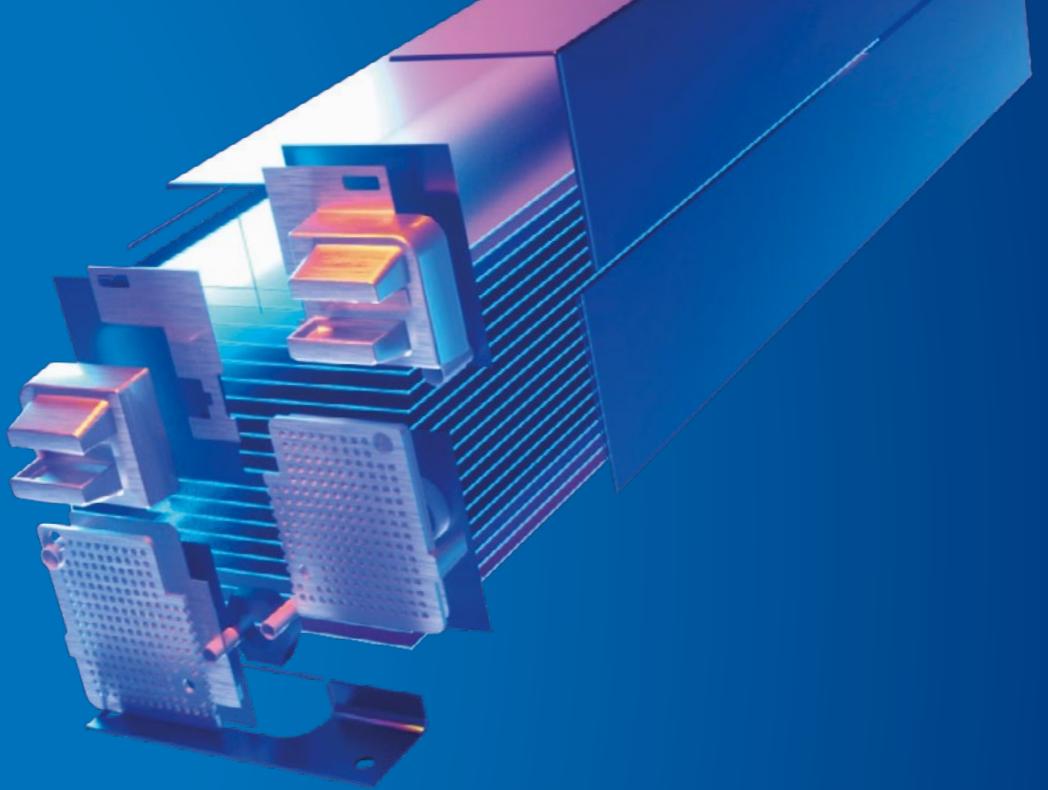


**MAKE A
SOLID
CHOICE,**

**WE ARE THE WORLD LEADER
IN SOLID-STATE BATTERIES,
BETTER WE MASS PRODUCE THEM.**



Blue Solutions is a pioneer in solid-state technologies and the only manufacturer to successfully engineer and make these unique batteries commercially available for transportation and electricity storage industries. The company has been doing R&D on solid-state batteries for over 25 years and has spent the last 15 years working on the development and the testing of its batteries on numerous field applications such as buses, heavy vehicles, cars and storage solutions.



→ BLUE SOLUTIONS AT A GLANCE

Blue Solutions develops and produces batteries based on its own unique solid-state Lithium Metal Polymer (LMP[®]) technology. The company controls every step of the design and mass production of these groundbreaking solid-state batteries.

2 PRODUCTION FACTORIES

in France (Brittany) and Canada (Montréal):
48,000 m²

ANNUAL PRODUCTION CAPACITY

Up to 1.5 GWh



WORKFORCE

400 technicians and engineers dedicated to the battery business

A LEADER IN SOLID-STATE R&D

620 patents: covering electrochemistry & materials, design, and manufacturing.
25+ years of R&D: pioneer in solid Lithium metal technology

BLUE SOLUTIONS IS A SUBSIDIARY OF THE BOLLORÉ GROUP

Founded in 1822, the Bolloré Group is one of the 500 largest companies in the world. Publicly traded, it is still majority controlled by the Bolloré family. The stability of its shareholder base enables it to follow a long-term investment policy. Thanks to its diversification strategy, which is based on innovation and international development, the Group currently holds strong positions in its three lines of business : transportation and logistics, communications and electricity storage and systems.

