Traction technologies

OPEN LEAD-ACID (PZS, PZB & MDL/MBS BLOCKS)

- The most representative solution portfolio for the Material Handling Industry.
- Vented lead acid battery with liquid electrolyte.
- Proven tubular plate technology provides long service life and excellent reliability, utilizing premium quality materials.

GEL (PZV)

- The maintenance free valve regulated gas recombination batteries with GEL electrolyte.
- Particularly suitable in the food, pharmaceutical and chemical industry.
- No acid leakage and minimum gas emissions.

LOW MAINTENANCE

- The low maintenance solution with up to 13 weeks interval.
- With special design and optimized alloys minimizes water consumption.
- Best solution to optimize customer's service cost.

CSM (Copper Stretch Metal)

- Based on CSM (Copper Stretch Metal) technology CSM batteries ensure increased performance, capacity and energy efficiency.
- Suitable for operation under extreme conditions (Cold Storage).
- Allowing fast and opportunity charging (2 shift use).

SQUARE

- Suitable for heavy-duty applications
- Increased capacity in standard cell design/volume
- Special chargers equipped with faster customized charging profiles allow also opportunity charging
- Square positive tubular plate
- Standard equipped with: central water filling system, acid circulation, capacitive battery electrolyte level sensor

EX-PROOF

- For Ex zones
- Open Lead-Acid and GEL technologies
- Certified ATEX and IECEx

PURE LEAD CARBON

- Maintenance Free, 99,99% Pure Lead
- Super fast charging and exceptional PSOC performance.
- Allows fast & intermediate charging.
- Lead Carbon added to negative electrodes increases power and reduces sulphation.

LI-ION

- The Li-Ion battery based on our vast know how and long experience for advanced applications.
- The combination of fast and opportunity charging with the battery's outstanding efficiency and charge acceptance enables multi-shift operation and an overall 24/7 availability

Traction technologies




Product Solution	DIN (PzS)	BS (PzB)	MDL-MBS Block	Gel (EPzV-PzVB)	LM
Application	Standard & Heavy Duty	Standard & Heavy Duty	Standard	Standard	Low Maintenance
Technology	Open Lead-Acid	Open Lead-Acid	Open Lead-Acid	VRLA (GEL)	Open Lead-Acid
Plate Design	Tubular Positive Plate	Tubular Positive Plate	Tubular Positive Plate	Tubular Positive Plate	Tubular Positive Plate
Gas Emission	Yes	Yes	Yes	Minimal	50 - 80% reduced gas emission
Top-Up with Demineralized Water	Weekly (every 5 charges)	Weekly (every 5 charges)	Weekly (every 5 charges)	-	8 - 13 weeks
Recommended Maintenance*	Every 3 months	Every 3 months	Yearly	Yearly	Every 3 months
Cell Design	IEC 60254-2 series L-E (2V DIN cells)	IEC 60254-2 series L-E (2V BS cells)	Multicell block (24 DIN-B/BS)	IEC 60254-2 series L-E (2V DIN-BS cells)	IEC 60254-1 & IEC254-1 (2V DIN cells)
Cell Voltage	2V	2V	2V (24V)	2V	2V
Cell Range (C5)	100 - 1150Ah	46 - 1188Ah	130 - 250Ah	104 - 1120Ah	250 - 1150Ah
Capacity	Standard	Standard	Standard	Standard	Standard
Inter-Cell Connections	Flexible connection	Flexible connection	Welded (internal)	Flexible connection	Flexible connection
Design Life	1500 cycles	1500 cycles	1500 cycles	1250 cycles (60% DOD)	1500 cycles
DOD	80%	80%	80%	60 - 80%	80%
Automatic Waterfill	Optional	Optional	Optional	-	Optional, recommended
Acid Circulation	Optional	Optional	-	-	Optional
Electrolyte Level Sensor	Optional	Optional	-	-	Optional
Datalogger	Optional	Optional	Optional	Optional	Optional
Best Charging Solution	7 to 12h, depending the selected charger	7 to 12h, depending the selected charger	7 to 12h, depending the selected charger	12h recommended, only adapted PZV charging profile	7 to 12h, depending the selected charger
Fast Charging	With fast charger and acid circulation up to 6,5h	With fast charger and acid circulation up to 6,5h	-	-	-
Charging Method	Transformer based or High Frequency Charger	Transformer based or High Frequency Charger	High Frequency Charger	GEL HF charger	High Frequency Charger
Charger Pump for Acid Circulation	In combination with acid circulation option	In combination with acid circulation option	-	-	In combination with acid circulation option
Container Colour	Standard or customized	Standard or customized	Polypropylene container	Standard or customized	Standard or customized
Special Features	Most Used Technology	Most Used Technology	Smart Low Budget Solution	No Maintenance	Low Maintenance

* Recommended inspection depends on usage. For more information, see page 151

Product Solution	CSM	Square (PSQ)	Atex (Ex)	Pure Lead Carbon	Lithium-Ion (LiFePO4)
Application	Heavy/Extreme Duty	Heavy/Extreme Duty	Atex Zone/Explosion Free	Special Applications	Special Applications
Technology	Open Lead-Acid/Copper	Open Lead-Acid	Open Lead-Acid/VRLA (GEL)	VRLA (AGM)	Lithium-ion
Plate Design	Tubular Positive Plate Copper Negative Plate	Square Positive Plate	Tubular Positive Plate	Thin Plate Pure Lead	Lithium-ion
Gas Emission	Yes	Yes	Yes	Minimal	None
Top-Up with Demineralized Water	Weekly (every 5 charges)	Weekly (every 5 charges)	Weekly (every 5 charges)	-	-
Recommended Maintenance*	Every 3 months	Every 3 months	Every 3 months	Yearly	Yearly
Cell Design	IEC 60254-2 series L-E (2V DIN cells)	IEC 60254-2 series L-E (2V DIN cells)	IEC 60254-2 series L-E (2V DIN-BS cells)	Multicell block	-
Cell Voltage	2V	2V	2V	12V	3,2V
Cell Range (C5)	260 - 1600 Ah	280 - 2040Ah	46 - 1860Ah	Custom Made	210 - 840 Ah
Capacity	Increased	Increased	Standard	High energy density	High energy density
Inter-Cell Connections	Flexible connection	Flexible connection	Flameproof Flexible Connector	Flexible connection	Laser Welded Bars
Design Life	> 1500 cycles	1800 cycles (70% DOD), 1500 cycles (80% DOD)	1500 cycles	1200 cycles	Up to 4000 cycles
DOD	80%	80%	80%	60%	80%
Automatic Waterfill	Optional	Included	Included	-	-
Acid Circulation	Optional	Included	Optional	-	-
Electrolyte Level Sensor	Optional	Included	-	-	-
Datalogger	Optional	Optional	-	Optional	Optional
Best Charging Solution	4,5 to 8h, depending the selected charger	7 to 12h, depending the selected charger	7 to 12h, depending the selected charger	4 to 8h, depending the selected charger	4 to 8h, depending working conditions
Fast Charging	With fast charger and acid circulation up to 4,5h	With fast charger up to 5,5h (Acid Circulation Standard)	Available, not recommended	Possible, up to 4h	Recommended, up to 2h
Charging Method	High Frequency Charger	High Frequency Charger	Transformer based or High Frequency Charger	High Frequency Charger	CCCV
Charger Pump for Acid Circulation	In combination with acid circulation option	Always, because of standard included acid circulation	In combination with acid circulation option	-	-
Container Colour	RAL 3001	Standard or customized	Standard or customized	Standard or customized	Standard or customized
Special Features	-15% internal resistance, Ideal for coldstore, longer lifetime, better Energy Throughput	Important increase of capacity, longer lifetime	With Certificates Atex & IECEx	-40°C to +65°C, PSOC, Made-to-Measure	Fully Customized, Available with Heating/Cooling

* Recommended inspection depends on usage. For more information, see page 151

Traction batteries

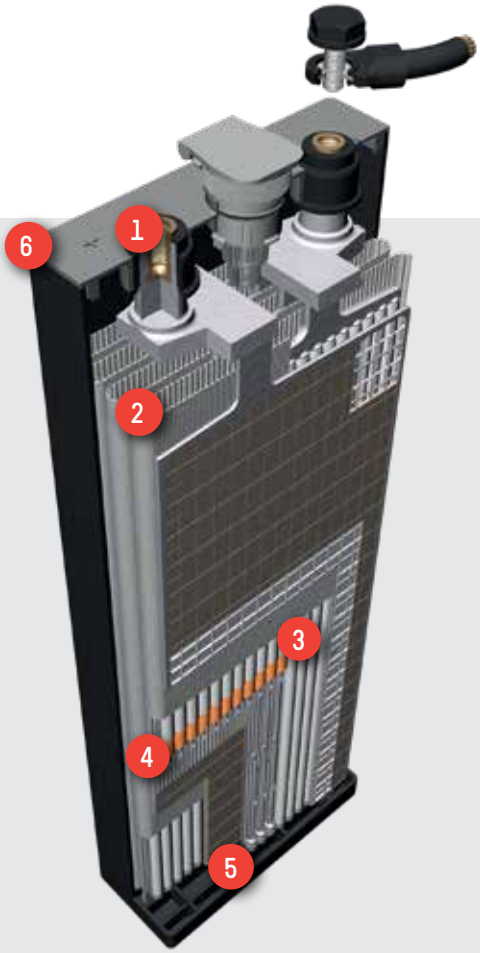
2 VOLT TRACTION CELLS

2 volt traction cells are mainly used in heavy industrial electrical applications, such as: electric forklifts, electric trucks, large industrial cleaning machines, tower wagons etc.

The cells are composed of positive tubular plates and negative grid plates, which guarantee a higher capacity and longer life than the conventional batteries with flat plates. The positive and negative plates are separated by a microporous separator in order to avoid mutual contact and short circuits. The plates are packed in a polypropylene container that is resistant to vibrations. At the bottom of this container, there is a reservoir to collect the precipitate and thus to prevent short circuits.

On top of the cells, there is a lid to prevent the coming-up of the separators by vibrations and shocks and causing a short circuit. The lid also protects against acid and protects the plates and the separators during filling. The cells are standard equipped with manual filler caps and a little basket which simplifies the refilling (refill up to the bottom of the basket).

2V CELL - INSIDE VIEW



1. **Terminal**
   Innovative conical design for perfect sealing
2. **Separator**
   Enveloped separator, preventing short-circuits
3. **Tubular plate**
   For long cycle life, endurance and high power density
4. **Red Lead**
   Produced with 99,99% pure lead for optimal performance
5. **Bottom bar**
   Ultrasonic welding with adequate space to absorb growth of spine
6. **Full capacity**
   Within the first 3 - 5 cycles

THE FOLLOWING VERSIONS ARE AVAILABLE

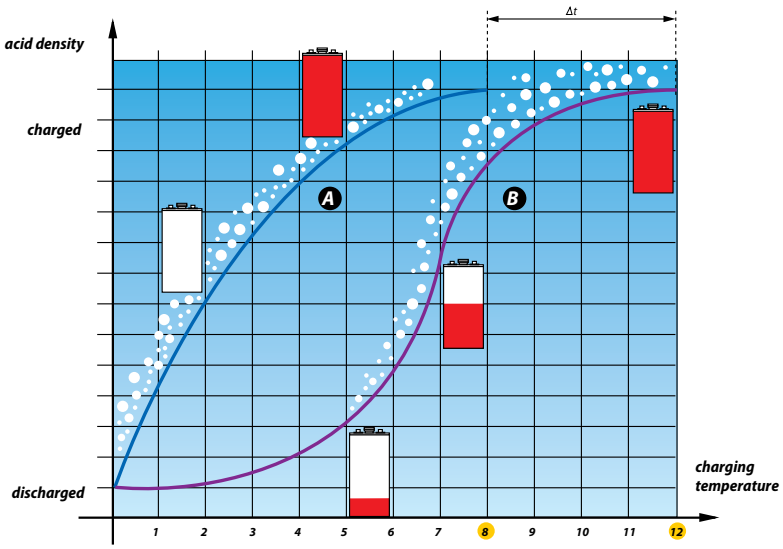
"S-version": the cells are linked by flexible screwed connections.

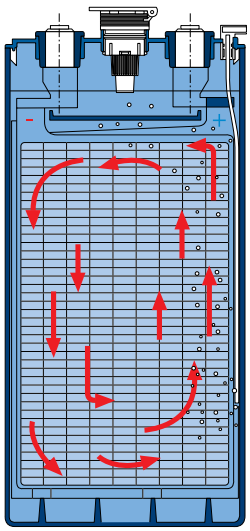
"A-version": automatic filling system on the basis of filler caps and floats.
Advantage: all cells are simultaneously refilled in an instant and without spilling up to the right level: time-saving!

