

www.midacbatteries.com



MOTIVE POWER BATTERIES LI-ION



INCOMPARABLE INDUSTRIAL EXPERIENCE

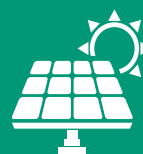
With an In-depth
knowledge on battery
technology, we can provide
fully customized solutions.

In almost three decades of experience in the production of batteries for industrial applications, we have countless solutions in several fields, discovering new ways to improve the performance of our batteries and maximize efficiency in every situation.

Our in-depth knowledge on battery technology allows us to select the best cells for each application, a key point for producing excellent lithium battery systems.

Midac's production management oversees every step of the lithium battery value chain, for continuous and efficient monitoring of cells, technical specifications, production process quality, product test and validation.

MIDAC LI-ION POWER APPLICATIONS

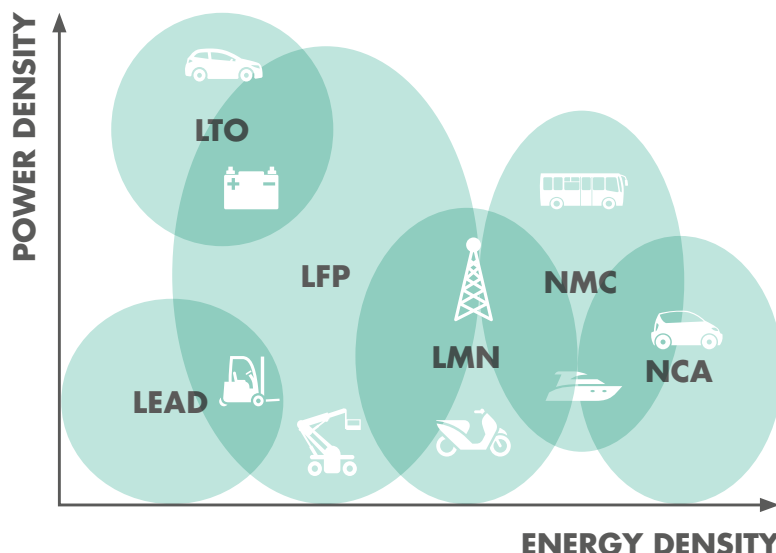


MIDAC LI-ION BATTERIES: SAFE GREEN POWER

THE RIGHT CHEMISTRY FOR EACH SPECIFIC APPLICATION

Midac's Lithium Department designs and develops a wide range of Li-Ion batteries, with sizes and technical features capable of satisfying any kind of power, durability and performance requirement.

We help our customers find the most suitable battery, and in case of special requirements we analyze the requests to develop the perfect solution, thanks to a team of specialized technicians.



LITHIUM BATTERIES COMPARED TO LEAD ACID BATTERIES:

- Up to 10 times more **powerful** (LFP)
- Up to 5 times **smaller** and **lighter** (NCA-NMC)
- Up to 10 times **longer lasting** (LTO)
- Up to 40% more **efficient** (1 hour discharge rate @RT)
- **Faster recharging** (LTO < 2min)
- **No maintenance**: Midac suggests just a yearly battery inspection and usage report
- **No expensive dedicated charging area**

Cathode	NMC (2 nd gen)	LFP	LMS	LMN	NCA
Anode	Carbon Based	Carbon Based	LTO	Carbon Based	Carbon Based
Electrolyte	Poly	Poly	Poly	Ion	Ion
Nominal Voltage	3,7	3,2	2,3	3,7	3,6
Specific Density (Wh/kg)	210	135	90	160	240
Energy Density (Wh/l)	490	245	180	280	600
Specific Power (W/kg)	3000	8000	10000	2000	1000
Max cont. Discharge/Charge rate	15C-5C	20C-5C	30C-30C	2C-0,5C	2C-0,5C
Cycling Life (@ 80%DoD)	4000-8000	4000-8000	25000	3000	3000
Security	● ● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ●	● ● ●
Peculiarity Uses	High Energy Density Automotive (PHEV, BEV), Industrial, Marine, Military, Stand-By (Renewable Energy, Telecom)	Safety & Power Automotive (SLI, Mild HEV, PHEV, BEV), Industrial; Marine, Stand-by (Renewable Energy, UPS)	Fast Charging & Life Automotive (SLI, HEV, Mild HEV) High Power UPS	Price & Energy Density Small EV, Industrial, Marine, Tools, low power UPS	High Energy Density Automotive (BEV), Marine, Military, Stand-By (Renewable Energy)