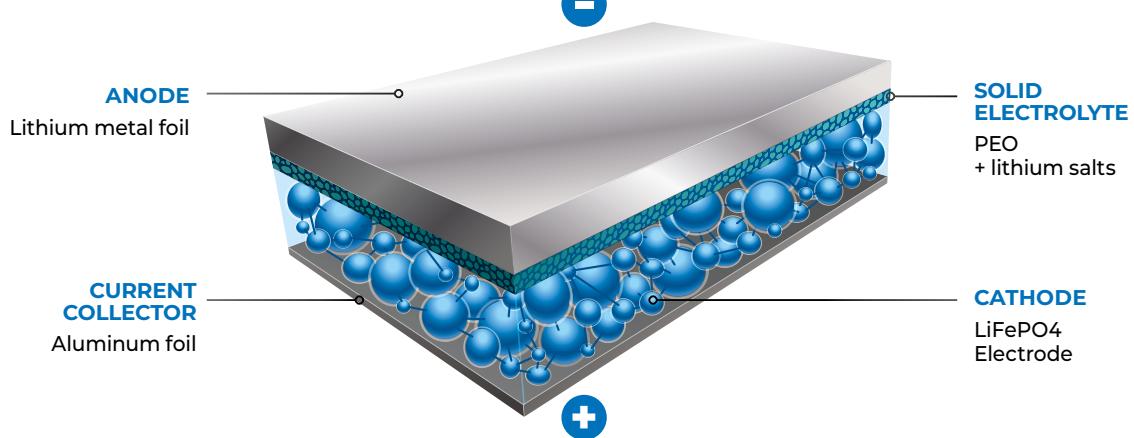


Nearly 84,000 employees

—
129 countries across 5 continents

—
€24,1 billion in revenue in 2020

SOLID-STATE TECHNOLOGY



→ THE BATTERY OF THE FUTURE IS AVAILABLE AND MASS MARKETED

The LMP® technology developed by Blue Solutions is based on a unique design: an all-solid cell without any liquid or gel components, made from two reversible electrodes (one of which in lithium metal) that are physically separated by a dry solid polymer.

While Li-ion battery technology currently prevails in applications, most notably in electric vehicles, solid-state batteries have long been a priority in battery research due to their long lifespan, high stability, safety, lower price and high energy density potential. Switching to a solid electrolyte is an effective solution to avoid using a potentially flammable liquid electrolyte and to simplify cell production.



THE LMP® BATTERY BOASTS MANY “FIRSTS”

- First battery to successfully implement a design including a lithium metal electrode – the most advanced and promising material in high-energy post Li-ion technologies.
- First commercially available solid-state battery pack for mobility applications, with a first generation available as early as 2007.
- First solid-state batteries to have achieved more than 300 million kilometers in EV applications.

ALL-SOLID CELL

- Safe: no gel or liquid to leak or ignite.
- High density.
- No cooling needed.
- Wide operating temperature range.
- Full charge available for use.
- Highly recyclable.





→ THE MULTI BENEFITS OF SOLID-STATE BATTERIES

HIGH ENERGY DENSITY

Thanks to its innovative Lithium metal technology.

ENHANCED SAFETY

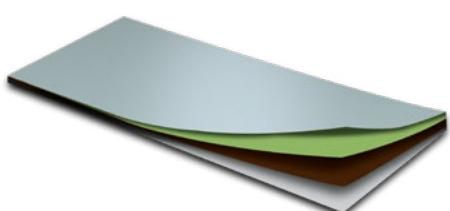
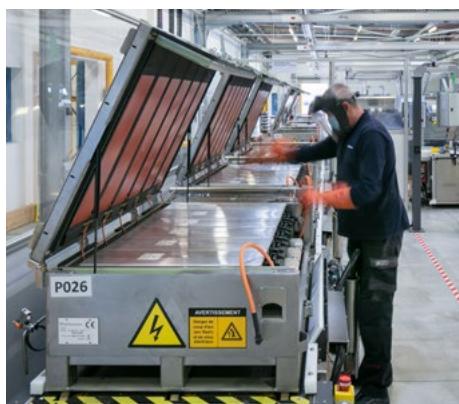
Thanks to its solid electrolyte which can sustain very high temperature.

HIGHLY RECYCLABLE

Thanks to the use of lithium in metallic form and the absence of toxic components.

SIMPLIFIED PRODUCTION PROCESS

Thanks to the absence of solvents and its high-yielded Roll to Roll industrial process.