"Z-version": Acid circulation version, cells with acid circulation. Every element contains a little tube in which the charger pumps a little quantity of air which makes the electrolyte circulate from the beginning of the charge (cf diagram)

A: Traction battery "Z" acid circulation

B: Traditional traction battery





THE CONTAINERS ARE AVAILABLE IN METAL AND PLASTIC

ADVANTAGES PLASTIC CONTAINER:

- Budget friendly
- Limited sizes
- Limited applications
- No battery change possible
- Light weight compared to coated steel
- Non-corrosive
- Easy to clean
- Battery acid resistant material
- Long life
- The battery is safely stored

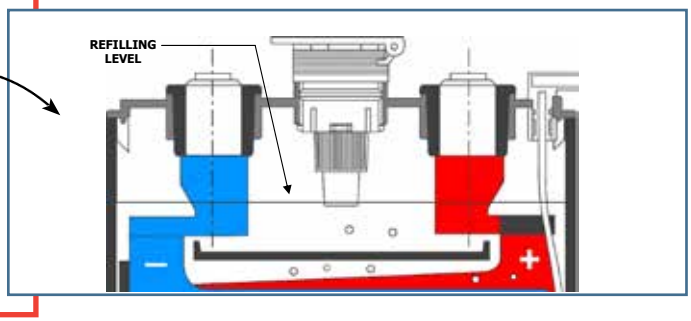
ADVANTAGES METAL CONTAINER:

- Common choice
- All sizes available
- Acid resistant coating
- Different color options
- Robust
- For all applications
- Battery change possible

Traction batteries

A COUPLE OF TIPS FOR A LONGER BATTERY LIFE

- Only refill with demineralised water
- Refilling after charge
- Refilling up to the bottom side of the baskets: not higher!
- Keep the upper side of the battery dry and clean
- Use an adequate charger for battery & capacity
- Avoid intermediate charges



HOW TO ORDER A TRACTION BATTERY?

- Brand and type of the forklift truck
- Type of the battery & reference of the elements
- Voltage & Ah of the battery
- Size of the outerbox or of the elements: X x Y x H
- How much time does one work with the battery: one shift,...
- Options: autom. filling system, acid circulation
- Type of the battery plug
- Fill out the form on page 152 of this catalogue

OR CONTACT OUR SALES!

Attention:

- Is my charger adapted to my battery?
- How long do I have to charge?

12 hours = Wa-charger
8 hours = WoWa-charger
< 8 hours = IUIa-charger

FOR MAXIMUM SERVICE LIFE

BAT/49206 Universal WiFi datalogger

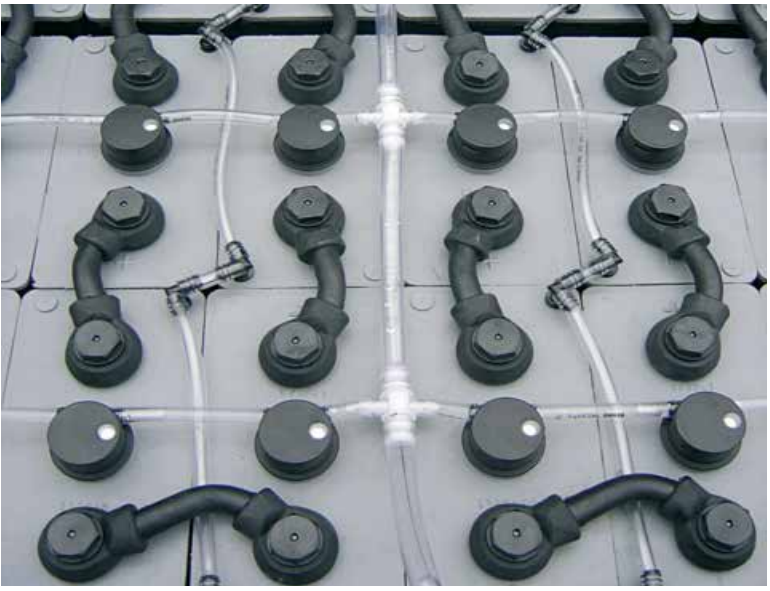
The data logger is connected to an industrial vehicle battery. It monitors the main battery parameters, recording all essential values then ensuring its utmost care and efficiency.

By external sensors (bidirectional current sensor, thermic sensor, liquid level sensor) all battery data can be read, recorded and broadcasted along working and charging cycle of the machine.

Collected data allows detecting battery status as well as introducing appropriate corrections to charging process insuring an extended battery lifetime.

By battery CAN Bus charger it is possible to modify real-time the charge algorithm.

More info: p. 106

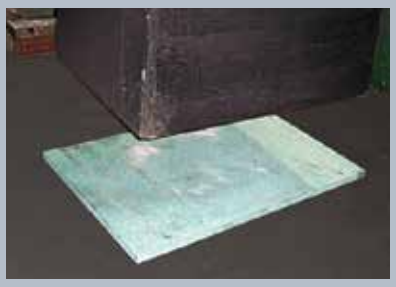


BENEFITS OF ACID CIRCULATION

- Thanks to the constant charge over the total surface of the plates, the charging time is considerably reduced by ± 2 hours
- Lower charge factor: from 1,20 up to 1,05
- 15 % more energy saving
- Lower battery temperature
- 75 % less water consumption

TIP

Acid circulation in combination with high frequency charger results in a battery with maximum usability and a minimum of maintenance!



PROTECTION MAT

Protects the floor from damages and pollution. Protects the battery from heavy shocks.

- BAT/28351 : 120 x 100 x 2 mm - Soft finish

  Other sizes are available upon request

LET YOUR BATTERY TELL YOU WHEN IT NEEDS WATER!

Electrolyte level warning systems

The SmartBlinky™ battery watering monitor is ideal for batteries where the top of the battery can be seen. The SmartBlinky's Super Bright LED is eight times brighter than the previous model, providing a much clearer indication that the battery requires watering. The LED is integrated onto the probe body in a single piece that sits directly on the battery. This is the value model in the Blinky family of battery watering monitors.
Works on all industrial lead acid batteries!

More info & other models: p. 119

Traction batteries

DIN - PZS

Our 2V cells and traction batteries are the most representative solution offered for our customers in the material handling industry. They are the proven vented solution with excellent reliability and long service life, using premium quality materials.

The cell design, state of the art production equipment and premium quality materials provide high end performance, excellent reliability and long service life.

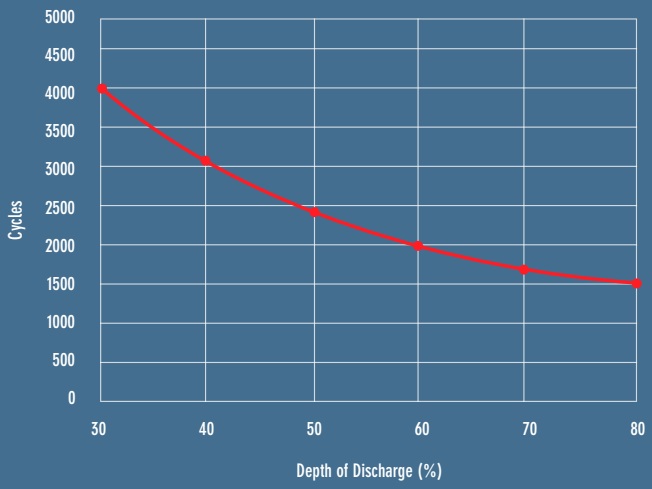
Our PzS cell ranges, fully comply to the IEC 60254-1/2, DIN 43531, DIN 43535, DIN 43536, DIN 43537, EN 62485-3 standards and are available in DIN dimensions, ensuring full compatibility and flexibility for all battery applications.

Positive tubular plate diameter 8.7 mm (more active material!), specific gravity of the electrolyte 1.29kg/l..

BENEFITS

- High capacity (exceed nominal values of international standards)
- Resistance to vibrations
- Short charging times
- Low consumption of distilled water
- Simple maintenance
- High performance, reliability and long service life
- High energy density
- Robust and durable construction
- High quality raw materials and components
- Recyclable

SERVICE LIFE: 1500 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

APPLICATIONS

Forklifts | Industrial cleaning machines | Pallet jack | Access equipment | AGV | Marine | GSE

CELL TYPE	Capacity (Ah/5h)	Discharge (A)	Charging current (A)		Weight (kg)		Dimensions (mm)			
			Start	End	Dry	Filled	X	Y	H	h
2 PzS 100	100	20	20	5	5,7	6,8	45	198	305	282
3 PzS 150	150	30	30	8	7,7	9,6	63	198	305	282
4 PzS 200	200	40	40	10	9,9	12,4	81	198	305	282
5 PzS 250	250	50	50	13	12,2	15,3	99	198	305	282
6 PzS 300	300	60	60	15	14,5	18,2	118	198	305	282
7 PzS 350	350	70	70	18	16,7	21,1	136	198	305	282
8 PzS 400	400	80	80	20	19,0	24,0	155	198	305	282
9 PzS 450	450	90	90	23	21,3	26,9	173	198	305	282
10 PzS 500	500	100	100	25	23,6	29,8	191	198	305	282
12 PzS 600	600	120	120	30	28,4	35,9	227	198	305	282
2 PzS 120	120	24	24	6	6,5	8,5	45	198	363	340
3 PzS 180	180	36	36	9	9,2	11,9	63	198	363	340
4 PzS 240	240	48	48	12	11,9	15,4	81	198	363	340
5 PzS 300	300	60	60	15	14,6	18,9	99	198	363	340
6 PzS 360	360	72	72	18	17,2	22,4	118	198	363	340
7 PzS 420	420	84	84	21	19,9	25,9	136	198	363	340
8 PzS 480	480	96	96	24	22,6	29,4	155	198	363	340
9 PzS 540	540	108	108	27	25,2	32,9	173	198	363	340
10 PzS 600	600	120	120	30	27,9	36,4	191	198	363	340
12 PzS 720	720	144	144	36	33,6	43,7	227	198	363	340
2 PzS 160	160	32	32	8	8,1	10,2	45	198	425	402
3 PzS 240	240	48	48	12	11,2	14,5	63	198	425	402
4 PzS 320	320	64	64	16	14,6	18,7	81	198	425	402
5 PzS 400	400	80	80	20	17,9	22,9	99	198	425	402
6 PzS 480	480	96	96	24	21,3	27,1	118	198	425	402
7 PzS 560	560	112	112	28	24,7	31,3	136	198	425	402
8 PzS 640	640	128	128	32	28,0	35,5	155	198	425	402
9 PzS 720	720	144	144	36	31,4	39,7	173	198	425	402
10 PzS 800	800	160	160	40	34,7	43,9	191	198	425	402
12 Pzs 960	960	192	192	48	41,8	52,6	227	198	425	402
2 PzS 180	180	36	36	9	9,1	11,6	47	198	495	472
3 PzS 270	270	54	54	14	12,8	16,6	65	198	495	472
4 PzS 360	360	72	72	18	16,6	21,4	83	198	495	472
5 PzS 450	450	90	90	23	20,5	26,2	101	198	495	472
6 PzS 540	540	108	108	27	24,4	31,0	119	198	495	472
7 PzS 630	630	126	126	32	28,2	35,8	137	198	495	472
8 PzS 720	720	144	144	36	32,1	40,6	155	198	495	472
9 PzS 810	810	162	162	41	35,9	45,4	173	198	495	472
10 PzS 900	900	180	180	45	39,8	50,2	191	198	495	472
12 PzS 1080	1080	216	216	54	47,8	60,1	227	198	495	472
2 PzS 210	210	42	42	11	10,3	13,3	47	198	538	515
3 PzS 315	315	63	63	16	14,4	18,3	65	198	538	515
4 PzS 420	420	84	84	21	18,6	23,7	83	198	538	515
5 PzS 525	525	105	105	26	22,9	29,1	101	198	538	515
6 PzS 630	630	126	126	32	27,1	34,5	119	198	538	515
7 PzS 735	735	147	147	37	31,4	39,9	137	198	538	515

