

Success of the Blue Solutions Lithium Metal Polymer (LMP®) batteries' integration in Gaussin's APM HE FULL ELEC vehicle



Blue Solutions, a subsidiary of the Bolloré Group, and GAUSSIN Manugistique announce the success of the integration of Lithium Metal Polymer (LMP®) batteries in the APM HE vehicle, an electric tractor intended for port operations.

A successful partnership model

On 19 February last, Gaussin announced the signing of **two contracts with the Bolloré Group**:

- The first, signed with **Blue Solutions** aimed to complete the range of Gaussin's POWERPACKS FULL ELEC by adding the Blue Solutions POWERPACK LMP®,
- The second, signed with **Bolloré Ports** concerned the joint development of an electric tractor fitted with LMP® batteries and intended for port transport.

After 3 months of close collaboration between the teams, the vehicle equipped with LMP® batteries went for its first spin in Héricourt on 19 May on the HE 38T version.

"We are delighted that a renowned French company such as Gaussin has approached Blue Solutions and its LMP® technology to electrify its vehicles," says Marie Bolloré, Managing Director of Blue Solutions. *"The integration of our technology in Gaussin's port vehicles is a huge first which has proved to be a success. This 100% French success, based on the shared skills, expertise and know-how of Gaussin, Bolloré Ports and Blue Solutions, will go towards the aims of decarbonisation and reducing port emissions and noise nuisances."*

The key factors of success

The rapid and easy integration of LMP® batteries, up until now used solely for 100% electric mobile applications (car sharing, buses, cars and trams) and stationary applications (on-grid and off-grid) of the Bolloré Group and also for the Citroën E-MEHARI, is due to their modularity and scalability. The standard communication protocol used and their robust design are entirely suitable for the applications of Gaussin's vehicles.

The experience acquired by the teams in integrating different types of batteries, the flexibility of the electric architecture of the vehicles and the design of the POWERPACK® technology which can accommodate a wide range of battery types, have contributed to the rapidity and success of integration.

The expertise of the Gaussin-Blue Solutions multi-disciplinary team and the efficient management of the project have favoured quick integration times.

The LMP® (Lithium Metal Polymer) battery: a unique technology

The LMP® battery is an innovative technology, **entirely solid**, designed and manufactured by Blue Solutions, a subsidiary of the Bolloré Group.

It is characterised by its high energy density and safety in use. The solid electrolyte limits the risks of local pollution in the event of an accident or if somebody tries to damage the battery pack's integrity. Moreover the LMP® battery is insensitive to temperature changes (ambient working temperature of -20°C to +65°C) and does not contain **cobalt, solvent or "rare earths"**.

Manufactured in Brittany and **made of cells sourced in France**, the LMP® battery has the "Origine France Garantie" [Guaranteed French Origin] label.

Blue Solutions is a partner of the European Battery Alliance which aims to give a new boost to the European industry.

The large-scale use of the LMP® battery in car sharing in Europe, America and Asia and electric buses is proof of its high performance, reliability and robustness.

To date the 240 Bluebus, the electric buses of the Bolloré Group fitted with LMP® batteries, circulate around the world and the Parisian electric car-sharing service, Autolib', alone clocks up over 260 million kilometres travelled since 2011 thanks to LMP® batteries.

Performance of the APM HE FULL ELEC LMP®

The initial acceleration and traction capacity measurements conducted on the Héricourt test track are highly promising. The elimination of the battery cooling system and the high resistance to high temperatures give new competitive technical advantages to Gaussin's solutions. The APM HE FULL ELEC is a concentration of technologies combining robustness, performance and ease of use. Designed for extreme environments where heat damages sensitive components, especially batteries, the HE version withstands temperatures exceeding 50 degrees.

Over the next few weeks, the APM HE fitted with LMP® batteries will be shipped to a Bolloré Ports concession for intensive tests in actual operation.

About Blue Solutions:

Publicly traded since October 30, 2013, Blue Solutions is the company that manages the electrical storage operations developed by the Bolloré group. By diversifying its historical business of producing paper and ultrathin plastic film, the Bolloré group has become a producer of complete electrical components for capacitors, and now holds over one-third of the global market. With this expertise and 20 years of R&D, the group has engineered electrical storage solutions and batteries that rely on a unique technology, the LMP® (Lithium Metal Polymer) battery as well as supercapacitor technology. The batteries are employed both in mobile applications (electric vehicles) as well as stationary ones (storing electricity for individuals, businesses, local governments, etc.) developed and sold by other group entities through Blue Applications, which since 2011 has been rapidly growing on every continent. www.blue-solutions.com

About Bolloré Ports:

Present on four continents, a leader in Africa, and a historic player in France, Bolloré Ports has set its sights on reinforcing its current positions and pursuing its international development. Owing to its recognized expertise in the port trades and in the synergies made possible by its being part of the Bolloré Transport & Logistics Group, Bolloré Ports is able to reinforce its position as a global port operator specialized in emerging markets. Bolloré Ports ensures the best product offering to its customers by developing quality partnerships that meet the highest international standards.

Our port expertise provides us with unique experience. The Port authorities and our customers thus rely upon a long-term partner who is trustworthy and professional. Every year, Bolloré Ports invests in the construction and development of port infrastructures entrusted to it, in service to its shipowner, import and export clients.

About Gaussin:

GAUSSIN MANUGISTIQUE® is specialized in the audit of handling processes, and the development of wheeled handling systems used to install and transport heavy, bulky or fragile loads. With more than 50,000 vehicles worldwide, GAUSSIN Manugistique boasts a strong reputation in four markets with high potential: Energy, Transport, the Environment, and Raw Materials. GAUSSIN MANUGISTIQUE® is listed on Alternext since 16 June 2010. GAUSSIN shares are listed since 20 July 2012 on the E2 listing (public market) since obtaining AMF Visa n°12-360 on 17/07/12 for the Prospectus, available free of charge on www.gaussin.com.

Press Contacts:

Blue Solutions : Laëticia Févry / laetitia.fevry@blue-solutions.eu / +33 6 25 64 15 07

Gaussin : Christophe Gaussin / invest@gaussin.com / +33 3 84 46 13 45

Ulysse Communication : Nicolas Daniels / ndaniels@ulyse-communication.com / +33 6 63 66 59 22