TWO "COBALT FREE" CHEMISTRIES FOR MORE THAN 200 INDUSTRIAL SOLUTIONS

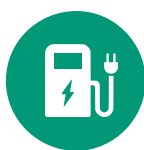
LFP CHEMISTRY OFFERS THE HIGHEST SAFETY STANDARD AND IMPRESSIVE PERFORMANCES. LMN CHEMISTRY COMPLIES TO THE SAME SAFETY LEVEL OF LFP TECHNOLOGY WHILE INTRODUCING THE COST EFFECTIVE APPROACH.



**X3
LIFETIME**



**UP TO 70%
COST SAVING**



**1 HOUR
FAST CHARGE TIME**



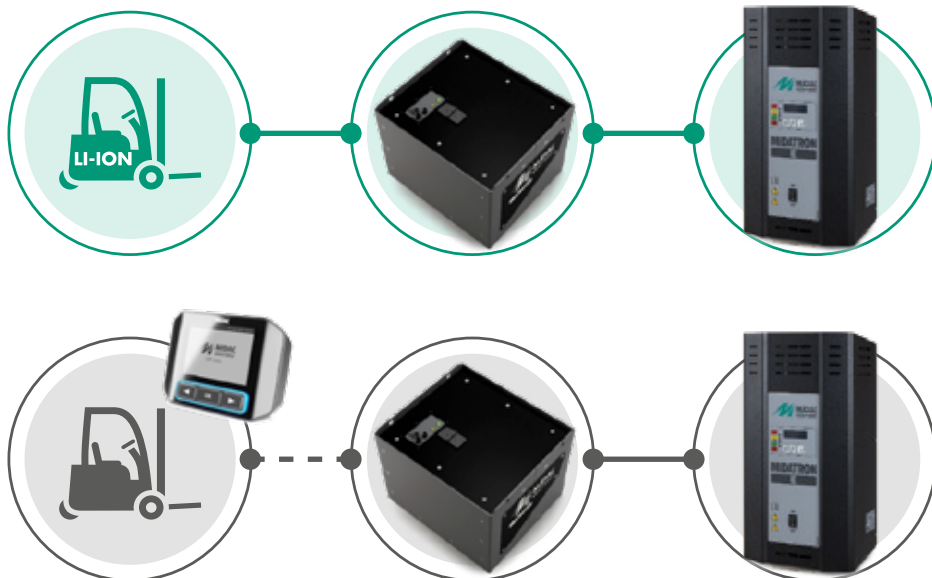
**98%
EFFICIENCY**



**NO GAS
EMISSIONS**

* Under operating conditions specified by Midac

INTEGRATED SOLUTIONS STAND ALONE SOLUTIONS



MORE SAFETY

Vehicle / Battery communication system

MORE EFFICIENCY

More useable energy (Able to work at 100% DOD).

LONGER LIFE

Better battery management.



**COLD
STORE**



**HIGH TEMPERATURE /
HEAVY OPPORTUNITY CHARGE**



**HIGH PROTECTION
INDEX**



**FAST RETURN
OF INVESTMENT**



**LFP: 5 YEARS / 10.000 HOURS
LMN: 3 YEARS**

MIDAC LI-ION BATTERY FEATURES

SPECIAL DOUBLE PLUG

- You can charge the battery without unplugging the vehicle
- Battery can be charged without opening / lifting covers, hoods or casings
- The safety system inhibits the movement of the vehicle when charger is connected
- Possibility of battery monitoring even during charging and with battery connected to the truck

INTEGRATED BDI

- SoC indicator with 6 Leds
- Fault / error indicator by blink code's Led
- Integrated ON/OFF/Stand-By button



M3-BDI: BATTERY MONITORING DISPLAY

Fully integrated device with a complete range of functionalities for accurate battery monitoring.