Also available in the special technologies:
- CSM
- SQUARE

CELL TYPE	Capacity (Ah/5h)	Discharge (A)	Charging current (A)		Weight (kg)		Dimensions (mm)			
			Start	End	Dry	Filled	X	Y	H	h
8 PzS 840	840	168	168	42	35,6	45,3	155	198	538	515
9 PzS 945	945	189	189	47	39,9	50,7	173	198	538	515
10 PzS 1050	1050	210	210	53	44,5	56,4	191	198	538	515
12 Pzs 1260	1260	252	252	63	53,0	67,2	227	198	538	515
2 PzS 230	230	46	46	12	10,8	14,0	47	198	568	545
3 PzS 345	345	69	69	17	15,3	19,8	65	198	568	545
4 PzS 460	460	92	92	23	19,9	25,6	83	198	568	545
5 PzS 575	575	115	115	29	24,8	31,4	101	198	568	545
6 PzS 690	690	138	138	35	29,6	37,2	119	198	568	545
7 PzS 805	805	161	161	40	34,5	43,0	137	198	568	545
8 PzS 920	920	184	184	46	39,3	48,8	155	198	568	545
9 PzS 1035	1035	207	207	52	44,5	54,9	173	198	568	545
10 PzS 1150	1150	230	230	58	49,3	60,7	191	198	568	545
12 PzS 1380	1380	276	276	69	59,0	72,3	227	198	568	545
2 PzS 250	250	50	50	13	11,6	14,7	47	198	593	570
3 PzS 375	375	75	75	19	16,2	20,7	65	198	593	570
4 PzS 500	500	100	100	25	21,1	26,9	83	198	593	570
5 PzS 625	625	125	125	31	26,0	33,1	101	198	593	570
6 PzS 750	750	150	150	38	30,9	39,3	119	198	593	570
7 PzS 875	875	175	175	44	35,8	45,5	137	198	593	570
8 PzS 1000	1000	200	200	50	40,7	51,7	155	198	593	570
9 PzS 1125	1125	225	225	56	45,9	58,2	173	198	593	570
10 PzS 1250	1250	250	250	63	50,8	64,4	191	198	593	570
12 PzS 1500	1500	300	300	75	60,6	76,8	227	198	593	570
2 PzS 280	280	56	56	14	14,4	20,6	47	198	709	686
3 PzS 420	420	84	84	21	19,4	25,3	65	198	709	686
4 PzS 560	560	112	112	28	25,1	32,2	83	198	709	686
5 PzS 700	700	140	140	35	30,9	39,5	101	198	709	686
6 PzS 840	840	168	168	42	36,6	46,7	119	198	709	686
7 PzS 980	980	196	196	49	42,3	54,0	137	198	709	686
8 PzS 1120	1120	224	224	56	48,0	61,2	155	198	709	686
9 PzS 1260	1260	252	252	63	54,1	68,8	173	198	709	686
10 PzS 1400	1400	280	280	70	59,8	76,0	191	198	709	686
12 PzS 1680	1680	336	336	84	71,3	90,5	227	198	709	686
2 PzS 310	310	62	62	16	14,9	21,5	47	198	743	720
3 PzS 465	465	93	93	23	20,6	26,1	65	198	743	720
4 PzS 620	620	124	124	31	26,7	33,5	83	198	743	720
5 PzS 775	775	155	155	39	32,9	41,1	101	198	743	720
6 PzS 930	930	186	186	47	39,0	48,9	119	198	743	720
7 PzS 1085	1085	217	217	54	45,1	56,7	137	198	743	720
8 PzS 1240	1240	248	248	62	51,3	64,5	155	198	743	720
9 PzS 1395	1395	279	279	70	57,8	72,8	173	198	743	720
10 PzS 1550	1550	310	310	78	64,0	80,6	191	198	743	720
12 PzS 1860	1860	372	372	93	76,2	96,2	227	198	743	720

Traction batteries

BS (BRITISH STANDARD) - PZB

Our 2V cells and traction batteries are the most representative solution offered for our customers in the material handling industry. They are the proven vented solution with excellent reliability and long service life, using premium quality materials.

The cell design, state of the art production equipment and premium quality materials provide high end performance, excellent reliability and long service life.

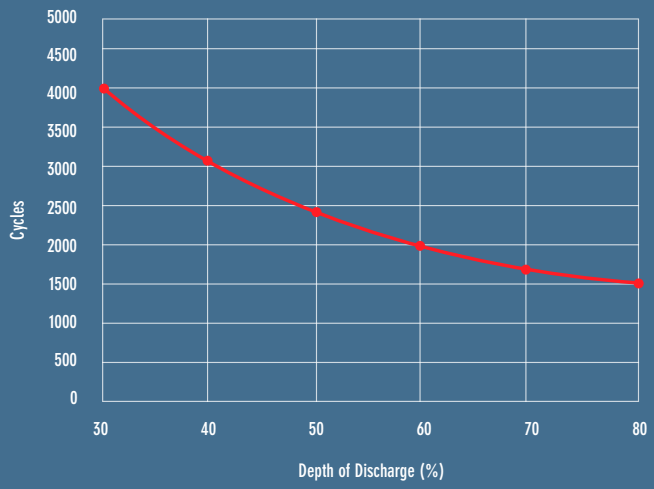
Our PzB cell ranges, fully comply to the IEC 60254-1/2, DIN 43531, DIN 43535, DIN 43536, DIN 43537, EN 62485-3 standards and are available in BS dimensions, ensuring full compatibility and flexibility for all battery applications.

Positive tubular plate diameter 8.7 mm (more active material!), specific gravity of the electrolyte 1.29kg/l..

BENEFITS

- High capacity (exceed nominal values of international standards)
- Resistance to vibrations
- Short charging times
- Low consumption of distilled water
- Simple maintenance
- High performance, reliability and long service life
- High energy density
- Robust and durable construction
- High quality raw materials and components
- Recyclable

SERVICE LIFE: 1500 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

APPLICATIONS

Forklifts | Industrial cleaning machines | Pallet jack | Access equipment | AGV

CELL TYPE	Capacity (Ah/5h)	Discharge (A)	Charging current (A)		Weight (kg)		Dimensions (mm)			
			Start	End	Dry	Filled	X	Y	H	h
2PzB46	46	9,2	9	2,3	3,0	3,7	45	157,5	240	216
3PzB69	69	14	14	3,5	4,2	5,4	61	157,5	240	216
4PzB92	92	18	18	4,6	5,4	6,9	77	157,5	240	216
5PzB115	115	23	23	5,8	6,6	8,4	93	157,5	240	216
6PzB138	138	28	28	6,9	7,8	10,0	109	157,5	240	216
7PzB161	161	32	32	8,1	9,0	11,6	125	157,5	240	216
8PzB184	184	37	37	9,2	10,2	13,2	141	157,5	240	216
9Pzb207	207	41	41	10,0	11,9	15,3	157	157,5	240	216
10PzB230	230	46	46	12,0	13,1	16,9	173	157,5	240	216
11PzB253	253	51	51	13,0	14,3	18,4	189	157,5	240	216
2PzB64	64	13	13	3,2	4,0	5,1	45	157,5	284	260
3PzB96	96	19	19	4,8	5,6	7,1	61	157,5	284	260
4PzB128	128	26	26	6,4	7,2	9,2	77	157,5	284	260
5PzB160	160	32	32	8,0	8,8	11,3	93	157,5	284	260
6PzB192	192	38	38	10,0	10,3	13,2	109	157,5	284	260
7PzB224	224	45	45	11,0	11,7	15,0	125	157,5	284	260
8PzB256	256	51	51	13,0	13,1	16,8	141	157,5	284	260
9PzB288	288	58	58	14,0	14,9	19,1	157	157,5	284	260
10PzB320	320	64	64	16,0	16,3	20,9	173	157,5	284	260
11PzB352	352	70	70	18,0	17,7	22,7	189	157,5	284	260
2PzB84	84	17	17	4,2	5,4	6,9	45	157,5	350	326
3PzB126	126	25	25	6,3	7,3	9,4	61	157,5	350	326
4PzB168	168	34	34	8,4	9,3	11,9	77	157,5	350	326
5PzB210	210	42	42	11,0	11,3	14,5	93	157,5	350	326
6PzB252	252	50	50	13,0	13,5	17,3	109	157,5	350	326
7PzB294	294	59	59	15,0	15,6	20,0	125	157,5	350	326
8PzB336	336	67	67	17,0	17,6	22,3	141	157,5	350	326
9PzB378	378	76	76	19,0	19,9	25,2	157	157,5	350	326
10PzB420	420	84	84	21,0	21,8	27,6	173	157,5	350	326
11PzB462	462	92	92	23,0	23,7	30,0	189	157,5	350	326
2PzB110	110	22	22	5,5	6,1	7,6	45	157,5	423	399
3PzB165	165	33	33	8,3	8,5	10,5	61	157,5	423	399
4PzB220	220	44	44	11,0	11,0	13,5	77	157,5	423	399
5PzB275	275	55	55	14,0	13,5	16,5	93	157,5	423	399
6PzB330	330	66	66	17,0	15,9	19,6	109	157,5	423	399
7PzB385	385	77	77	19,0	18,4	22,6	125	157,5	423	399
8PzB440	440	88	88	22,0	20,8	25,6	141	157,5	423	399
9PzB495	495	99	99	25,0	23,8	29,1	157	157,5	423	399
10PzB550	550	110	110	28,0	26,3	32,1	173	157,5	423	399
11PzB605	605	121	121	30,0	28,7	35,2	189	157,5	423	399
2PzB130	130	26	26	6,5	6,8	8,2	45	157,5	477	453
3PzB195	195	39	39	10,0	10,1	12,0	61	157,5	477	453
4PzB260	260	52	52	13,0	13,0	15,5	77	157,5	477	453
5PzB325	325	65	65	16,0	16,0	19,0	93	157,5	477	453
6PzB390	390	78	78	20,0	18,9	22,6	109	157,5	477	453

CELL TYPE	Capacity (Ah/5h)	Discharge (A)	Charging current (A)		Weight (kg)		Dimensions (mm)			
			Start	End	Dry	Filled	X	Y	H	h
7PzB455	455	91	91	23	21,8	26,1	125	157,5	477	453
8PzB520	520	104	104	26	24,5	29,6	141	157,5	477	453
9PzB585	585	117	117	29	27,9	33,6	157	157,5	477	453
10PzB650	650	130	130	33	30,6	37,2	173	157,5	477	453
11PzB715	715	143	143	36	33,3	40,7	189	157,5	477	453
2PzB150	150	30	30	8	7,5	10,0	45	157,5	537	513
3PzB225	225	45	45	11	10,8	13,9	61	157,5	537	513
4PzB300	300	60	60	15	14,1	17,8	77	157,5	537	513
5PzB375	375	75	75	19	17,5	21,6	93	157,5	537	513
6PzB450	450	90	90	23	20,9	25,6	109	157,5	537	513
7PzB525	525	105	105	26	24,1	29,6	125	157,5	537	513
8PzB600	600	120	120	30	27,4	33,5	141	157,5	537	513
9PzB675	675	135	135	34	31,1	38,2	157	157,5	537	513
10PzB750	750	150	150	38	34,2	42,3	173	157,5	537	513
11PzB825	825	165	165	41	37,3	46,4	189	157,5	537	513
2PzB170	170	34	34	9	-	11,5	45	158,0	597	570
3PzB255	255	52	52	13	-	16,2	61	158,0	597	570
4PzB340	340	69	69	17	-	20,5	77	158,0	597	570
5PzB425	425	86	86	22	-	25,0	93	158,0	597	570
6PzB510	510	103	103	26	-	29,4	109	158,0	597	570
7PzB595	595	120	120	30	-	33,8	125	158,0	597	570
8PzB680	680	138	138	34	-	38,4	141	158,0	597	570
9PzB765	765	155	155	39	-	42,6	157	158,0	597	570
10PzB850	850	172	172	43	-	47,2	173	158,0	597	570
11PzB946	946	189	189	47	39,7	51,4	189	157,5	597	570
2PzB200	200	40	40	10	9,4	11,8	45	157,5	632	608
3PzB300	300	60	60	15	13,5	16,6	61	157,5	632	608
4PzB400	400	80	80	20	17,5	21,5	77	157,5	632	608
5PzB500	500	100	100	25	21,6	26,4	93	157,5	632	608
6PzB600	600	120	120	30	25,6	31,5	109	157,5	632	608
7PzB700	700	140	140	35	29,7	36,4	125	157,5	632	608
8PzB800	800	160	160	40	33,7	41,4	141	157,5	632	608
9PzB900	900	180	180	45	38,6	47,1	157	157,5	632	608
10PzB1000	1000	200	200	50	42,7	52,0	173	157,5	632	608
11PzB1100	1100	220	220	55	46,7	56,9	189	157,5	632	608
2PzB210	210	43	43	11	-	14,1	45	158,0	713	686
3PzB315	315	65	65	16	-	19,4	61	158,0	713	686
4PzB420	420	86	86	22	-	24,8	77	158,0	713	686
5PzB525	525	108	108	27	-	30,1	93	158,0	713	686
6PzB630	630	130	130	32	-	35,4	109	158,0	713	686
7PzB735	735	151	151	38	-	40,9	125	158,0	713	686
8PzB840	840	173	173	43	-	46,3	141	158,0	713	686
11PzB1188	1188	238	238	59	50,4	62,8	189	157,5	712	688

Traction batteries

MONOBLOC 24V - MDL - MBS BLOCK

The 24V block battery DIN (open lead-acid) in a rugged polypropylene housing is designed to reduce voltage drop by using short intercell connectors integrated under the cover.

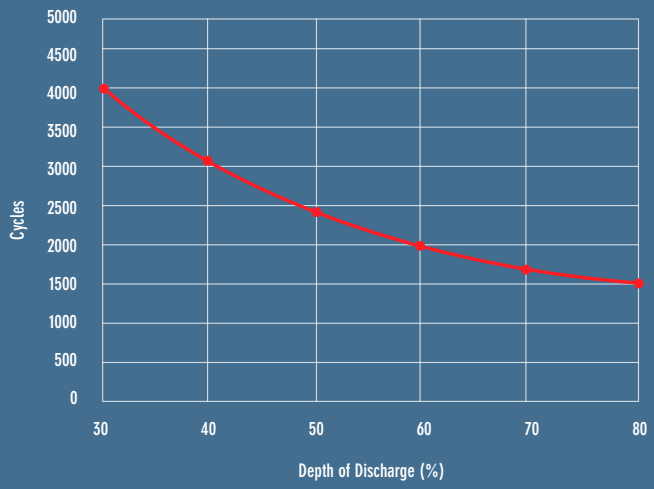
One of the greatest challenges in technological development is to create innovation, whilst introducing substantial improvements to both the production process and the resulting product, that positively impact quality, cost and application.

