
DELTA BATTERY
LI-ION SERIES
ONE OF THE LEADING MANUFACTURERS OF TRACTION LITHIUM-ION BATTERIES FOR WAREHOUSE AND CLEANING EQUIPMENT AND SPECIAL-PURPOSE SOLUTIONS
www.delta-lfp.ru

FEDERAL DISTRIBUTION NETWORK

ENERGON

ONE OF THE LARGEST SUPPLIERS OF INDUSTRIAL LEAD-ACID BATTERIES

- Smart Batteries
- EcoTech
- 10 separate business units (SBU) in the Russia
- Development of Belarus and Kazakhstan markets

ENERGON BRAND RANGE

DELTA BATTERY

SECURITY FORCE

Optimus for security systems

ВОСТОК PRO АККУМУЛЯТОРНЫЕ БАТАРЕИ TELECOMMUNICATIONS / DATA CENTERS / STATE OBJECTS

YUASA

HOPPECKE

ENERGON

DISTRIBUTION NETWORK

MOSCOW
SAINT-PETERSBURG
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YEKATERINBURG
PERM
UFA
NOVOSIBIRSK
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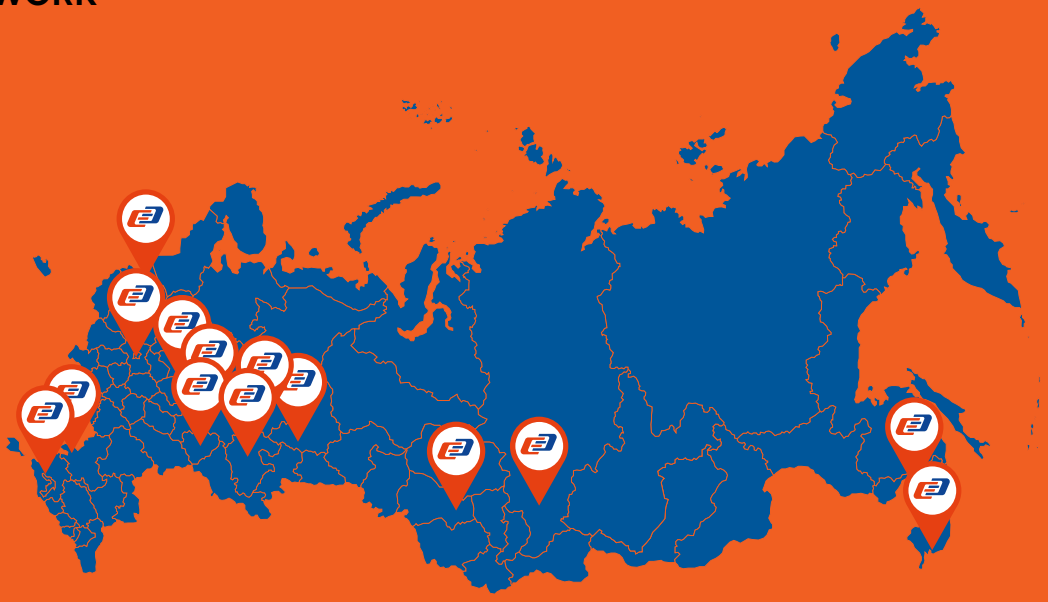


The following kinds of services are available in all regions of the Russian Federation:

- Service support
- Maintenance
- Disposal of used batteries

Subdivisions are responsible for delivery and documentary support of projects.