MIDAC SERVICE SOFTWARE



MAIN FEATURES

Overview: Show the battery status, the SoC level, the voltage and current of battery pack and single cells. In addition you receive a real time feedback on the status of the communication with MBM.

Temperature: Shows the record of the temperatures measured by the MBM, including board and cells temperature.

Voltage: Shows a series of luminous indicators that represent the state of balance of the individual cell that compose the battery pack. Maximum, minimum and average voltage of each cell are also indicated.

Warning/Error/Alarm: System shows and records all warning/error/alarm event occurred during whole battery life.

Resistance: Contains indicators that summarize the internal resistance of the cells in the battery. Minimum resistance, maximum and average are highlighted.

Firmware Update: The MBM can be updated via the CAN bus with the appropriate USB.CAN interface provided. The auto-start of the new firmware can be optionally selected for a more rapid reprogramming.

Log: This feature allows to record the activity of MBM and the measurements. This is useful for determining any form of battery abuse. Parameters such as the number of charge / discharge cycles performed, voltages, maximum current charge / discharge, temperatures of the cell resistors, etc. They can be recorded for later evaluation and analysis.

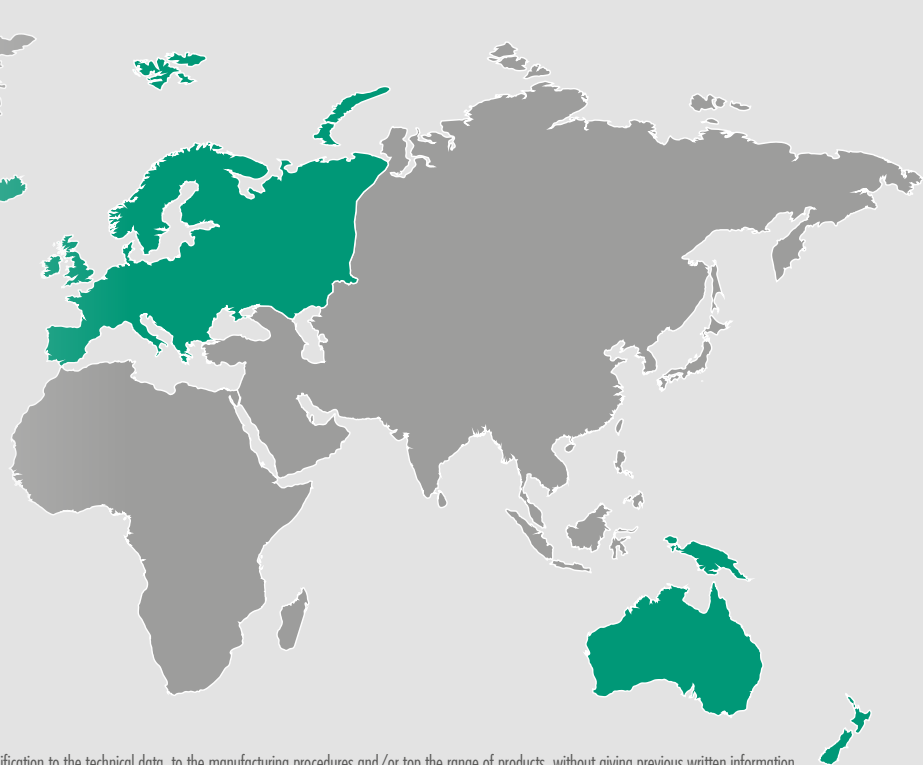


E-MOTIVE: THE EASIEST WAY TO STAY CONNECTED WITH ALL YOUR BATTERIES (AVAILABLE SOON).

SALES & AFTER SALES SERVICE NETWORK

We can support our customers everywhere around Europe, Australia and more.

