum	η Industry	μ Magnum	η Industry	μ Magnum	η Industry	μ Magnum	η Industry	μ Magnum	η Industry
Invertor unit - kVA	125		250		400		500		1000	
Battery unit - kWh	158	124,6	316	249,2	388,2	373,8	633	498,4	1108	996,8 / 16x
Approximate price before project focus	€ 178 120,-	€ 118 500,-	€ 389 200,-	€ 237 000,-	€ 458 000,-	€ 374 000,-	€ 686 524,-	€ 472 000,-	€ 1 351 100,-	€ 982 400,-

μ The Magnum RUG types specified above are designed for long-term charging and discharging in 0.5C mode to achieve 10.000 lifetime cycles. Other RUG configurations are needed to use stronger discharge currents.

η The Industry RUG types specified above are designed for long-term charging and discharging in 1.5C mode to achieve 10.000 lifetime cycles. Other RUG configurations are needed to use stronger discharge currents.

* Data shown here are used to show the differences between configurations. Exact price is determined by the Project documentation

** Project documentation must be prepared within 30 days



MAGNUM

79,2 kWh

- This battery cell has C-rate of 2,5 C Max.
- Cell manufacturer is Samsung
- Warranty at 0,5 C discharge / 10 000x
- Liquid cooled



LTW Battery – type MAGNUM 79,2 kWh	
Configuration & type of battery cells	Li-ion 180S01P (12 moduls of 15S01P)
Dimensions	1356 mm x 800 mm x 465 mm
Weight	555 kg
Nominal capacity at 25°C, 1/5C (min)	120 Ah
(100% DOD - 4,2V ... 2,7V / link)	
Nominal output power	79,27 kWh
Nominal voltage	660,6 VDC
Output voltage range	486 VDC ... 756 VDC
External voltage	16V ... 30V & 486 V - 756 V
Maximum constant discharge current	180 A / 2,5 C
Maximum constant charge current	120 A / 2C
Estimated constant power supply current at 24VDC	~0,6 A
Estimated constant power supply current (75ms) at 24VDC	~3,5 A
Charging norm	IEC61851-23
Work temperature	-25°C ... +55°C
Communication interface	CAN Bus 29-bit ID, 500 Kbit/s
Cooling system possibility	Liquid type with internal battery heat exchangers
Heating	Optional