The "block project", 8 years on from the launch of the revolutionary MBSblock range, is now completed and significantly enhanced by the introduction of the new MDLblock versions to cover most of the applications on pallet trucks designed for British Standard and DIN-B 24V batteries up to 250 Ah/C5.

BENEFITS

- Low price
- Inter cell connectors
- Acid resistant polypropylene container

SERVICE LIFE: 1500 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

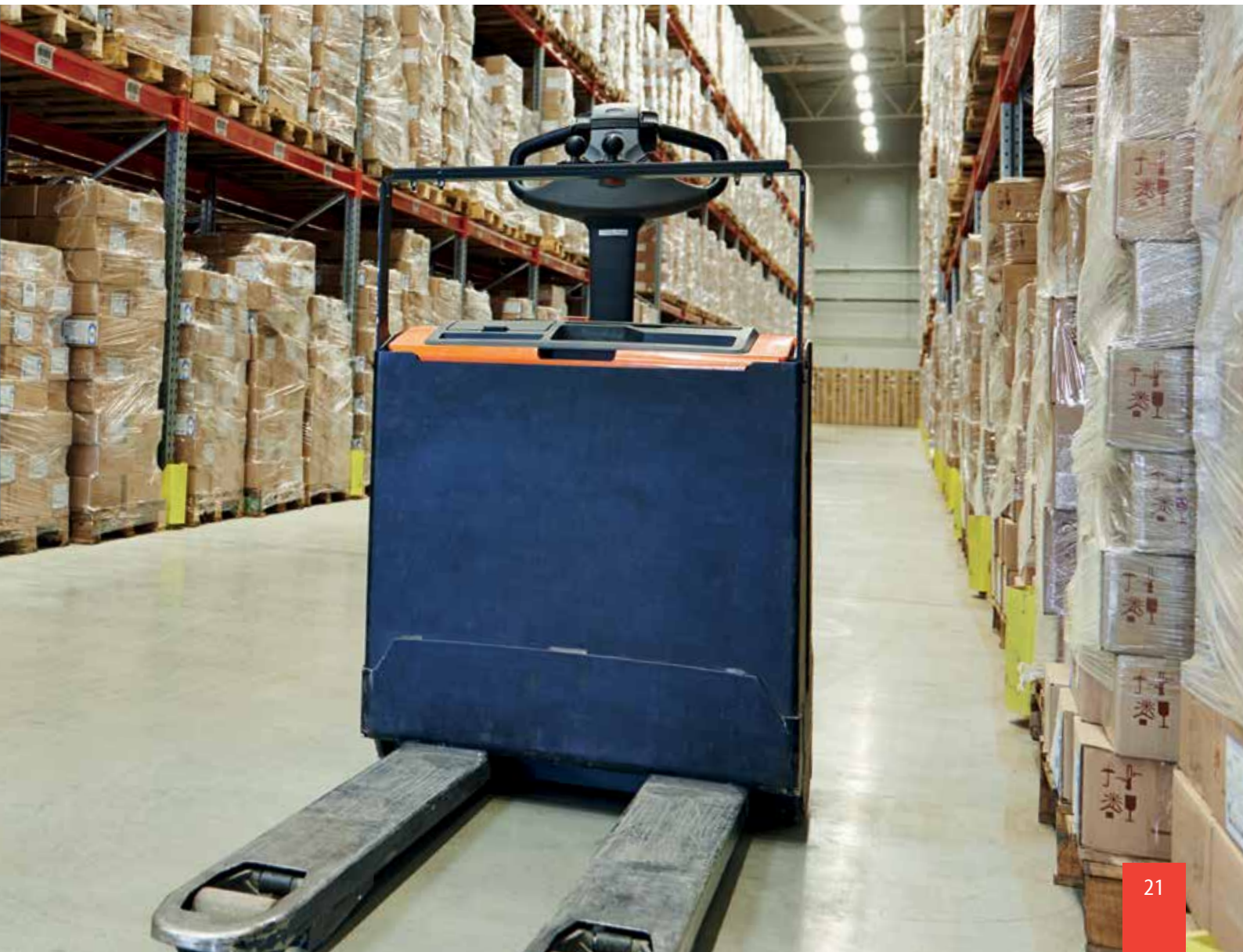
APPLICATIONS

Pallet jack

Mast boom lift

Cell Type DIN					
CELL TYPE	Capacity (Ah/5h)	Weight (Kg)	Dimensions (mm)		
			X	Y	H
MDL 2-160L	160	121	624	192	510
MDL 2-180L	180	135	624	192	510
MDL 2-180M	180	138	624	192	570
MDL 2-210M	210	154	624	192	570
MDL 2-210H	210	157	624	192	627
MDL 2-230H	230	166	624	192	627
MDL 2-250H	250	180	624	192	627
MBS2-150	150	125	641	141	549
MBS2-200	200	160	641	141	660

	MDL - MBS block
Application	Standard
Technology	Open Lead-acid
Maintenance	Weekly
Design	Multicell block (24V DIN-B / BS)
Capacity (C5)	130 - 250 Ah
Inter-Cell connections	Welded (internal)
Design life (cycles*)	1500+
Single Point Watering	Optional
Air mixing	NA
Electrolyte level sensor	NA
Charging solution	7 to 12 hrs charging time with HF switching chargers
Energy pack charger	Midatron HF
BMU module	Optional
Battery Change Solutions	YES



Traction batteries

GEL - PZV

Maintenance-free traction cells with positive tubular plates.

Our maintenance-free sealed-type GEL battery is ideal for food, pharmaceutical, and chemical industries where hygiene standards are essential.

The ideal solution for hygiene-sensitive product storage facilities, where gas emissions must be minimum and liquid acid must be absent. Ideal for storage areas with limited charging space or where maintenance is difficult. The GEL batteries have zero maintenance costs as they don't require any water topping up.

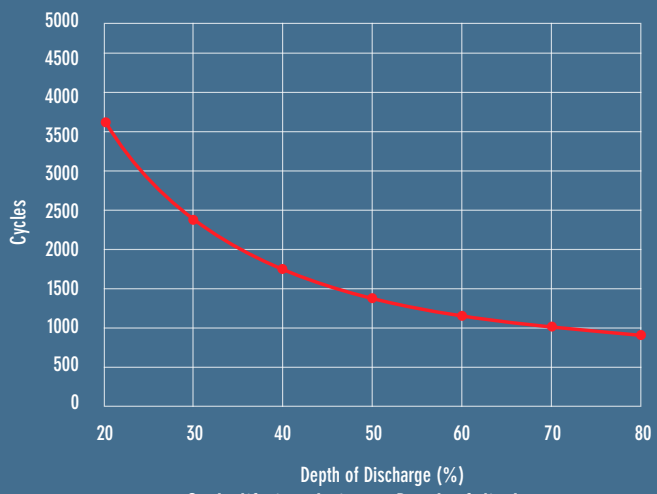
The bayonet design of the valve ensures better sealing of cells. Lids with increased thickness ensure the robustness of the cell against the developed operating pressure. Vacuum GEL Filling process ensures that no gas is trapped between and inside the plates.

Attention: the charger must be adapted to gel PzV charging profile. We recommend 12h charging. For 8 hours charging, the capacity should not exceed 600-650 Ah for 24V, 350 Ah for 48V or 200 Ah for 80V batteries.

BENEFITS

- Minimized maintenance costs
- No water topping up required
- High Performance: tubular plate design ideal for deep cycling loads
- Minimum gas emission
- Low ventilation requirements
- Safe to use
- User and environmental friendly: no acid leakage, no danger for corrosion and contamination.
- Long lifetime: GEL electrolyte prevents acid stratification & there is no development of high temperatures.
- Flexibility and interchangeability: DIN and BS standards, safe and easy switch from PzS to PzV battery. Provided that the charging profile is suitable for PzV.

SERVICE LIFE: 1200 CYCLES DOD 60%



Cycle life in relation to Depth of discharge

APPLICATIONS

Forklifts | Industrial cleaning machines | Food industry | Pallet jack | Pharma & chemical industry

Cell Type DIN						
CELL TYPE	Capacity (Ah/5h)	Weight (Kg)	Dimensions (mm)			
			X	Y	H	h
2 EPzV 120	120	9,6	47	198	370	343
3 EPzV 180	180	13,2	65	198	370	343
4 EPzV 240	240	16,8	83	198	370	343
5 EPzV 300	300	20,1	101	198	370	343
6 EPzV 360	360	24,0	119	198	370	343
7 EPzV 420	420	27,7	137	198	370	343
8 EPzV 480	480	31,4	155	198	370	343
2 EPzV 150	150	11,6	47	198	435	408
3 EPzV 150	150	16,0	65	198	435	408
4 EPzV 300	300	20,4	83	198	435	408
5 EPzV 375	375	24,8	101	198	435	408
6 EPzV 450	450	29,3	119	198	435	408
7 EPzV 525	525	33,8	137	198	435	408
8 EPzV 600	600	38,3	155	198	435	408
2 EPzV 170	170	13,5	47	198	505	478
3 EPzV 255	255	18,7	65	198	505	478
4 EPzV 340	340	24,0	83	198	505	478
5 EPzV 425	425	29,2	101	198	505	478
6 EPzV 510	510	34,4	119	198	505	478
7 EPzV 595	595	39,7	137	198	505	478
8 EPzV 680	680	44,9	155	198	505	478
2 EPzV 220	220	16,3	47	198	595	568
3 EPzV 330	330	22,5	65	198	595	568
4 EPzV 440	440	28,8	83	198	595	568
5 EPzV 550	550	35,1	101	198	595	568
6 EPzV 660	660	41,4	119	198	595	568
7 EPzV 770	770	47,8	137	198	595	568
8 EPzV 880	880	54,1	155	198	595	568
2 EPzV 260	260	19,5	47	198	715	688
3 EPzV 390	390	26,9	65	198	715	688
4 EPzV 520	520	34,4	83	198	715	688
5 EPzV 650	650	41,9	101	198	715	688
6 EPzV 780	780	49,4	119	198	715	688
7 EPzV 910	910	57,0	137	198	715	688
8 EPzV 1040	1040	64,5	155	198	715	688
2 EPzV 280	280	20,4	47	198	740	713
3 EPzV 420	420	28,3	65	198	740	713
4 EPzV 560	560	36,2	83	198	740	713
5 EPzV 700	700	44,1	101	198	740	713
6 EPzV 840	840	52,1	119	198	740	713
7 EPzV 980	980	60,1	137	198	740	713
8 EPzV 1120	1120	68,1	155	198	740	713

Cell Type BS						
CELL TYPE	Capacity (Ah/5h)	Weight (Kg)	Dimensions (mm)			
			X	Y	H	h
2 PzVB 140	140	10,6	45	158	541	514
3 PzVB 210	210	14,5	61	158	541	514
4 PzVB 280	280	18,6	77	158	541	514
5 PzVB 350	350	22,6	93	158	541	514
6 PzVB 420	420	26,5	109	158	541	514
7 PzVB 490	490	30,5	125	158	541	514
8 PzVB 560	560	34,5	141	158	541	514
2 PzVB 170	170	12,8	45	158	633	606
3 PzVB 255	255	17,7	61	158	633	606
4 PzVB 340	340	22,5	77	158	633	606
5 PzVB 425	425	27,3	93	158	633	606
6 PzVB 510	510	32,1	109	158	633	606
7 PzVB 595	595	36,9	125	158	633	606
8 PzVB 680	680	41,9	141	158	633	606

Traction batteries

LOW MAINTENANCE - LM

With proven PzS technology using tubular plates in combination with an adjusted charging regime results in extended watering intervals. Cells are manufactured and tested according to EN60254-1 and IEC254-1.