ENERGON IN FIGURES

20+ YEARS IN THE MARKET

50 MLN BATTERIES WERE SOLD SINCE 1998

TEAM INCLUDES MORE THAN 250+ PROFESSIONAL SPECIALISTS

16,000 M² WAREHOUSE FACILITIES

4 LEVELS OF THE QUALITY CONTROL

546 TRANSACTIONS DAILY

Developed network OF SBU throughout of Russia

Design and development

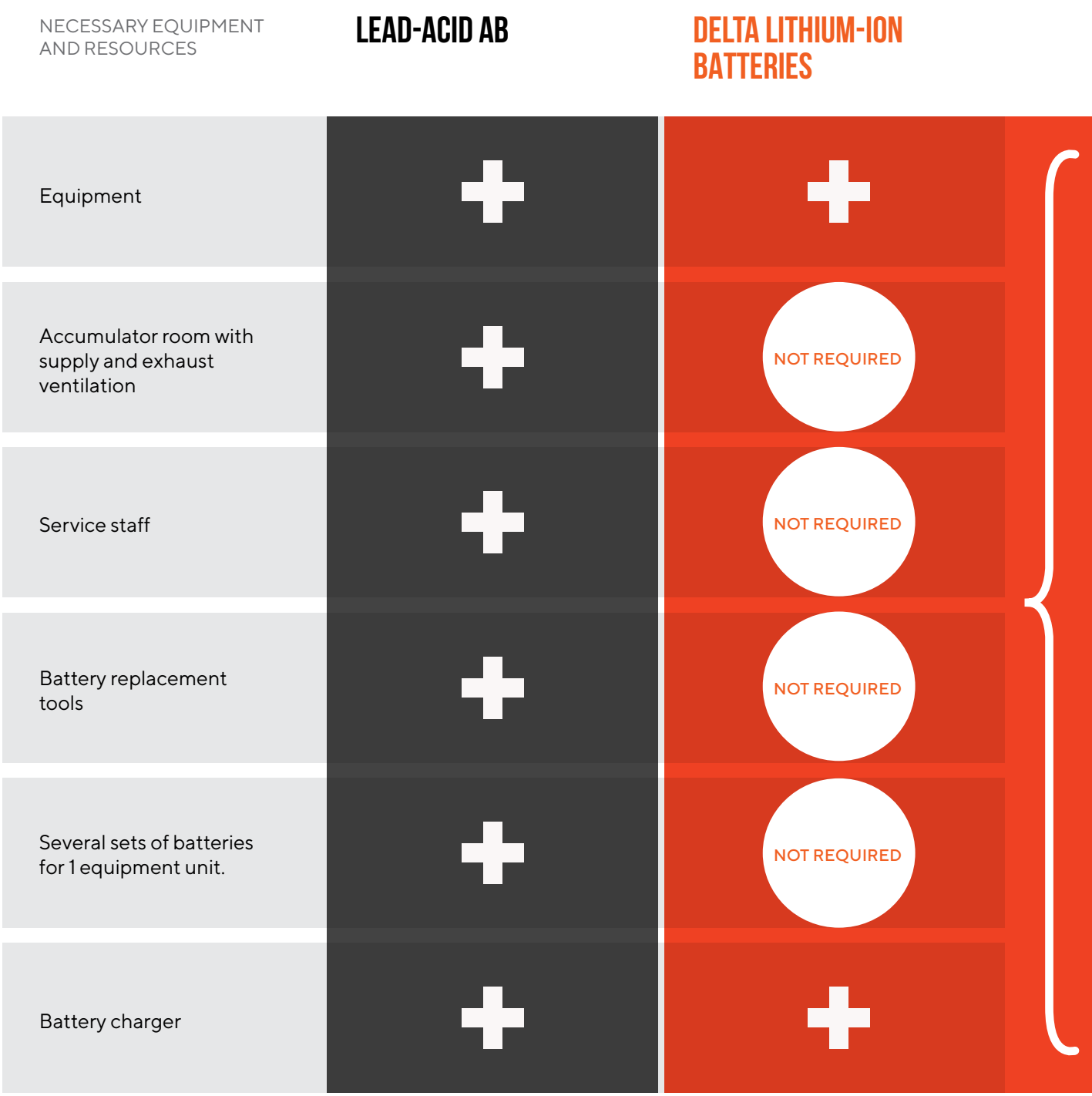
Imported components

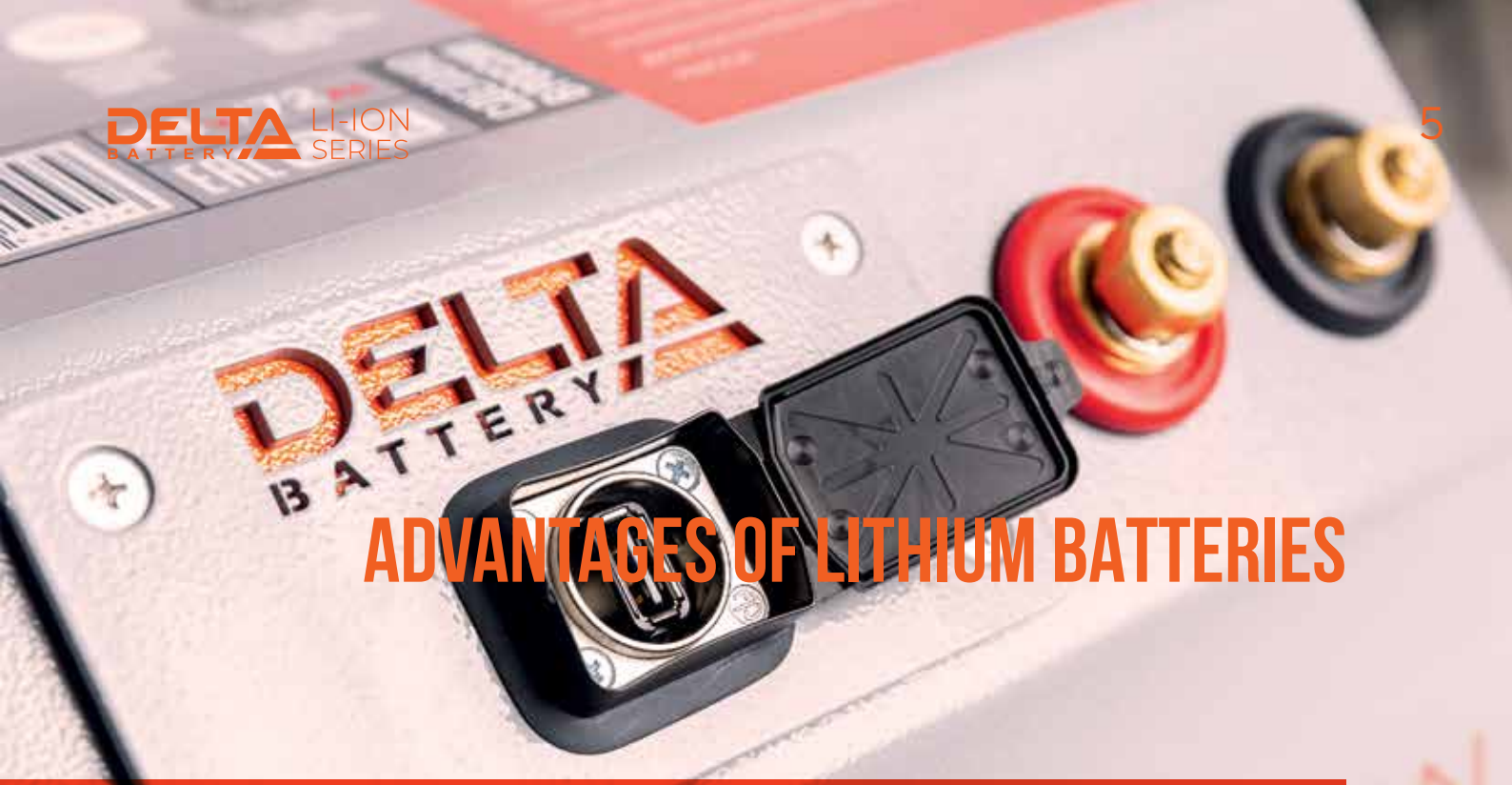
In-house production

Testing laboratory

BATTERY OWNERSHIP DIFFERENCE: LEAD OR LITHIUM BATTERIES?

The difference between the use of lead acid and lithium-ion batteries is clearly demonstrated by the use or absence of battery maintenance and commissioning services.





ADVANTAGES OF LITHIUM BATTERIES

HAVE 2-3 times longer service life compared to lead batteries

REDUCED MAINTENANCE COSTS

100%
CHARGE RATE:
up to 100% in 1-2 hours

NON-TOXIC saving on battery room

3x Pb
SHORT CHARGING TIME:
one lithium battery replaces 2-3 lead ones

NO "MEMORY EFFECT"
recharge at any convenient time

98%+
AVAILABLE CAPACITY > 98%

-30%
POWER CONSUMPTION
is 30% lower (compared to lead-acid batteries)

LITHIUM BATTERY WARRANTY PERIOD -
3 years, extended - 5 years
(lead batteries: 1-2 years)

LITHIUM IS A NEW OIL

- Lithium is one of the most highly-demanded rare metals used in the military and civilian industries around the world.
- Lithium is the one and only proper alternative to petrol and gas.