Extrusion of ultra thin films used as anodes, electrolytes and cathodes.



→ THE LMP® BATTERIES ARE ENVIRONMENTALLY FRIENDLY

The chemical components of LMP® batteries are less hazardous to humans and their environment than those of most other batteries.

The LMP® battery contains no rare earth metals, no cobalt, no cadmium and no nickel.



The batteries are manufactured using copper, lithium, polymers, lithium salts, iron phosphate, carbon and aluminum.

All these resources benefit from a stable and non-sensitive supply chain. LMP® batteries are free from SVHC (Substance of very high concern) according to REACH

regulations, or CMR (carcinogenic, mutagenic or toxic for reproduction) according to CLP regulations.

In addition, the absence of solvents in the manufacture of LMP® batteries not only helps to protect the environment, but also provides additional safety in production and for the end users.

- No liquid electrolyte and no leak or gas seepage risks.
- No reactive organic solvents.
- No rare materials.
- No cobalt, no nickel.
- Recyclable and reusable

REDUCED CONSUMPTION OF NATURAL RESOURCES AND REUSE OF RECYCLED RAW MATERIALS

Blue Solutions is committed to creating a sustainable value chain in which more than 80% of its metallic raw materials are reused or recycled.

All our battery packs are dismantled to recover our recyclable materials, such as aluminum, copper or electronic cards.

We are developing our own innovative and proprietary solution to extract, recycle and reuse lithium metal from old batteries.

LMP® RECYCLING BY EXTRACTION PROCESS

We heat the cell to the temperature above 180°C to reach the melting point of lithium-metal. We extract up to 90% of the lithium-metal thanks to a proprietary solution.

Reuse of Li-metal
in new pack
and module





→ CARS ON THE HORIZON. THE 100% SOLID-STATE BATTERY REVOLUTION IS ON ITS WAY

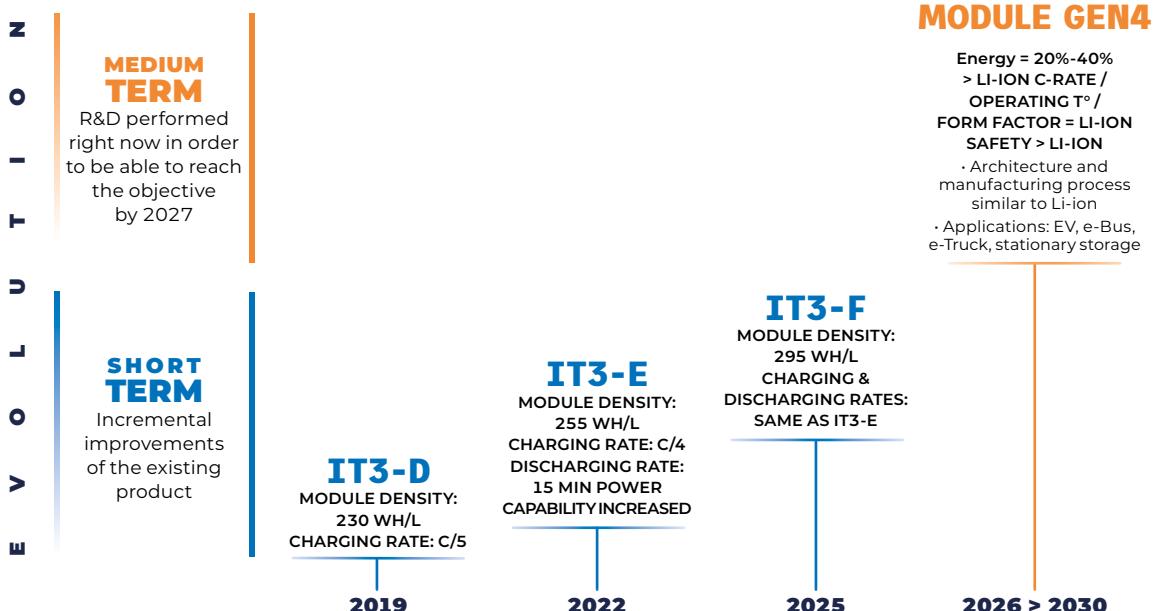
**BLUE SOLUTIONS' TECHNOLOGY PATH
IS BASED ON DECADES OF EXPERTISE
AND WILL ENSURE THAT THE COMPANY
WILL BE THE FIRST TO MARKET
ALL-SOLID-STATE BATTERIES TO OEMS
BY 2026**

Blue Solutions is committed to continuous R&D efforts in order to maintain its major competitive advantage and produce ever more powerful solid-state batteries in the years to come.