INDUSTRIAL

62,3 kWh

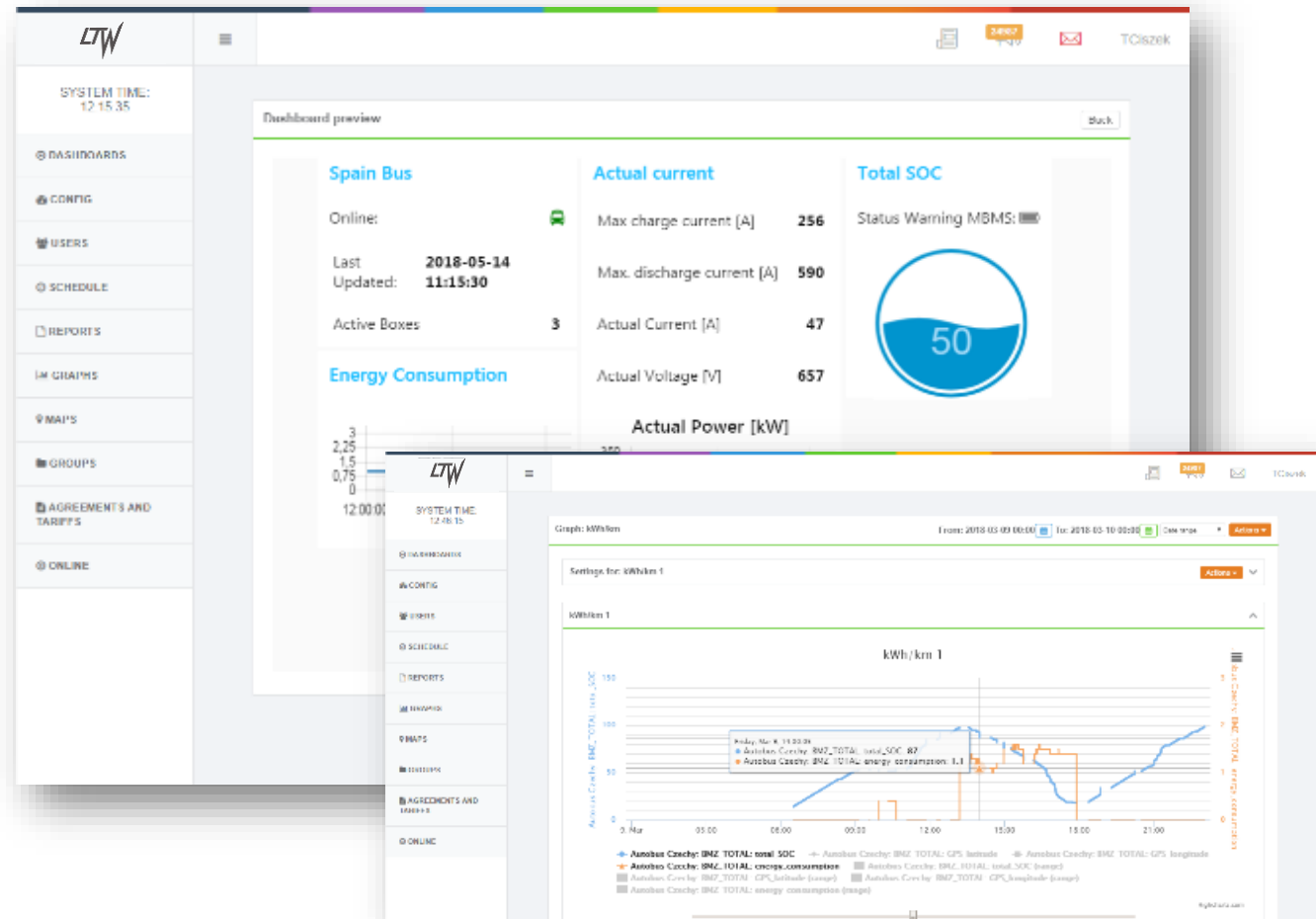
- This cell has C-rate of 4C Max.
- Cell manufacturer is Panasonic
- Warranty at 1,5 C discharge / 10 000x
- Not liquid cooled



LTW Battery – type INDUSTRIAL 62,3 kWh	
Configuration & type of battery cells	Li-ion 180S01P (15 moduls of 12S01P)
Dimensions	800 mm x 850 mm x 2100 mm
Weight	670 kg
Nominal capacity at 25°C, 1/5C (min) (100% DOD - 4,2V ... 2,7V / link)	94 Ah
Nominal output power	62,3 kWh
Nominal voltage	662,4 VDC
Output voltage range	540 VDC ... 747 VDC
External voltage	12 VDC
Maximum discharge current of a single battery block @ 25°C	230 A
Maximum charging current of a single battery block @ 25°C	100 A
Continuous supply current for a single battery block @ 12 VDC	~1 A
Pulse supply current (75 ms) for a single battery block @ 12 VDC	~8 A
Certification	UN38.3, CE
Operating temperature range	0°C ... +55°C
Recommended temperature	23°C
Slave ESS block control via data bus	via CAN bus
Communication interface	MODBUS TCP
LCD display with the battery system's current status	7" display in Master ESS
Battery charge indicator of a single battery block	LED indicator
Remote monitoring with event log	(option) – online
Remote servicing	Software upgrades and system monitoring possible via remote access
Pre-charge	External system required.
IP class	IP55
High-current connection between the battery blocks	Busbar output
Estimated number of cycles (until 70% SOH @ 25°C)	6000
Depth of Discharge (DoD)	99%
Battery chemistry	Li-ion NMC / LMO