Low Maintenance 8-series :

- Watering interval : up to 8 weeks
- HF charger (1.10 - 1.11 charging factor)
- Electrolyte level indicator
- Automatic filling system (optional, but recommended)

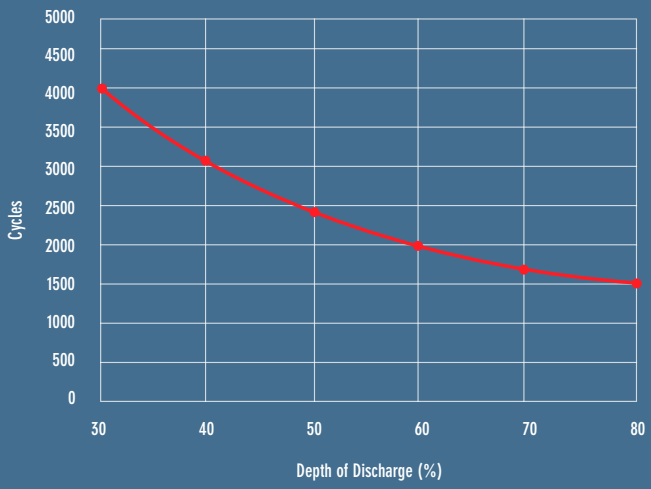
Low Maintenance 13-series :

- Watering interval up to 13 weeks
- HF charger + Acid circulation system (1.07 - 1.08 charging factor)
- Electrolyte level indicator
- Automatic filling system (optional, but recommended)

BENEFITS

- Water refill interval is efficiently prolonged
- Reduced water consumption
- Low maintenance and reduced operational costs
- Reduced charging factor
- 50 to 80% reduced gas release and ventilation requirements
- 20 to 30% less charging time
- Cost saving due to lower energy consumption from 10 to 20%
- Reduced operation temperatures

SERVICE LIFE: 1500 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

APPLICATIONS

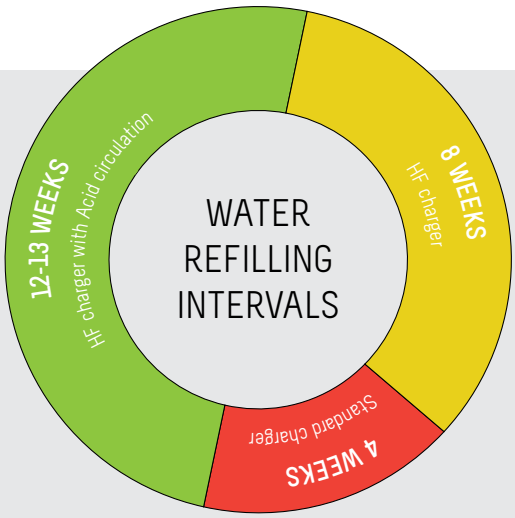
Forklifts | Industrial cleaning machines | Pallet jack | AGV

CELL TYPE	Capacity (Ah/5h)	Weight (Kg)	Dimensions (mm)			
			X	Y	H	h
2 PzRM 160	160	10,2	47	198	425	402
3 PzRM 240	240	14,5	65	198	425	402
4 PzRM 320	320	18,7	83	198	425	402
5 PzRM 400	400	22,9	101	198	425	402
6 PzRM 480	480	27,1	119	198	425	402
7 PzRM 560	560	31,3	137	198	425	402
8 PzRM 640	640	35,5	155	198	425	402
9 PzRM 720	720	39,7	173	198	425	402
10 PzRM 800	800	43,9	191	198	425	402
12 PzRM 960	960	52,6	227	198	425	402
2 PzRM 180	180	11,6	47	198	495	472
3 PzRM 270	270	16,6	65	198	495	472
4 PzRM 360	360	21,4	83	198	495	472
5 PzRM 450	450	26,2	101	198	495	472
6 PzRM 540	540	31,0	119	198	495	472
7 PzRM 630	630	35,8	137	198	495	472
8 PzRM 720	720	40,6	155	198	495	472
9 PzRM 810	810	45,4	173	198	495	472
10 PzRM 900	900	50,2	191	198	495	472
12 PzRM 1080	1080	60,1	227	198	495	472
2 PzRM 210	210	13,3	47	198	538	515
3 PzRM 315	315	18,3	65	198	538	515
4 PzRM 420	420	23,7	83	198	538	515
5 PzRM 525	525	29,1	101	198	538	515
6 PzRM 630	630	34,5	119	198	538	515
7 PzRM 735	735	39,9	137	198	538	515
8 PzRM 840	840	45,3	155	198	538	515
9 PzRM 945	945	50,7	173	198	538	515
10 PzRM 1050	1050	56,4	191	198	538	515
12 PzRM 1260	1260	67,2	227	198	538	515
2 PzRM 230	230	14,0	47	198	568	545
3 PzrM 345	345	19,5	65	198	568	545
4 PzRM 460	460	25,0	83	198	568	545
5 PzRM 575	575	30,6	101	198	568	545
6 PzRM 690	690	36,2	119	198	568	545
7 PzRM 805	805	41,8	137	198	568	545
8 PzRM 920	920	47,4	155	198	568	545
9 PzRM 1035	1035	53,2	173	198	568	545
10 PzRM 1150	1150	58,9	191	198	568	545
12 PzRM 1380	1380	70,1	227	198	568	545

CELL TYPE	Capacity (Ah/5h)	Weight (Kg)	Dimensions (mm)			
			X	Y	H	h
2 PzRM 250	250	14,5	47	198	593	570
3 PzRM 375	375	20,5	65	198	593	570
4 PzRM 500	500	26,5	83	198	593	570
5 PzRM 625	625	32,5	101	198	593	570
6 PzRM 750	750	38,5	119	198	593	570
7 PzRM 875	875	44,5	137	198	593	570
8 PzRM 1000	1000	50,5	155	198	593	570
9 PzRM 1125	1125	56,8	173	198	593	570
10 PzRM 1250	1250	62,8	191	198	593	570
12 PzRM 1500	1500	74,8	227	198	593	570
2 PzRM 280	280	18,5	47	198	709	686
3 PzRM 420	420	25,3	65	198	709	686
4 PzRM 560	560	32,2	83	198	709	686
5 PzRM 700	700	39,5	101	198	709	686
6 PzRM 840	840	46,7	119	198	709	686
7 PzRM 980	980	54,0	137	198	709	686
8 PzRM 1120	1120	61,2	155	198	709	686
9 PzRM 1260	1260	68,8	173	198	709	686
10 PzRM 1400	1400	76,0	191	198	709	686
12 PzRM 1680	1680	90,5	227	198	709	686
2 PzRM 310	310	18,8	47	198	743	720
3 PzRM 465	465	26,1	65	198	743	720
4 PzRM 620	620	33,5	83	198	743	720
5 PzRM 775	775	41,1	101	198	743	720
6 PzRM 930	930	48,9	119	198	743	720
7 PzRM 1085	1085	56,7	137	198	743	720
8 PzRM 1240	1240	64,5	155	198	743	720
9 PzRM 1395	1395	72,8	173	198	743	720
10 PzRM 1550	1550	80,6	191	198	743	720
12 PzRM 1860	1860	96,2	227	198	743	720

LM	4-series	8-series	12-13-series
Refilling intervals in weeks	4	8	12-13
Charger	50 Hz	HF	HF + Acid circulation
Charging factor	1.2	1.10 - 1.11	1.07 - 1.08
Electrolyte level indicator	Serial	Serial	Serial
Central Water filling system	Optional	Optional	Optional
Acid circulation	Optional	Optional	Serial

Condition: water refilling intervals are based on 80% DOD - 1 cycle per day, 5 days per week.



Traction batteries

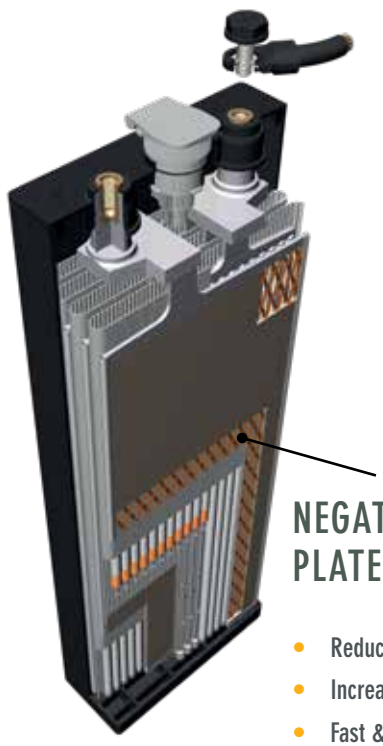
COPPER STRETCH METAL - CSM

With the Copper Stretch Metal battery, the negative grid plate consists entirely of copper.

Copper has a better electrical conductivity which is 10 x higher than lead!

The Copper Stretch Metal technology can work under extreme temperatures.

Thanks to its higher energy content, it can offer longer operating times. The CSM battery can be charged quickly thanks to its low internal resistance. This gives the battery a longer service life than standard batteries.



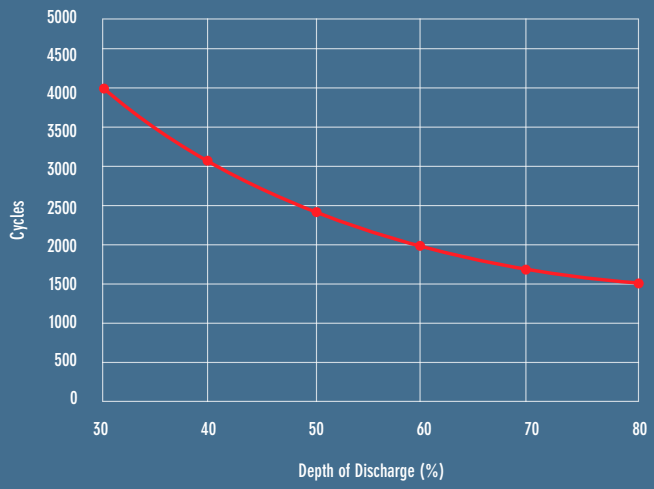
NEGATIVE COPPER PLATE

- Reduced internal resistance
- Increased curent flow
- Fast & Opportunity charing

BENEFITS

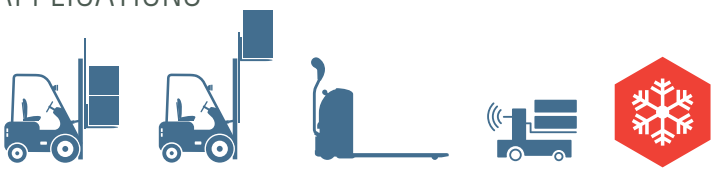
- 2 Shift operation with opportunity charging in combination with acid circulation = less battery changes - more autonomy - increased lifetime
- Lower Internal Resistance (-15%)
- Higher Energy Efficiency, both when charging and discharging
- Higher Energy Content (longer working shift)
- Increased Capacity
- Better charge acceptance - reduced heat development & energy loss - longer service life
- Fast and opportunity charging (intermediate charge)
- This exceptional battery comes in the color RAL 3001

SERVICE LIFE: 1500 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

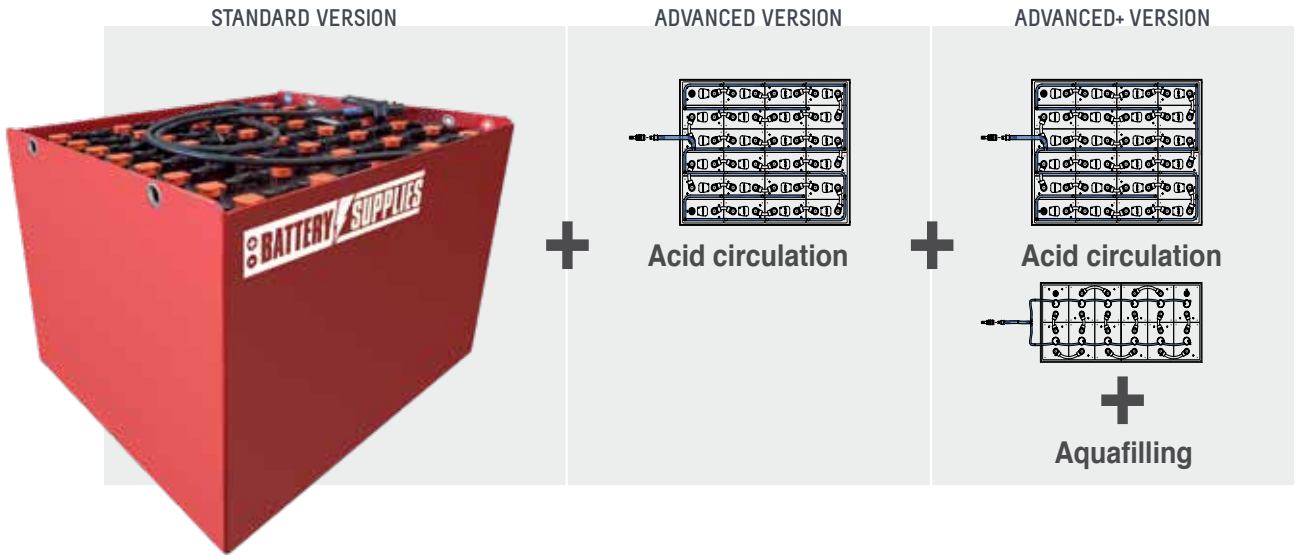
APPLICATIONS



Heavy-duty applications | Forklift high-rack (12m) | Pallet jack | AGV | Cold storage

Available versions

Features	Standard version	Advanced version	Advanced+ version
Acid circulation	no	yes	yes
Aquafilling	no	no	yes
Fast charging	no	yes	yes
Operating time	+5%	+5%	+5%
Energy content	higher	higher	higher
Internal resistance	up to -15%	up to -15%	up to -15%
Refill time	normal	normal	up to 5 times faster



CELL TYPE	Capacity (Ah/5h)	Dimensions (mm)		
		X	Y	H
24V				
2 CSM 260	260	827	162	627
2 CSM 260	260	621	209	627
3 CSM 390	390	827	216	627
3 CSM 390	390	621	281	627
4 CSM 520	520	827	270	627
5 CSM 650	650	827	324	627
6 CSM 780	780	827	378	627
8 CSM 1040	1040	827	486	627
3 CSM 480	480	832	220	784
3 CSM 480	480	625	285	784
5 CSM 800	800	832	328	784
48V				
3 CSM 390	390	827	411	627
3 CSM 390	390	1.027	346	627
4 CSM 520	520	827	519	627
4 CSM 520	520	1.027	436	627
5 CSM 650	650	827	627	627
5 CSM 650	650	1.027	526	627
6 CSM 780	780	827	735	627
6 CSM 780	780	1.027	616	627

CELL TYPE	Capacity (Ah/5h)	Dimensions (mm)		
		X	Y	H
3 CSM 480	480	832	415	784
3 CSM 480	480	1.032	440	784
3 CSM 480	480	1.220	280	784
4 CSM 640	640	832	523	784
4 CSM 640	640	1.032	440	784
4 CSM 640	640	1.220	352	784
5 CSM 800	800	832	631	784
5 CSM 800	800	1.032	530	784
5 CSM 800	800	1.220	424	784
6 CSM 960	960	1.032	620	784
6 CSM 960	960	1.220	496	784
80V				
3 CSM 390	390	1.023	561	627
4 CSM 520	520	1.023	705	627
5 CSM 650	650	1.023	849	627
6 CSM 780	780	1.023	993	627
3 CSM 480	480	1.025	564	784
4 CSM 640	640	1.025	708	784
5 CSM 800	800	1.025	852	784
6 CSM 960	960	1.025	996	784

* Only available as a complete battery, other dimensions on request. Colour of the container: RAL 3001 .