The LMP® battery is the culmination of an ambitious research and development program initiated by the Bolloré Group over 30 years ago. Blue Solutions' teams are constantly working on future generations of this technology, focusing R&D efforts on increasing the battery's energy density and performance, lowering its operating temperature and improving the ergonomics of its packaging and electronic control systems.



ROAD MAP INNOVATION





→ STATE-OF-THE-ART FACTORIES & HIGH-YIELDED PRODUCTION PROCESS

LMP® batteries are produced in two state-of-the-art plants located in France and Canada, with an annual production capacity of up to 1.5 GWh and will continue to grow over the next few years. Thanks to extrusion and coating techniques, the continuously optimized industrial process guarantees the high quality of the cells as well as the efficiency and performance of the whole production line.

Blue Solutions continues to focus its investments on boosting its production capacities. Considerable investments have been done in the last few years to support the expected growth in coming years.



BLUE SOLUTIONS IS COMMITTED TO LIMITING ITS CARBON FOOTPRINT IN THE PRODUCTION PROCESS

All production factories in France and Canada are covered by a common environmental management system based on ISO 14001. Our production sites follow the regulations for countries with very high environmental standards and a low carbon footprint.

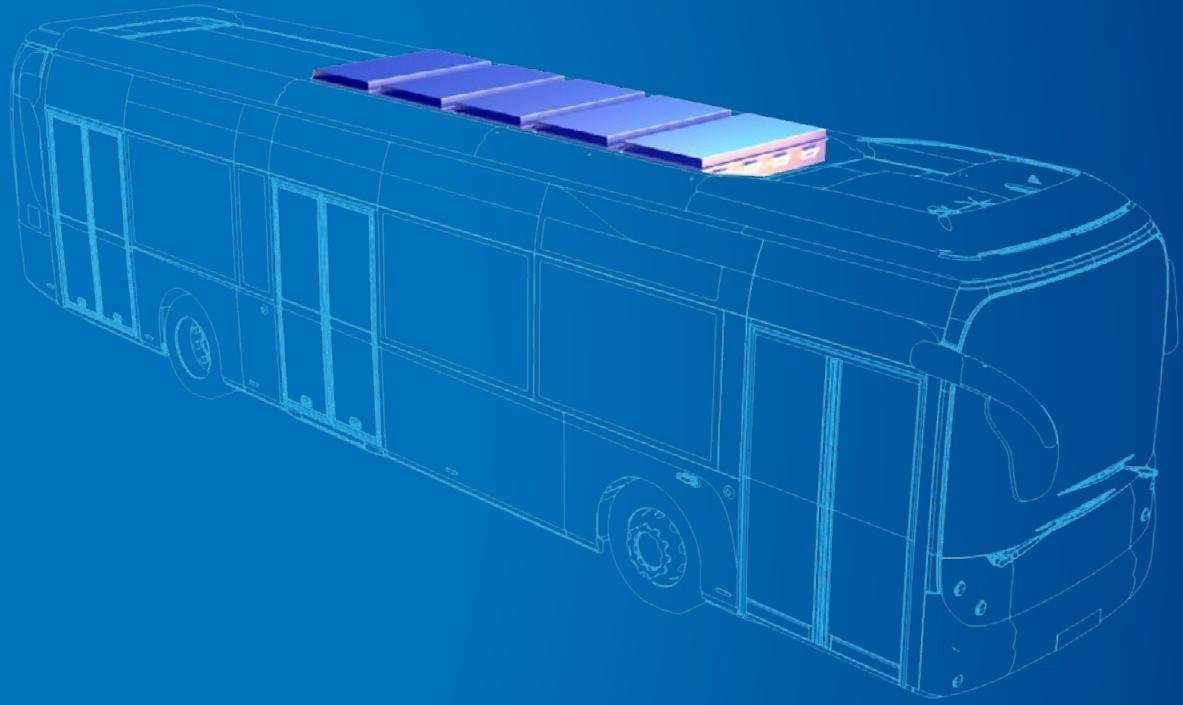
- Our factories incorporate strict energy performance requirements. Moreover, 50% of their electricity supply is guaranteed to come from renewable sources.
- The production (life cycle analysis from raw material extraction to the factory gate) of the latest generation LMP® battery cuts CO₂ emissions per stored kWh by one third compared to the previous version.