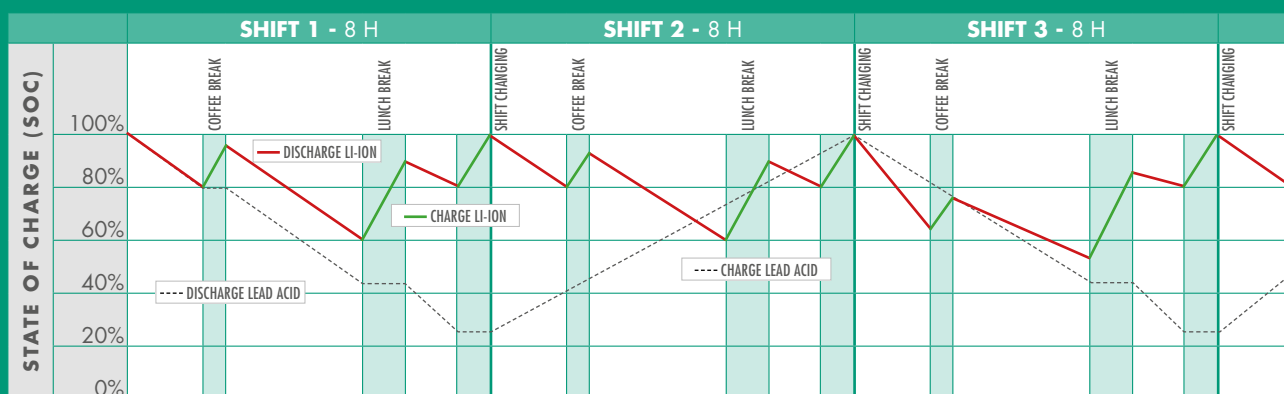
Moreover Midac has developed a complete range of service tools to help customers obtain better performances from their batteries.





RELEASE THE FULL POTENTIAL OF YOUR WAREHOUSE

Midac Li-Ion batteries are the perfect choice for multi-shift operation. The fast opportunity charging allows to take advantage of breaks and downtimes to recharge the batteries, granting a continuous availability of the vehicle fleet.



Li-Ion STANDARD RANGE



RANGE

24 V

from **50 to 600 Ah**



RANGE

48 V

from **150 to 1200 Ah**



RANGE

80 V

from **100 to 1200 Ah**



RANGE

120 V

up to **1200 Ah**

**MIDAC S.p.A.**

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**MIDAC SPA HEADQUARTERS, SOAVE, VERONA, ITALY**

Unica realtà a produrre batterie avviamento, trazione e stazionarie in un singolo stabilimento produttivo, è diventata una delle aziende leader in Europa con prodotti distribuiti in tutto il mondo.

The only company that produces Automotive, Motive power and Stationary batteries in the same manufacturing plant, it has become one of the leading companies in Europe and its products are sold worldwide.

MIDAC PRODUZIONE VERDE

Midac utilizza l'energia pulita prodotta dal proprio impianto fotovoltaico per la produzione di batterie e accumulatori, evitando l'emissione di 945 tonnellate di CO₂ ogni anno.

MIDAC FABRICATION ÉCOLOGIQUE

Midac utilise l'énergie propre provenant de votre système photovoltaïque pour la production de batteries et d'accumulateurs, en évitant l'émission de 945 tonnes de CO₂ chaque année.

MIDAC GREEN PRODUCTION

Midac uses clean energy produced by its own photovoltaic system to produce batteries and accumulators, avoiding the emission of 945 CO₂ tons every year.

MIDAC GRÜNE ENERGIE

Midac verwendet grüne Energie, welche von der eigenen Solaranlage geliefert wird, um ihre Batterien und Akkumulatoren herzustellen. So sind wir in der Lage 945 Tonnen an CO₂ einzusparen.

MIDAC PRODUCCIÓN DE ENERGÍA VERDE

Midac utiliza energía limpia producida por su propio sistema fotovoltaico para producir baterías y acumuladores, evitando la emisión de 945 toneladas de CO₂ cada año.

MIDAC GRÖN PRODUKTION

Midac använder ren energi som produceras av deras egna solceller för att producera batterier och ackumulatörer, genom detta så undviker man varje år utsläpp av 945 ton CO₂.