Traction batteries

SQUARE - PSQ

SQUARE batteries are designed to deliver more power and longer run time comparing to conventional lead-acid batteries and are the perfect choice to meet the needs of heavy-duty applications.

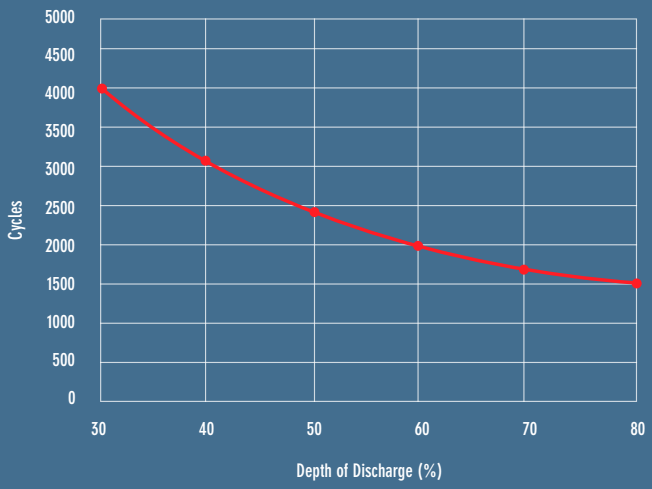
SQUARE POSITIVE TUBULAR PLATE design allows more active material surface area to be exposed to electrolyte with higher specific gravity which leads to increased power and prolonged run time of the battery compared to conventional lead-acid batteries with round tube design.

Prolonged run time on each battery charge means fewer battery change required and less need of spare batteries.

BENEFITS

- Suitable for heavy-duty applications
- Increased capacity in standard cell design/volume
- More active material on positive plates
- More power due to bigger plate surface compared to standard round tube design
- More positive active material surface area exposed to electrolyte with higher specific gravity
- Plates can sustain higher levels of voltage throughout the discharge cycle
- Higher robustness of the plates
- Prolonged run time of the forklift within one cycle –fewer spare batteries needed
- Special chargers equipped with faster customized charging profiles also allow opportunity charging
- The chargers with specific charge curves allow to charge faster and to make intermediate charges PzSQ charge with 20A/100Ah (Standard PzS: 16A/100Ah)
- Prolonged cycle life based on robust plate construction

SERVICE LIFE: 1500 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

APPLICATIONS

Heavy-duty applications

Forklift high-rack (12m)

Cell Type DIN							
CELL TYPE	Capacity (Ah/5h)	Weight (Kg)		Dimensions (mm)			
		Dry	Filled	X	Y	H	h
2 PSQ 280	280	15,5	12,4	47	198	593	570
3 PSQ 420	420	21,9	17,4	65	198	593	570
4 PSQ 560	560	28,4	22,6	83	198	593	570
5 PSQ 700	700	35,0	27,9	101	198	593	570
6 PSQ 840	840	41,5	33,1	119	198	593	570
7 PSQ 980	980	48,1	38,4	137	198	593	570
8 PSQ 1120	1120	54,6	43,6	155	198	593	570
9 PSQ 1260	1260	61,6	49,3	173	198	593	570
10 PSQ 1400	1400	68,1	54,5	191	198	593	570
12 PSQ 1680	1680	81,2	65,0	227	198	593	570
2 PSQ 340	340	22,4	15,8	47	198	743	720
3 PSQ 510	510	27,4	21,8	65	198	743	720
4 PSQ 680	680	35,1	28,3	83	198	743	720
5 PSQ 850	850	43,1	34,8	101	198	743	720
6 PSQ 1020	1020	51,2	41,3	119	198	743	720
7 PSQ 1190	1190	59,4	47,8	137	198	743	720
8 PSQ 1360	1360	67,5	54,3	155	198	743	720
9 PSQ 1530	1530	76,4	61,4	173	198	743	720
10 PSQ 1700	1700	84,5	67,9	191	198	743	720
12 PSQ 2040	2040	100,8	80,8	227	198	743	720

SQUARE POSITIVE TUBULAR PLATE

4 Poles

STANDARD: CENTRAL WATER FILLING SYSTEM

STANDARD: ACID CIRCULATION

STANDARD: ELECTROLYTE LEVEL SENSOR

OPTIONAL: DATALOGGER

Traction batteries

EX-PROOF

The Ex-proof batteries are produced in accordance with the directive 2014/34/EU in IECEx certification scheme and fulfill the applicable requirements of directive harmonized standards EN/IEC 60079-0, 60079-7 and 60079-31.

The cable connection ends are protected by a connection system of certified type according to one of the type of protection intended by the ATEX and IECEx, respectively for group I and group II. Moreover, in case of use in uni-polar or bipolar connectors, these are non-interchangeable.

All accessories used, must be ceritifed according to IEC 60079-0, IEC 60079-7 and IEC 60079-31 Standards.

TECHNICAL DATA

- Maximum voltage: from 12 to 400V
- Maximum power: 155kW
- Maximum cell's capacity: 46 to 1860 Ah
- Maximum dischrge current: 0,2 x cell's capacity C5
- Type of protection: "e" "tb"
- Ambient temperature: from -20°C to 40 °C
- Electrolyte density by 30°C: 1,29 ± 0,01 kg/l.
- Weight tolerance is ± 5%

ACCESSORIES

CELL CONNECTORS - in combination with the cell terminal and screw - this system offers the highest safety. Connection to the cells is via female threaded inserts secured with metallic bolts with insulated covers, which maintain the minimum ingress protection level op IP 64 required for Zone 21 (dust).

WATER FILLING SYSTEM - optional water refilling system built on batteries is used to automatically maintain the nominal electrolyte levels. The battery should be topped up after completion of a full charge with water with conductance below 30µS/cm.

ELECTROLYTE CIRCULATION SYSTEM - this optional system is recommended for heavy-duty use, short charge times, boost or opportunity charging and in high ambient temperatures. The system reduces water consumption, working temperatures and a charge factor, prevents the stratification of the electrolyte and reduces charging time.

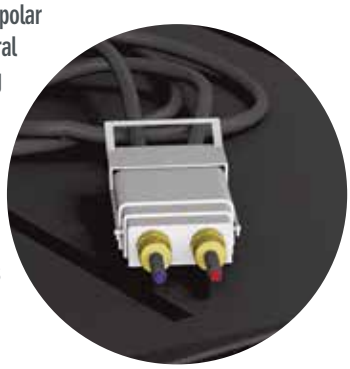
APPLICATIONS

Mining | Pharma & chemical industry | Petro-chemistry | Storage depot

CONNECTORS

Flameproof connector consist of a female bipolar plug and of a male bipolar socket. The central special pin prevents the not correct coupling and the reversal of the poles.

The connection with the electrical circuits is realized by certified ATEX and IECEx (depending on request) Ex-d cable glands for armored or not-armored cable. The kit is completed by a non-flameproof plug for the recharging system.



DIN - PZS

CELL TYPE	Capacity (Ah/5h)	Weight (kg)		Dimensions (mm)			
		Dry	Filled	X	Y	H	h
2 PzS 100	100	5,7	6,8	47	198	305	282
3 PzS 150	150	7,7	9,6	65	198	305	282
4 PzS 200	200	9,9	12,4	83	198	305	282
5 PzS 250	250	12,2	15,3	101	198	305	282
6 PzS 300	300	14,5	18,2	119	198	305	282
7 PzS 350	350	16,7	21,1	137	198	305	282
8 PzS 400	400	19,0	24,0	155	198	305	282
9 PzS 450	450	21,3	26,9	173	198	305	282
10 PzS 500	500	23,6	29,8	191	198	305	282
12 PzS 600	600	28,4	35,9	227	198	305	282
2 PzS 120	120	6,5	8,5	47	198	363	340
3 PzS 180	180	9,2	11,9	65	198	363	340
4 PzS 240	240	11,9	15,4	83	198	363	340
5 PzS 300	300	14,6	18,9	101	198	363	340
6 PzS 360	360	17,2	22,4	119	198	363	340
7 PzS 420	420	19,9	25,9	137	198	363	340
8 PzS 480	480	22,6	29,4	155	198	363	340
9 PzS 540	540	25,2	32,9	173	198	363	340
10 PzS 600	600	27,9	36,4	191	198	363	340
12 PzS 720	720	33,6	43,7	227	198	363	340
2 PzS 160	160	8,1	10,2	47	198	425	402
3 PzS 240	240	11,2	14,5	65	198	425	402
4 PzS 320	320	14,6	18,7	83	198	425	402
5 PzS 400	400	17,9	22,9	101	198	425	402
6 PzS 480	480	21,3	27,1	119	198	425	402
7 PzS 560	560	24,7	31,3	137	198	425	402
8 PzS 640	640	28,0	35,5	155	198	425	402
9 PzS 720	720	31,4	39,7	173	198	425	402
10 PzS 800	800	34,7	43,9	191	198	425	402
12 Pzs 960	960	41,8	52,6	227	198	425	402
2 PzS 180	180	9,1	11,6	47	198	495	472
3 PzS 270	270	12,8	16,6	65	198	495	472
4 PzS 360	360	16,6	21,4	83	198	495	472
5 PzS 450	450	20,5	26,2	101	198	495	472
6 PzS 540	540	24,4	31,0	119	198	495	472
7 PzS 630	630	28,2	35,8	137	198	495	472
8 PzS 720	720	32,1	40,6	155	198	495	472
9 PzS 810	810	35,9	45,4	173	198	495	472
10 PzS 900	900	39,8	50,2	191	198	495	472
12 PzS 1080	1080	47,8	60,1	227	198	495	472
2 PzS 210	210	10,3	13,3	47	198	538	515
3 PzS 315	315	14,4	18,3	65	198	538	515
4 PzS 420	420	18,6	23,7	83	198	538	515
5 PzS 525	525	22,9	29,1	101	198	538	515
6 PzS 630	630	27,1	34,5	119	198	538	515
7 PzS 735	735	31,4	39,9	137	198	538	515
8 PzS 840	840	35,6	45,3	155	198	538	515
9 PzS 945	945	39,9	50,7	173	198	538	515
10 PzS 1050	1050	44,5	56,4	191	198	538	515
12 Pzs 1260	1260	53,0	67,2	227	198	538	515

CELL TYPE	Capacity (Ah/5h)	Weight (kg)		Dimensions (mm)			
		Dry	Filled	X	Y	H	h
2 PzS 230	230	10,8	14,0	47	198	568	545
3 PzS 345	345	15,3	19,8	65	198	568	545
4 PzS 460	460	19,9	25,6	83	198	568	545
5 PzS 575	575	24,8	31,4	101	198	568	545
6 PzS 690	690	29,6	37,2	119	198	568	545
7 PzS 805	805	34,5	43,0	137	198	568	545
8 PzS 920	920	39,3	48,8	155	198	568	545
9 PzS 1035	1035	44,5	54,9	173	198	568	545
10 PzS 1150	1150	49,3	60,7	191	198	568	545
12 PzS 1380	1380	59,0	72,3	227	198	568	545
2 PzS 250	250	11,6	14,7	47	198	593	570
3 PzS 375	375	16,2	20,7	65	198	593	570
4 PzS 500	500	21,1	26,9	83	198	593	570
5 PzS 625	625	26,0	33,1	101	198	593	570
6 PzS 750	750	30,9	39,3	119	198	593	570
7 PzS 875	875	35,8	45,5	137	198	593	570
8 PzS 1000	1000	40,7	51,7	155	198	593	570
9 PzS 1125	1125	45,9	58,2	173	198	593	570
10 PzS 1250	1250	50,8	64,4	191	198	593	570
12 PzS 1500	1500	60,6	76,8	227	198	593	570
2 PzS 280	280	14,4	18,3	47	198	709	686
3 PzS 420	420	19,4	25,3	65	198	709	686
4 PzS 560	560	25,1	32,2	83	198	709	686
5 PzS 700	700	30,9	39,5	101	198	709	686
6 PzS 840	840	36,6	46,7	119	198	709	686
7 PzS 980	980	42,3	54,0	137	198	709	686
8 PzS 1120	1120	48,0	61,2	155	198	709	686
9 PzS 1260	1260	54,1	68,8	173	198	709	686
10 PzS 1400	1400	59,8	76,0	191	198	709	686
12 PzS 1680	1680	71,3	90,5	227	198	709	686
2 PzS 310	310	14,9	18,8	47	198	743	720
3 PzS 465	465	20,6	26,1	65	198	743	720
4 PzS 620	620	26,7	33,5	83	198	743	720
5 PzS 775	775	32,9	41,1	101	198	743	720
6 PzS 930	930	39,0	48,9	119	198	743	720
7 PzS 1085	1085	45,1	56,7	137	198	743	720
8 PzS 1240	1240	51,3	64,5	155	198	743	720
9 PzS 1395	1395	57,8	72,8	173	198	743	720
10 PzS 1550	1550	64,0	80,6	191	198	743	720
12 PzS 1860	1860	76,2	96,2	227	198	743	720