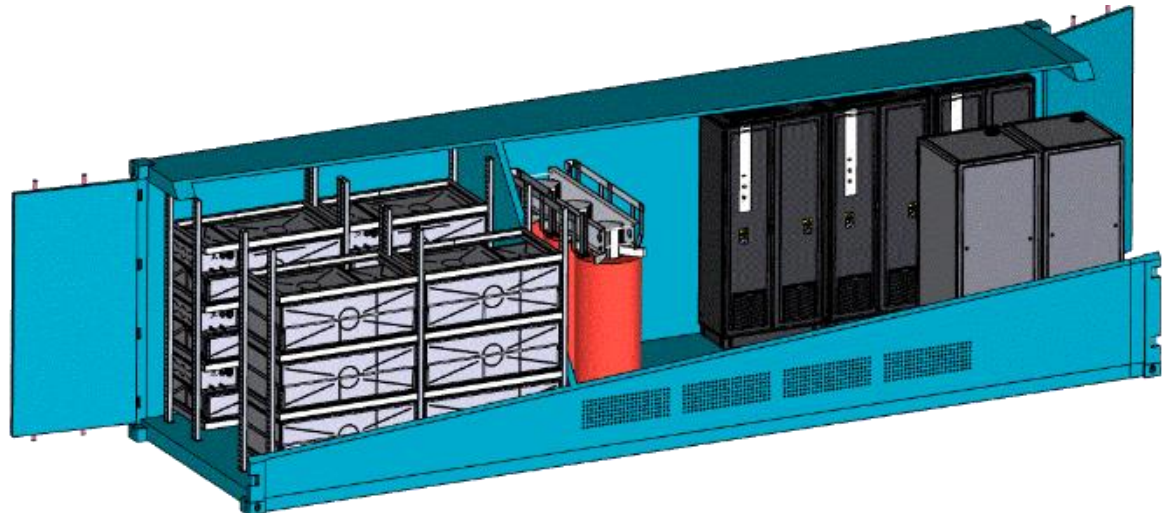
TECHNICAL DATA MONITORING

- Every 5 seconds, the monitoring unit sends more than **50 different values** from **each battery unit** to our secured (TIER III) servers
- All collected data is kept for the **whole warranty period** or longer.
- Alert module for exceeding values
- Possibility for manage users' account
- Web dashboard with live graphs



WHY ENERGY SOLUTION powered by LTW ?

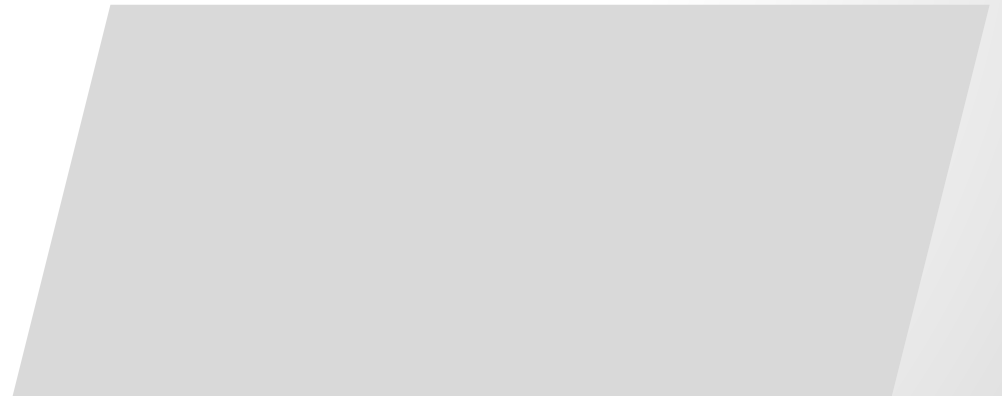
- LTW together with BMZ is the biggest energy producers – **best li-ion cell used technology**
- Smart Power Station energy storage system experiences from Germany, Poland & Czechia
- Individual configurations for customer needs to achieve most **effective** ROI
- Effectivity = **3/4 Economical Success**
- LTW is former leader at „**RTBR**“ market with energy storage solutions
- Internal liquid cooling



RUG

powered by **LTW**

600 V CONTACT



TECHNICAL SUPPORT
GEORGE JANDA
george@ltw-battery.at

*Economical success belongs to the **preppers***