COMPOSITION OF TRACTION LI-ION BATTERY

BATTERY MANAGEMENT SYSTEM (BMS)

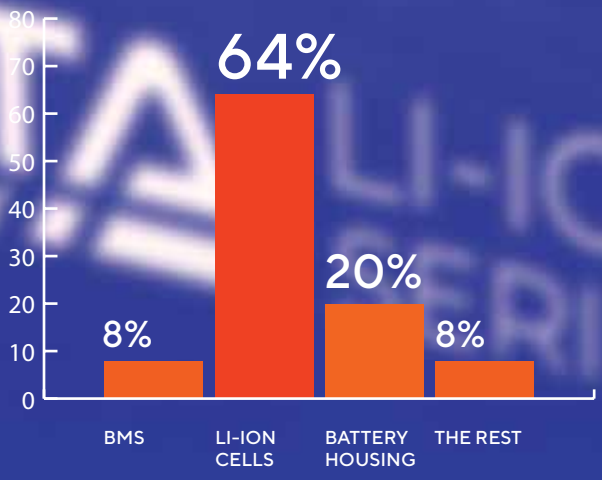
LI-ION CELLS

BODY (+ BALLAST)

OTHER COMPONENT PARTS

Other component parts may include: power connectors, contactors, DC-DC converters, BMS harnesses, copper busses, power wiring and other consumables.

COST STRUCTURE OF TRACTION LI-ION BATTERIES



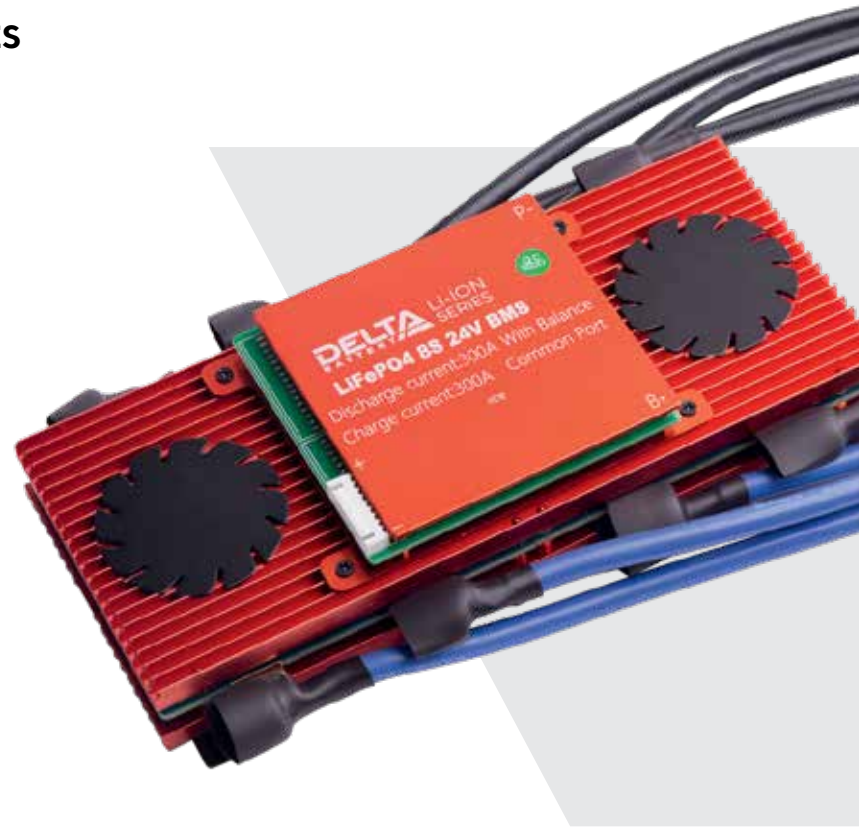
Li-Ion cells make up the key share in the cost structure of traction Li-Ion batteries. Total cost of the battery is determined by the quality of the cells.

With proper operation, the service life of lithium cells is 7-10 years, after the cells can be updated without replacing the rest of the components. Such a replacement is significantly more profitable than purchasing a new battery.