BS - PZB

CELL TYPE	Capacity (Ah/5h)	Weight (kg)		Dimensions (mm)			
		Dry	Filled	X	Y	H	h
2PzB46	46	3,0	3,7	45	157,5	240	216
3PzB69	69	4,2	5,4	61	157,5	240	216
4PzB92	92	5,4	6,9	77	157,5	240	216
5PzB115	115	6,6	8,4	93	157,5	240	216
6PzB138	138	7,8	10,0	109	157,5	240	216
7PzB161	161	9,0	11,6	125	157,5	240	216
8PzB184	184	10,2	13,2	141	157,5	240	216
9Pzb207	207	11,9	15,3	157	157,5	240	216
10PzB230	230	13,1	16,9	173	157,5	240	216
11PzB253	253	14,3	18,4	189	157,5	240	216
2PzB64	64	4,0	5,1	45	157,5	284	260
3PzB96	96	5,6	7,1	61	157,5	284	260
4PzB128	128	7,2	9,2	77	157,5	284	260
5PzB160	160	8,8	11,3	93	157,5	284	260
6PzB192	192	10,3	13,2	109	157,5	284	260
7PzB224	224	11,7	15,0	125	157,5	284	260
8PzB256	256	13,1	16,8	141	157,5	284	260
9PzB288	288	14,9	19,1	157	157,5	284	260
10PzB320	320	16,3	20,9	173	157,5	284	260
11PzB352	352	17,7	22,7	189	157,5	284	260
2PzB84	84	5,4	6,9	45	157,5	350	326
3PzB126	126	7,3	9,4	61	157,5	350	326
4PzB168	168	9,3	11,9	77	157,5	350	326
5PzB210	210	11,3	14,5	93	157,5	350	326
6PzB252	252	13,5	17,3	109	157,5	350	326
7PzB294	294	15,6	20,0	125	157,5	350	326
8PzB336	336	17,6	22,3	141	157,5	350	326
9PzB378	378	19,9	25,2	157	157,5	350	326
10PzB420	420	21,8	27,6	173	157,5	350	326
11PzB462	462	23,7	30,0	189	157,5	350	326
2PzB110	110	6,1	7,6	45	157,5	423	399
3PzB165	165	8,5	10,5	61	157,5	423	399
4PzB220	220	11,0	13,5	77	157,5	423	399
5PzB275	275	13,5	16,5	93	157,5	423	399
6PzB330	330	15,9	19,6	109	157,5	423	399
7PzB385	385	18,4	22,6	125	157,5	423	399
8PzB440	440	20,8	25,6	141	157,5	423	399
9PzB495	495	23,8	29,1	157	157,5	423	399
10PzB550	550	26,3	32,1	173	157,5	423	399
11PzB605	605	28,7	35,2	189	157,5	423	399
2PzB130	130	6,8	8,2	45	157,5	477	453
3PzB195	195	10,1	12,0	61	157,5	477	453
4PzB260	260	13,0	15,5	77	157,5	477	453
5PzB325	325	16,0	19,0	93	157,5	477	453
6PzB390	390	18,9	22,6	109	157,5	477	453
7PzB455	455	21,8	26,1	125	157,5	477	453
8PzB520	520	24,5	29,6	141	157,5	477	453
9PzB585	585	27,9	33,6	157	157,5	477	453
10PzB650	650	30,6	37,2	173	157,5	477	453
11PzB715	715	33,3	40,7	189	157,5	477	453
2PzB150	150	7,5	10,0	45	157,5	537	513

CELL TYPE	Capacity (Ah/5h)	Weight (kg)		Dimensions (mm)			
		Dry	Filled	X	Y	H	h
3PzB225	225	10,8	13,9	61	157,5	537	513
4PzB300	300	14,1	17,8	77	157,5	537	513
5PzB375	375	17,5	21,6	93	157,5	537	513
6PzB450	450	20,9	25,6	109	157,5	537	513
7PzB525	525	24,1	29,6	125	157,5	537	513
8PzB600	600	27,4	33,5	141	157,5	537	513
9PzB675	675	31,1	38,2	157	157,5	537	513
10PzB750	750	34,2	42,3	173	157,5	537	513
11PzB825	825	37,3	46,4	189	157,5	537	513
2PzB172	172	8,3	10,7	45	157,5	591	567
3PzB258	258	11,8	15,0	61	157,5	591	567
4PzB344	344	15,2	19,3	77	157,5	591	567
5PzB430	430	18,6	23,7	93	157,5	591	567
6PzB516	516	22,0	28,1	109	157,5	591	567
7PzB602	602	25,4	32,6	125	157,5	591	567
8PzB688	688	28,8	37,1	141	157,5	591	567
9PzB774	774	32,9	42,3	157	157,5	591	567
10PzB860	860	36,3	46,9	173	157,5	591	567
11PzB946	946	39,7	51,4	189	157,5	591	567
2PzB200	200	9,4	11,8	45	157,5	632	608
3PzB300	300	13,5	16,6	61	157,5	632	608
4PzB400	400	17,5	21,5	77	157,5	632	608
5PzB500	500	21,6	26,4	93	157,5	632	608
6PzB600	600	25,6	31,5	109	157,5	632	608
7PzB700	700	29,7	36,4	125	157,5	632	608
8PzB800	800	33,7	41,4	141	157,5	632	608
9PzB900	900	38,6	47,1	157	157,5	632	608
10PzB1000	1000	42,7	52,0	173	157,5	632	608
11PzB1100	1100	46,7	56,9	189	157,5	632	608
2PzB216	216	9,9	13,5	45	157,5	712	688
3PzB324	324	14,3	18,9	61	157,5	712	688
4PzB432	432	18,7	24,3	77	157,5	712	688
5PzB540	540	23,2	29,7	93	157,5	712	688
6PzB648	648	27,6	35,1	109	157,5	712	688
7PzB756	756	32,1	40,5	125	157,5	712	688
8PzB864	864	36,5	45,9	141	157,5	712	688
9PzB972	972	41,6	52,0	157	157,5	712	688
10PzB1080	1080	46,0	57,4	173	157,5	712	688
11PzB1188	1188	50,4	62,8	189	157,5	712	688

GEL - PZV

Cell Type DIN						
CELL TYPE	Capacity (Ah/5h)	Weight (kg)	Dimensions (mm)			
			X	Y	H	h
2 PzV 110	110	9,3	47	198	350	340
3 PzV 165	165	12,7	65	198	350	340
4 PzV 220	220	16,5	83	198	350	340
5 PzV 275	275	20,1	101	198	350	340
6 PzV 330	330	23,8	119	198	350	340
7 PzV 385	385	27,4	137	198	350	340
2 PzV 140	140	10,8	47	198	412	402
3 PzV 210	210	15,5	65	198	412	402
4 PzV 280	280	19,7	83	198	412	402
5 PzV 350	350	24,2	101	198	412	402
6 PzV 420	420	29,1	119	198	412	402
2 PzV 160	160	12,7	47	198	482	472
3 PzV 240	240	18,1	65	198	482	472
4 PzV 320	320	23,6	83	198	482	472
5 PzV 400	400	29,0	101	198	482	472
6 PzV 480	480	35,0	119	198	482	472
2 PzV 200	200	14,7	47	198	573	563
3 PzV 300	300	21,6	65	198	573	563
4 PzV 400	400	27,8	83	198	573	563
5 PzV 500	500	34,3	101	198	573	563
6 PzV 600	600	40,6	119	198	573	563
2 PzV 240	240	19,7	47	198	730	720
3 PzV 360	360	27,4	65	198	730	720
4 PzV 480	480	35,3	83	198	730	720
5 PzV 600	600	42,1	101	198	730	720
6 PzV 720	720	50,0	119	198	730	720

Cell Type BS						
CELL TYPE	Capacity (Ah/5h)	Weight (kg)	Dimensions (mm)			
			X	Y	H	h
2 PzVB 122	122	9,7	45	157,5	486	472
3 PzVB 183	183	13,5	61	157,5	486	472
4 PzVB 244	244	16,9	77	157,5	486	472
2 PzVB 142	142	10,6	45	157,5	530	516
3 PzVB 213	213	14,8	61	157,5	560	516
4 PzVB 284	284	18,5	77	157,5	560	516
2 PzVB 170	170	11,8	45	157,5	625	611
3 PzVB 255	255	16,1	61	157,5	625	611
4 PzVB 340	340	20,7	77	157,5	625	611

IECEx MARKING:

Ex e IIB or IIC T5 Gb
and/or: Ex tb IIIC T100°C Db Ex e I Mb

CERTIFICATES

ATEX Certificate: INERIS 16ATEX0013X
IECEx Certificate: IECEx INE 16.0022X

ATEX MARKING:

For group II and/or group III:

II 2 G

EX e IIB or IIC T5 Gb

II 2 D

Ex tb IIC T100°C Db

For group I:

I M2

Ex e I Mb

Traction batteries

PURE LEAD CARBON

BATTERY SYSTEM FOR ELECTRIC PALLET TRUCKS

AGM THIN PLATE LEAD CARBON

2S BAT/190FT-C
24V 170Ah/C5

CHARACTERISTICS

- Designed for small traction applications
- Totally maintenance free
- Could be installed in any position (except inverted)
- High energy density
- Opportunity charge design
- Operating temperature range -40°C to +65°C
- Modified electrochemistry delivers high capacity and high power density
- Steel containers
- Optimization for cycling performances (up to 1200 cycles at 60% DoD)
- Available in 12V blocks and assembled batteries to be installed in DIN crates

Cell Type DIN						
Reference	Capacity (Ah/C5)	Weight (Kg)	Dimensions (mm)			
			X	Y	H	
2S BAT/190FT-C	170	160	650	220	580	-> framed insert

BENEFITS

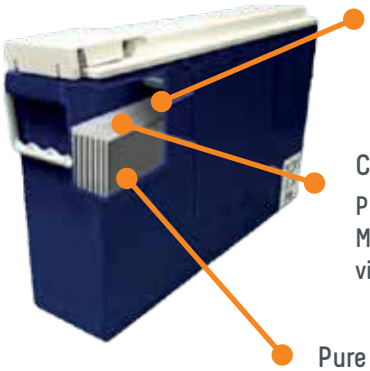
- Resistant to extreme low & high temperatures: -40°C to +65°C
- Longer battery life : 3 times more cycles than standard AGM
- Maintenance-free
- Five times faster recharging
- High performance
- Minimal gassing
- Low self-discharge
- PSOC: Partial State Of Charge

APPLICATIONS

Pallet jack

AGV

Cold storage



Robust Intercell Connections

To prevent vibration, the cell connectors are casted and bonded to the plates.