BLUE SOLUTIONS' EXPERTISE AND KNOW-HOW IN METALLIC LITHIUM PROCESS AND MANUFACTURING

- Know-how to overcome interface challenges (between materials and between layers).
- Production of special electrolyte to avoid dendrites.
- Extrusion and coating process of ultra thin films of anodes, electrolytes and cathodes without organic solvent : our processes are dry or water-based.
- Roll-to-roll manufacturing process and stacking of films to create cells.
- Specific process dedicated to solid-state and metallic lithium.





→ **LMP® TECHNOLOGY:
A GROUND-BREAKING SOLUTION
FOR ELECTRIC URBAN TRANSPORT**

Electric mobility in cities is key to addressing climate change challenges, yet innovation in battery technology is a major hurdle to its widespread adoption.

Solid-state batteries are a perfect match for new and innovative brands of electric city buses, thanks to their many advantages and their abilities to be designed and tweaked to accommodate specific constraints on how each bus needs to perform, including in challenging operating environment.



→ REMARKABLE PERFORMANCES FOR ELECTRIC VEHICLES OPERATIONS

THE MANY ADDITIONAL BENEFITS OF SOLID-STATE BATTERIES COMPARED TO TRADITIONAL LI-ION TECHNOLOGIES



HIGH ENERGY DENSITY

Thanks to the lithium metal technology (380 Wh/L at cell level).



HIGH SAFETY LEVEL

No thermal runaway, limited risks of leakage or off-gassing.



EASE OF USE AND MAINTENANCE

Plug & Play, no need of cooling system.

Charging at depot/easy to SWAP.



ENVIRONMENTALLY FRIENDLY

Contains no solvent, cobalt or nickel.

Highly recyclable.



INSENSITIVE TO EXTREME CLIMATE CONDITIONS

Wide operating temperature from -30°C to +60°C without any influence on the performance.



LONG-TERM WARRANTY

More than 10 years warranty with no temperature or average SOC provisions.



600 V LMP® BATTERY PACK

Capacity : 63 kWh per pack
Voltage range: 450V-648V



400 V LMP® BATTERY PACK

Capacity : 42 kWh per pack
Voltage range: 300V-432V

→ **BLUE SOLUTIONS HAS ALREADY ESTABLISHED ITSELF AS A KEY PARTNER FOR BUS MANUFACTURERS AND URBAN TRANSPORT AUTHORITIES SEEKING ZERO-EMISSION TRANSPORT SOLUTIONS**

DAIMLER

Blue Solutions has signed an exclusive supply contract with the Daimler group for its new range of eCitaro buses which are now equipped with LMP® batteries. Mercedes Benz' leadership in the bus segment is based on the constant search for the latest technological innovations. That's why this unique and powerful technology fits perfectly with Blue-Solutions unique and powerful technology. The new eCitaro with solid-state batteries has an energy content of 441 kWh and is available for both the articulated and solo bus. These eCitaro will have an energy density 25% higher than those equipped with traditional lithium-ion batteries.



ACTIA / DENNING

We provide Actia, a leading worldwide leader in electric vehicles chassis integrators, with batteries to equip the brand-new Element Custom Denning buses specially designed for local Australian constraints and fully assembled in the Australian production facilities of Denning.



RATP

Thanks to its proprietary vehicles Bluebus and its 9 years proven experience in 100% electric buses battery technology, Blue Solutions is one of the main suppliers of the French public transport RATP. More than 100 Bluebus are currently in circulation in Paris.



→ **HIGH PERFORMANCES FOR A DIVERSIFIED RANGE OF HEAVY LOGISTIC AND HANDLING VEHICLES**

GAUSSIN

The LMP® batteries are particularly suited to extreme climatic constraints and the high productivity demands that are put on heavy handling vehicles. Blue Solutions, in collaboration with Gaussin, has developed a fully electric APM 75T HE tractor dedicated to the container logistic. Zero CO₂ emissions, zero noise: this innovative vehicle reconciles high performance and environment protection for the port industry. The APM 75T HE tractors are already in operations in ports in Qatar and Republic of Côte d'Ivoire.