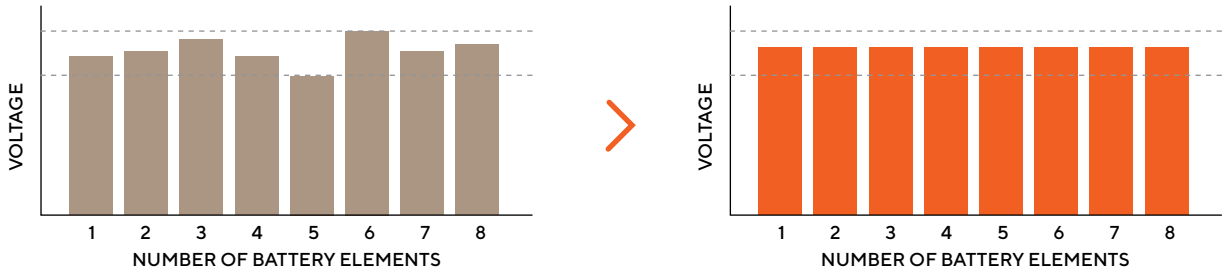
COMPONENT APPROACH: BATTERY MANAGEMENT SYSTEM (BMS)

BENEFITS OF BMS DELTA LI-ION SERIES

- Increased number of conductors per load
- Two cell balancing modes
- Turning off the the equipment power while charging
- Overcharge protection, deep discharge protection, short circuit protection, cell temperature monitoring, etc.
- Remote control of BMS is possible via ModBus, CAN, Ethernet communication protocols through wi-fi connection
- Logging information to an SD card with the subsequent transfer of files to a remote server



HOW DOES BMS WORK?



The central microprocessor of an industrial Li-Ion battery is a battery management system (BMS). Several configurations of BMS systems are available for ordering: active or passive cell balancing, with the load disconnecting function during charging, temperature, humidity, shock sensors, etc.

DESIGN OF THE LI-ION BATTERY

1 BATTERY LEVEL INDICATOR

2 BATTERY ON BUTTON

3 CHARGING PORT

4

5

BATTERY LOAD MOUNTING HOLE

6

BATTERY HOUSING, DUPLICATING ORIGINAL DESIGN

EXTERNAL BATTERY LEVEL INDICATOR WITH MAGNETIC CONNECTOR

DELTA BATTERY LI-ION SERIES

Having extensive experience in converting machinery parks from lead-acid batteries to lithium-ion ones, the ENERGON Federal Distribution Network (FDN) has developed several standard solutions for various application fields, including equipment operating at temperatures as low as -50 ° C.

COMPONENT PARTS SELECTION APPROACH: LI-ION CELLS

The Li-ion DELTA batteries use the best LiFePO4 cells in an aluminium housing.

- Relief valve
- Aluminum housing for better heat transfer
- Ceramic membrane for added security
- More than 3000 charge/discharge cycles

In its goods production, Energon FDS uses only premium quality cells, which are supplied to the factories of the Volkswagen and BMW auto concerns, and are also used in the world civil and military aircraft industry.

CHARACTERISTICS OF THE DELTA LI-ION SERIES OF LI-ION BATTERY CELLS

- Rated voltage - 3,2 B
- Rated capacity - 50, 72, 100, 200 Ah
- Internal resistance - less than 1 mΩ
- Two charging modes (nominal/fast) - 2/1 hour

DATA TRANSFER AND CLOUD SERVICE

BATTERY HOUSING

ENERGON FDS has developed 4 types of lithium-ion storage batteries:

DELTA ORIGNAL

STANDARD MODEL

Battery operating temperature range from 0 ° to + 40 ° C

DELTA FROST

FROST RESISTANT DESIGN

дополнительный обогрев, специальный утеплитель корпуса

Operating temperature range of the battery from -50° to +40 °C

DELTA FUSION

ADDITIONAL HEATING, SPECIAL HOUSING INSULATION FOR HIGH TEMPERATURE ZONES

double cooling circuit

Battery operating temperature range from 0 ° to +85°C

DELTA EX

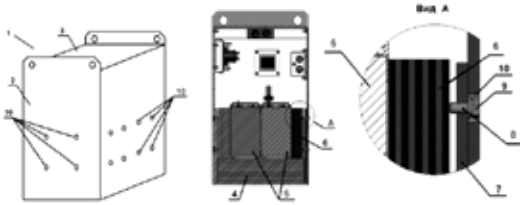
EXPLOSION-PROOF DESIGN

IP66, intrinsically safe connection

Battery operating temperature range from 0 ° to + 40 ° C

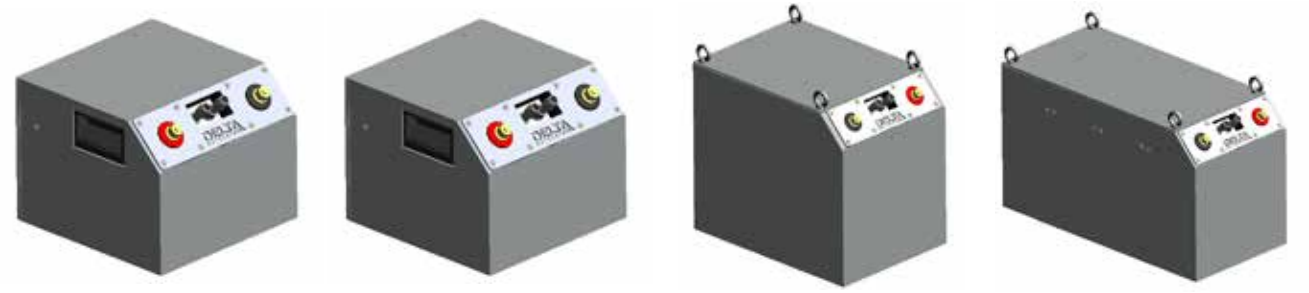
PATENTED LI-ION CELL FASTENING SYSTEM

Clamping the ballast sheets through a screw connection allows to solve the problem during the operation of equipment associated with increased vibrations on the battery.



- Installing the router into the charger case
- Data transmission to a remote server via Wi-Fi for closed rooms and via GSM for open rooms
- Lithium-ion battery remote monitoring software
- The possibility to store and analyze information about the battery condition in the cloud service

DELTA LI-ION BATTERY SOLUTIONS FOR CLEANING AND PACKAGING EQUIPMENT



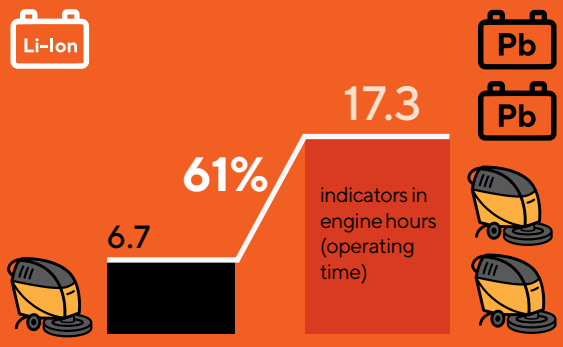
DELTA LFP 12-144	DELTA LFP 24-72	DELTA LFP 24-216	DELTA LFP 24-288
12 V / 144 Ah	24 V / 72 Ah	24 V / 216 Ah	24 V / 288 Ah
≤150 A	≤150 A	≤150 A	≤150 A
275 x 270 x 215 mm	275x270x215 mm	427x274x330 mm	427x274x330 mm
27 kg	27 kg	90 kg	100 kg

Do not require supplementing of the lithium battery with ballast and are constructed as unified monoblock solutions. Three standard solutions can be offered for more than 90% of the modern cleaning and packaging equipment.