Compressed AGM

Plate Separators
Made for extreme vibration resistance

Pure Lead Plates

Thin Plates constructed from 99% pure lead

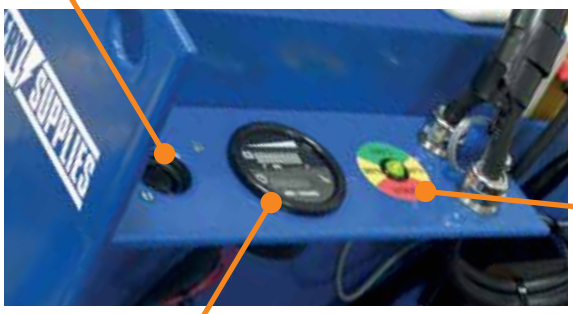
Thin plate Pure Lead

- Excellent cycle life time
- Fast recharge
- High Energy throughput
- Space saving

Quicker Recharge after using

Fast Discharge

Buzzer (low SOC)



Discharge meter

Led indicator:

State of charge
Green: 100% charged
Yellow: 80% charged
Red: Start charging

On-board charger

(built-in interlock relay)
No driving while charging

Low Internal Resistance

- Increased charge efficiency/charge acceptance
- Lower energy consumption for battery recharge
- Lower heat generation
- No risk of thermal runaway

PSOC functionality

- Longer life time in hard condition
- Fast recharge
- Opportunity charge

Exposure to high temperature conditions

- Temperature levels from -20 °C to + 45 °C

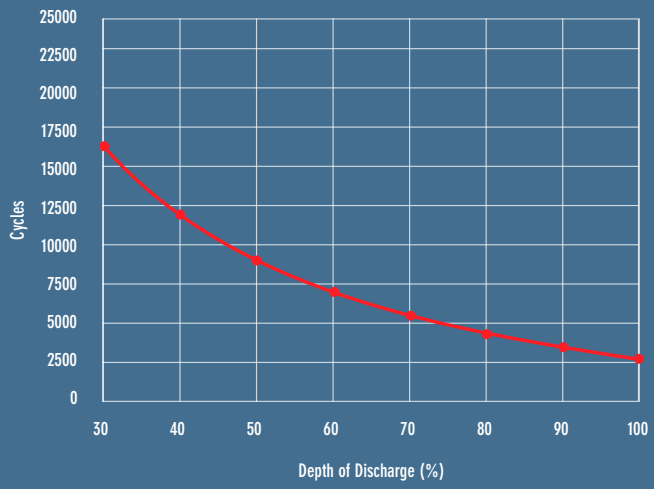
Traction batteries

LITHIUM-ION - LIFEPO4

BENEFITS

- Excellent low temperature performance
- High safety performance
- Longer lifespan: up to 4000 cycles
- High energy density
- Outstanding charging, discharging performance
- Lower self-discharging rate
- Maintenance-free
- Zero emission
- Customizations
- Fast & opportunity charging
- Can be mounted in every position

SERVICE LIFE: 4000 CYCLES DOD 80%



Cycle life in relation to Depth of discharge

APPLICATIONS

Forklift | Marine | Solar | Pallet jack | AGV | Access equipment | GSE | Custom made applications | Construction equipment | Agri

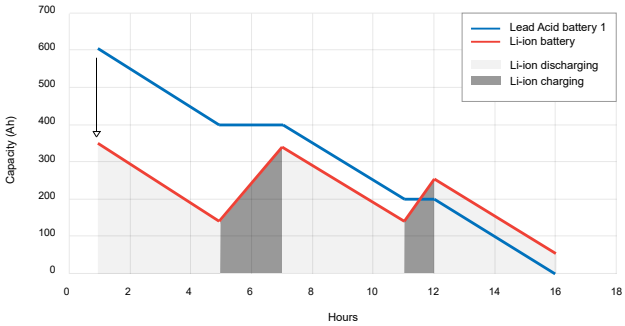
AQ-LITH®

QUICK & OPPORTUNITY CHARGING

A Li-ion battery can be charged whenever you want: during each lunch break, between two operations, etc. A quick charger can charge the battery up to 25% in 30 minutes. A saving of 30% capacity (and thus cost) can be found easily.

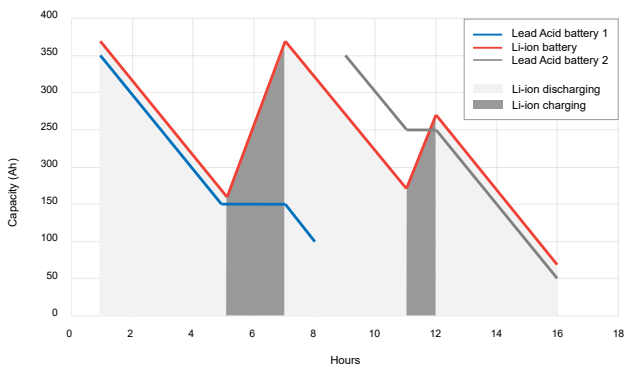
Especially for trucks used in two shifts, the autonomy of a battery is too low. In that case, you need to switch to a 2nd battery after a shift. It takes easily 15 minutes for an operator to replace an acid traction battery. With a Li-ion battery combined with opportunity charging, you can increase the capacity and autonomy for the whole day. **This will avoid the investment and maintenance of a 2nd battery and save the time to switch the batteries.**

DISCHARGE DURING THE DAY



Compared to traditional lead-acid batteries, a Li-ion battery can be charged very fast. **It takes only 2 to 3 hrs for a total charge.** Opportunity charging can be done relatively faster. This makes a Li-ion battery a perfect choice for opportunity charging and for transport systems in 24/24 hrs regime (as AGV's) .

1 LI-ION BATTERY REPLACES 2 LEAD ACID BATTERIES



MAINTENANCE FREE

LiFePO4 batteries are fully maintenance-free and can cope with intermediate charging. Intermediate charging – or opportunity charging – leads to battery sulphation, the number one killer of batteries as the acid particles of the electrolyte will attach to the lead plates causing huge internal damage and loss of capacity. However, opportunity charging does not harm lithium-ion batteries.

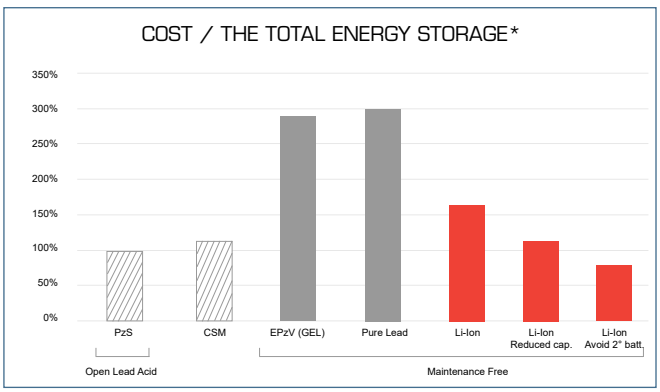
99% of the early fall-out of acid traction batteries are not due to production faults, but to bad battery handling or bad maintenance: mistakes during watering, intermediate charging, not fully charging the battery after use or leaving the battery in a discharged state, incidents when replacing batteries, etc. The lithium cells inside the LFP battery pack are protected, supervised and balanced by a Battery Management System (BMS). The BMS is basically the heart of the lithium battery system. The BMS prevents all kinds of abuse of the operator.

COST-EFFECTIVENESS

No doubt about it that the purchase of a lead-acid battery is the cheapest solution. The investment of a maintenance-free traction battery of 20 kWh (as gel or pure lead) will be more than double compared to the standard lead-acid battery. The cost of a Li-ion battery can be 4 times more expensive.

However, if you take into account the total energy stored in the battery over its life time, the comparison is totally different. The total storage of energy in a gel and pure-lead battery is limited to the low lifetime expectations (1200 cycles) and the proposed useful capacity (60% DOD) and is about 14 MWh.

COST / THE TOTAL ENERGY STORAGE*



* *The total energy stored in the battery during its life time = capacity (20 kWh) x expected cycles x DOD%*

Traction batteries

LITHIUM-ION - LIFEPO4

For Li-ion batteries, the total energy capacity is much higher : 20 kWh x 4000 cycles x 80 %DOD = 64 MWh. **This makes a Li-ion traction battery the cheapest maintenance-free battery.**

This price will drop if you take into account the possible reduction of capacity (almost no effect of high discharge currents and low temperatures) and the possibility to avoid a 2° battery (saving in labour).

ZERO EMISSION

Lithium-ion batteries have no emissions during charging. They can be used easily in the food industry. The battery can be charged in a standard room without venting. You don't need to invest in a separate charging room.

EXTRA ADVANTAGES

- Lithium-ion batteries have no memory effect.
- The energy efficiency (discharged energy/charged energy) for Li-ion batteries is much higher than conventional lead-acid batteries.
- Used in low-temperature circumstances, lead-acid batteries lose a lot of capacity. The reduction of capacity for Li-ion batteries is much smaller what makes them very useful for low temperature operations. If you need to charge the battery in freezing conditions, we can install an extra heater into the tray. This heater will be fed by the charger, thus the battery will keep its autonomy.
- BMS The AQ-LITH® Lithium BMS has a standard CANbus-connection to allow a perfect control and supervision. The battery will be delivered with a standard CANbus indicator displaying the SOC% (State of Charge) , but also the current, voltage, temperature andwarning messages.
- x2 The energy density of Li-ion is very high. You can replace a lead-acid battery with a Li-ion battery with the double capacity and the same dimensions.
- The Li-ion battery is much lighter than the conventional lead-acid battery, this can give an important saving in the construction and reduces the energy consumption for mobile systems.
- High discharge currents reduce seriously the capacity of a lead-acid battery (see Peukert's law). However, the capacity of a Li-ion battery is almost not influenced by high discharge currents.
- Ω The internal resistance of a Li-ion battery is very low.
- Long cycle life: Up to 4000 cycles @ 80 %DOD

WHY BUY AN AQ-LITH® LI-ION BATTERY?

Based on the long experience with Li-ion, Battery Supplies developed a new generation of Li-ion traction batteries with 2 important advantages:

1. The AQ-LITH® Lithium batteries use prismatic cells based on the superior LiFePO4 (lithium ferrophosphate) technology. This cell offers long cycle life with an excellent energy density. Compared to the NMC technology (lithium nickel manganese cobalt), the LiFePO4 is a lot safer.

   In industrial and logistics applications only LiFePO4 is used. It is important to understand that this technology does not ignite or explode, even if the battery breaks down. It is fully protected. The cells are assembled in modules with laserwelded busbars. This connection reduces the internal resistance and reduces the risk of poor connections.

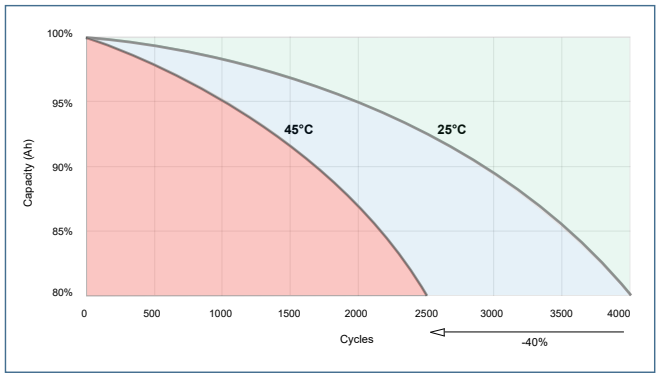
2. The heat dissipation in the cells have a big negative impact on the life time of the battery. Higher temperatures will reduce the lifetime drastically (each °C extra reduces the life time with 2%).

   For most Li-ion batteries on the market, the cells and modules are placed together, which will lead to an unstable heat dissipation and local hotspots of the cells. The AQ-LITH® Lithium batteries have an optimal heat balance: the modules are placed to allow an excellent natural venting. This venting will transfer the heat towards the tray and will balance the overall temperature.

   Optimal venting

   Optionally, the battery can be installed with a forced cooling (airco) for high temperatures or heaters for low temperatures.



AQ-LITH®

STANDARD RANGE OF AQ-LITH® LITHIUM BATTERIES

The AQ-LITH® Lithium batteries are delivered ready-to-use in a tray. In the tray all necessary safety and control components are present as the AQ-LITH® BMS with dynamic balancing.

The standard AQ-LITH® Lithium batteries can be built in the most standard dimensions of lift truck trays. For lift trucks, the weight of the batteries are quite important as contra-weight. In that case extra ballast will be placed in the tray as option to match the same weight as a standard lead-acid battery.

Standard models	Voltage (V)	Capacity (Ah)	Capacity (kWh)	Capacity (kWh net)	Charger: standard charging (4 to 8 hrs)	Charger: fast charging (2 to 3 hrs)
DYN24-210	24	210	5,04	4,032	NG1/24-45 RE-L	NG3/24-95RE-L
DYN24-315	24	315	7,56	6,048	NG1/24-45RE-L	NG9/24-145 RE-L
DYN24-420	24	420	10,08	8,064	NG3/24-60RE-L	NG9+/24-200 RE-L
DYN24-630	24	630	15,12	12,096	NG3/24-95RE-L	NG9+/24-200 RE-L
DYN48-210	48	210	10,08	8,064	NG3/48-45-RE-L	NG7/48-120RE-L
DYN48-315	48	315	15,12	12,096	NG3/48-60RE-L	NG9+/48-160RE-L
DYN48-420	48	420	20,16	16,128	NG5/48-95RE-L	NG9+/48-160RE-L
DYN48-630	48	630	30,24	24,192	NG7/48-120RE-L	MG18/48-320RE-L
DYN48-840	48	840	40,32	32,256	NG7/48-120RE-L	MG27/48-480RE-L
DYN80-210	80	210	16,8	13,44	NG3/80-30RE-L	NG9+/80-120RE-L
DYN80-315	80	315	25,2	20,16	NG5/80-60RE-L	NG9+/80-120RE-L
DYN80-420	80	420	33,6	26,88	NG7/80-75RE-L	MG18/80-200RE-L
DYN80-630	80	630	50,4	40,32	NG9/80-100RE-L	MG27/80-300RE-L
DYN80-840	80	840	67,2	53,76	NG9+/80-120RE-L	MG36/80-400RE-L

For all models:

Discharge current nom	1C max
Discharge current peak (3s)	3C max
Charge current	0,5C max
Temperature for charging	0 to 40°C
Optional : with heating	-20 to 40°C
Temperature for discharging	- 20 to 50°C

Canbus indicator: BAT/48769

Ideal for all M+ and AQ-LITH® traction batteries. This indicator reads the CANBUS signals from the BMS and displays the SOC, voltage, current, temperature and all warnings.
With potential-free contact for minimum State of Charge (adjustable)

! CUSTOM MADE AQ-LITH® LITHIUM BATTERIES

If the standard batteries don't fit for your application, then we can assemble a custom-made AQ-LITH® Lithium battery based on your specifications. Please send us your parameters as dimensions, voltage, capacity and required current and we will develop the right solution.

Please contact info@batterysupplies.be