



# 100% solid-state battery technology for the energy transition

*Blue Solutions*  
by Bolloré

# Blue Solutions

A major player in energy transition and energy access for all



## LMP<sup>®</sup> Technology

The answer to the challenges of the energy transition



7kWh module



Pack LMP<sup>®</sup> 63



Blue LMP<sup>®</sup> 250



A listed company since October 30, 2013, BlueSolutions brings together all the energy storage activities developed by the Bolloré Group.

Over more than twenty years of R&D, and based on its expertise in paper and ultra-thin plastic films, BlueSolutions has developed batteries and energy storage solutions based on a unique advanced technology: the LMP<sup>®</sup> battery (Lithium Metal Polymer).

At a time when energy transition and energy access for all have become major issues for citizens, and governments, BlueSolutions relies on its expertise to design, develop, manufacture, and market complete solutions for the production, storage and intelligent management of energy.

Spread over two production sites in France and Canada, Blue Solutions employs more than 300 researchers,

engineers and technicians for the development and production of the LMP<sup>®</sup> batteries. The batteries are used both in mobility applications: full-electric buses, car-sharing, and other electric vehicles; and in stationary applications for small communities, private companies, and big utilities to facilitate the integration of renewable energies and to allow 1.2 billion people access to energy.

Marketed by other Bolloré group entities (Bluestorage and Bluebus), these solutions have been developing rapidly since 2011 on all continents.

More than ever, Blue Solutions represents a real answer to the current and future challenges of energy.

01. 02. Our battery plants in France and Canada.

BlueSolutions is the only manufacturer that masters the solid-state Lithium Metal Polymer technology (LMP<sup>®</sup>).

Made of thin films produced using extrusion techniques perfected by the Bolloré Group, LMP<sup>®</sup> batteries stand out by their high energy density, safety of use and performance. Their all-solid-state construction provides many advantages in terms of efficiency and safety:



### SAFETY AND ROBUSTNESS

- No thermal runaway thanks to its solid-state construction.
- No risk of fire
- No risk of leakage or off-gassing
- More than 300 million kilometers covered by cars and electric buses since 2011
- No cooling system needed
- Strong warranty without provision clause on temperature nor on average SOC



### INSENSITIVE TO CLIMATE CONDITIONS

- LMP<sup>®</sup> batteries support extreme temperatures without any cooling system, leading to enhanced performance, greater reliability and simplified maintenance
- Easy transport and storage, even in hot external conditions, with no effect on the battery lifespan



### HIGH LONG TERM PERFORMANCE

- A constant storage capacity throughout the battery lifespan
- A DC/DC efficiency up to 98%, regardless of the outside temperature
- A lifespan of up to 4,000 cycles depending on the application
- Withstands free floating (100% charge) with no damage to the battery



### ENVIRONMENTALLY-FRIENDLY

- Contains no solvents
- Cobalt and nickel free, leading to an optimized LCA
- Effective recyclability thanks to the use of lithium in metallic form



## Stationary applications

# Bluestorage



Bluestorage has been deploying energy storage solutions to meet the challenges of energy transition and energy access for all. These solutions are based on our LMP<sup>®</sup> battery technology that stands out for its safety in use and performance whatever the ambient temperature and without the need for a cooling system.



**With more than 30 off-grid and on-grid installations deployed all over the world, and specially in Africa, Bluestorage has a unique expertise in energy storage.**

## Mobile applications

# Bluebus

The 100% electric Bluebus from the Bolloré Group are available in 6 and 12 meter formats and are equipped with LMP<sup>®</sup> (Lithium Metal Polymer) batteries. A clean and silent solution for urban and suburban public transport, the Bluebus range meets environmental challenges and combines high technology, design and performance.

These 100% electric buses are manufactured in France, more specifically in Brittany, at Ergué-Gabéric where the Bluebus and Blue Solutions factories are certified to ISO 9001. Cells, batteries and buses are all produced at the same industrial site. This ensures Bolloré group's quality control of manufacturing and integration as well as eliminating CO<sub>2</sub> emissions related to transportation of parts. The Bluebus 6 meters and 12 meters are labeled Origine France Garantie, for the bus as well as for the batteries.

With more than 300 Bluebus operating worldwide today, the Bolloré Group provides an effective and innovative answer to the changing mobility needs of cities of today and tomorrow.

**The collaboration with RATP began in 2016 with the 12m 100% electric Bluebus on the entire line 341. Today, the 12m Bluebus also operates on the bus lines 72, 115 and 126 of Paris bus network.**



# Blue Solutions

Blue Solutions provides mobility energy storage systems to bus and truck manufacturers around the world using LMP<sup>®</sup> batteries to equip their vehicles with a proven advanced technology.

**Several partners already trust Blue Solutions' groundbreaking solid-state technology - among them Daimler, who chose the LMP<sup>®</sup> technology for the equipment of eCitaro<sup>®</sup> buses in Europe, and Gaussin, for the equipment of port tractors.**