MAIN FEATURES OF TYPICAL SOLUTIONS FOR CLEANING EQUIPMENT

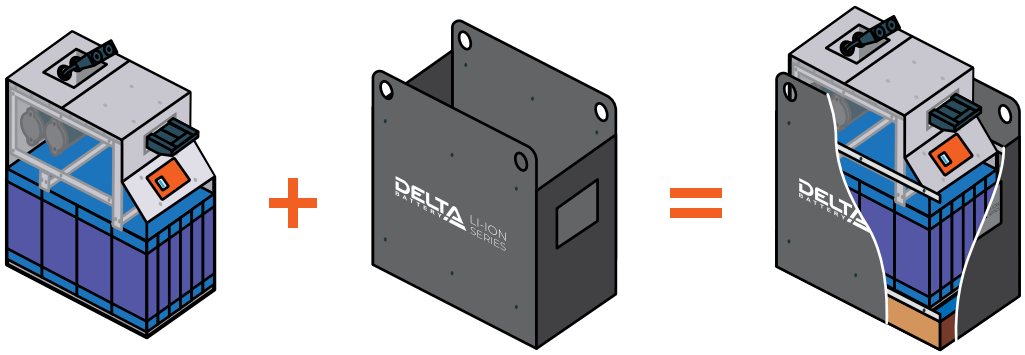
- Equipped with an external charge indicator
- Parallel connection of the battery in order to increase the total capacity
- Dust and water resistant housing
- Maximum discharge current up to 150 A

LITHIUM VS LEAD: ADVANTAGES FOR CLEANING EQUIPMENT



Operating time of Li-Ion batteries can be significantly increased due to a quick charge in 1-2 hours and reduce the number of equipment units.

TYPICAL LI-ION DELTA BATTERY SOLUTIONS FOR WAREHOUSE EQUIPMENT



EXAMPLES OF TYPICAL TRACTION BATTERIES:

DELTA LFP 24-144	DELTA LFP 24-216	DELTA LFP 24-288
24 V / 144 Ah	24 V / 216 Ah	24 V / 288 Ah
≤200 A	≤200 A	≤200 A
566 x 142 x 450 mm	566 x 142 x 450 mm	566 x 274 x 450 mm
75 kg	98 kg	120 kg

Typical solutions for warehouse equipment depend largely on the ballast size and weight, which allow the use of unified traction lithium-ion batteries for a wide range of equipment manufacturers, matching the battery with the housing and characteristics of each specific series of machines.

The ballast can be built into the battery casing, or installed with a monoblock battery, and guaranteedly prevents rol during the lifting/lowering or moving of loads.

ADVANTAGES OF SERIAL AND STANDARD BATTERIES

- \+ Lower cost due to bulk ordering of the similar type of components
- \+ Stock availability of serial and standard batteries, ballast production time is 1-3 days
- \+ The possibility to use the same type of batteries in different equipment due to replaceable ballast
- \+ Replacement fund: no downtime of equipment, fulfillment of obligations to the customer
- \+ No need to purchase an additional new battery when updating the fleet

ADVANTAGES OF DELTA SOLUTIONS

The participants of the ENERGON distribution network occupy their position on the market due to the unconditional fulfillment of general customer liability and the consistently high quality of products.

- INDIVIDUAL APPROACH TO EVERY PROJECT
- WAREHOUSE AVAILABILITY OF BATTERIES AND CHARGERS • for standard solutions of warehouse equipment • for standard cleaning and packaging equipment solutions
- TRANSPARENT COMMERCIAL TERMS
- TRADE-IN PROGRAM Official disposal of lead-acid batteries and up to 30% add. discount on Li-ion batteries
- MINIMUM DELIVERY TIME: 2-4 WEEKS Due to the constant availability of all component parts at production site
- SUBSCRIPTION PROGRAMRenting of batteries for testing and decision making
- FREE AUDIT OF EQUIPMENT AND PREMISES DURING PROJECT DEVELOPMENT
- WIDE BRANCH NETWORK IN RUSSIA Uniform pricing in any region

BATTERY CHARGERS

ENERGON FDS members are official distribution and service partners with the S.P.E. Company - a reputable manufacturer of battery chargers from Italy, dating back to 1972.

UPON COMPLETION OF BATTERY SERVICE LIFE

- regeneration of capacity for 50-70% of original cost
- official disposal of lithium batteries upon completion of service life

THE DELTA BRAND IS DEVELOPING IN THE RUSSIAN MARKET SINCE 1998

ENERGON DISTRIBUTOR NETWORK MEMBERS MEET DELIVERIES TO GOVERNMENT AND COMMERCIAL ENTERPRISES

METRO

Auchan

Yandex

Schneider Electric

PHOENIX CONTACT

DELTA BATTERY LI-ION SERIES

ENERGON / DELTA BATTERY LI-ION SERIES

ENERGON Federal
distribution network

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