→ BLUEBUS, 100% ELECTRIC BUSES

10 YEARS OF FIELD EXPERIENCE IN ELECTRIC BUSES OPERATIONS

Bluebus has become one of the very first players in the electric buses segment in France. Providing a clean and quiet public transit solution for urban and suburban areas, Bluebus 6 meters and 12 meters vehicles meet environmental requirements and combine high technology and performance thanks to their latest generation LMP® batteries. The Bluebus are made in France in an ISO 9001:2015 plant located in Britany and have an "Origine France Garantie" certification. Their centralized production process ensures a high environmental standard and a very good carbon footprint for all of the zero-emission range of vehicles.

6-METER BLUEBUS

Convivial and compact, yet spacious and bright, it can accommodate 22 people and make its way through the small streets of the city centers thanks to its very small size (5,45 meters).

The Bluebus offers enhanced accessibility for people with reduced mobility thanks to its flat and low flooring. 60 cities have chosen to include the Bluebus in their public transport offering, which represents more than 280 buses in operation.



MORE THAN
400 BLUEBUS
IN CIRCULATION
WORLDWIDE

MORE THAN
20 MILLION
KILOMETERS

12-METER BLUEBUS

This 12-meter bus has a capacity of 441 kWh and can reach an astonishing 320 km daily range depending on operating conditions. The Bluebus can accommodate up to 109 people.





→ LMP® SOLID-STATE STORAGE SOLUTION: A TECHNOLOGY TO ADDRESS ENERGY TRANSITION CHALLENGES

Electrical networks transformation has already begun. Renewable energies are taking an increasing place in the energy mix, energy flows are increasingly optimized, remote areas are connected by microgrids and energy storage is one of the key assets making it all possible.

BLUE SOLUTIONS DEVELOPS HIGHLY MODULAR BATTERIES CABINET



Scalable racks

From 1 rack of 250 kWh to clusters of several MWh.

Blue LMP® 250 and Blue LMP® 400 can be used for dozen of MWh projects connected to the HV network (renewable integration, congestion management, peak shaving) as well as for microgrids aiming to provide clean energy in remote locations with harsh environment.



Rural electrification



Hybrid power unit



Renewables integration



Ancillary services

Blue LMP® 250 and Blue LMP® 400 are intended for integrators or project developers who offer turnkey solutions combining electricity generation, storage conversion and energy management systems. Both products have been designed to be compatible with all inverters and softwares available on the market.

ADVANTAGES OF BLUE SOLUTIONS BATTERIES CABINET

SAFETY AND INSENSITIVE TO CLIMATE CONDITIONS

- No thermal runaway, no risk of leakage or off-gassing.
- Fully airtight, outdoor cabinet with no cooling system required.
- Strong warranty without provision clause on temperature.

HIGH LONG-TERM PERFORMANCE

- A lifespan of more than 4,000 cycles depending on the application.
- A constant capacity throughout the battery's lifespan.

EASE OF USE

- Simplified logistics and transport.
- Simplified maintenance.



→ A COMPREHENSIVE SERVICE OFFERING AVAILABLE WORLDWIDE

Blue Solutions has developed an extensive range of services and solutions :

- consulting offer to assist in the design of the global storage system;
- range of powerful software including monitoring, Energy Management System (EMS) and Scada;
- installation and commissioning;
- training program;
- various maintenance packaging and hotline service.

FOCUS ON OUR IN-HOUSE DESIGNED CONVERSION SOLUTION FOR MICROGRID

Thanks to its experience with more than 30 microgrids deployed worldwide, Blue Solutions has developed standardized electrical cabinets for small- medium-sized microgrids. These electrical cabinets, ranging from 100 to 300 kVA, are the keystone of the microgrids, where batteries, PV and genset are connected. Thanks to the batteries, software and microgrid solution developed by Blue Solutions, developers are guaranteed to use a solution that has already been field-tested. Thus avoiding the need to make a specific design with all the costs incurred and the compatibility risks.



THE RINGO PROJECT BY RTE

One of the most innovative storage systems in Europe currently under deployment, Blue Solutions with its partners SCLE SFE and Engie Solutions are installing more than 30 MWh in Ventavon.

The RINGO project aims to validate the performance of battery-based energy storage to manage local grid congestion (due to the rise in renewable energy generation) through the installation of several batteries.



RURAL ELECTRIFICATION

Blue Solutions has been awarded among its partners Générale du Solaire and Aress to deploy 12 solar mini-grids with storage in Benin for a total capacity of 3.2 MWc of installed power and 3.8 MWh of storage. The robustness of the LMP® technology, which withstands high outside temperatures, suits perfectly to the rural electrification market and to climate constraints in Benin.





→ **MAKE A SOLID CHOICE**

www.blue-solutions.com

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