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Press Release

Second life or recycling? BattMAN rescues batteries from a needlessly short lifespan!

- Audi Brussels, Volkswagen Group Components develop new quick check system
- BattMAN ReLife evaluates battery health in minutes
- The result shows which cells and modules can be reused

Brussels/Salzgitter, 30 September 2021 – The question is on the minds of everyone who is interested in e-mobility: What happens to the battery when an e-vehicle has reached the end of its service life? The answer is simple: The new analysis software BattMAN ReLife checks their state of health in just a few minutes. Starting immediately, the quick check system will be used as a means of initial diagnosis in battery recycling at the pilot plant that Volkswagen Group Components has been operating in Salzgitter since the beginning of the year.

Depending on the capacity that the inspection system detects, a high-voltage battery may be reused in a vehicle either in whole or in part, receive a second life as a mobile or stationary energy reservoir, or the material might be returned to cell production by means of an innovative recycling process.

The first version of the BattMAN (Battery Monitoring Analysis Necessity) software was developed by the Audi Brussels quality management department for the quick and reliable analysis of Audi e-tron's high-voltage battery. It is already in use as a diagnostics tool for several brands of the Volkswagen group.

BattMAN then underwent further development in cooperation with recycling experts at Volkswagen Group Components prior to the opening of the pilot plant for battery recycling in Salzgitter. After several months of programming and testing, BattMAN ReLife emerged as the new analysis solution that provides a reliable first assessment of a battery in just a few minutes to help set its further course. Previously, this process took several hours.

After plugging in the low-voltage connectors, the device first checks whether the battery is even able to communicate and transfer data. The system then detects and displays any error messages as well as insulation resistance, capacity, temperatures, and cell voltages. Axel Vanden Branden, Quality Engineer at Audi Brussels, explains: "We are able to measure all a cell's most important parameters. Then a traffic light system indicates the status cell by cell – green means a cell is in good order, yellow means it requires closer inspection, and red means the cell is out of order."



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This lets the user determine a battery's overall state of health. Now three options are on the table.

The first is so-called remanufacturing, a process by which the battery, due to its good or very good state of health, can be reprocessed for further use as a replacement part for e-vehicles after undergoing repair work reflecting its current market value. A number of related concepts are currently in review and preparation.

In the second option, a battery receives its "second life" when it has a medium-level to good state of health that will permit its continued use outside an e-vehicle for years to come. This might be in a flexible quick charging station, a mobile charging robot, a driverless transportation system, or a forklift as well as in a home storage or emergency standby power system.

The third option entails efficient recycling in the Volkswagen Group Components pilot plant in Salzgitter, where mechanical processes gently dismantle only the most completely exhausted of batteries into their basic materials such as aluminum, copper, plastics, and "black powder". This "black powder" contains the valuable battery components lithium, nickel, manganese, cobalt, and graphite, which are separated by specialized partners using hydrometallurgical means before being processed again into a cathode material.

Frank Blome, Head of Battery Cell and System at Volkswagen Group Components, says: "We know that recycled battery materials are just as effective as new ones. These recycled materials will be used to supply our cell production activities in the future."

Volker Germann, CEO of Audi Brussels, adds: "The development of BattMAN ReLife is a great example of the success that cooperation between the various brands of the Volkswagen group leads to."

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The **Audi Group**, with its brands Audi, Ducati and Lamborghini, is one of the most successful manufacturers of automobiles and motorcycles in the premium segment. It is present in more than 100 markets worldwide and produces at 19 locations in 12 countries. 100 percent subsidiaries of AUDI AG include Audi Sport GmbH (Neckarsulm, Germany), Automobili Lamborghini S.p.A. (Sant'Agata Bolognese, Italy), and Ducati Motor Holding S.p.A. (Bologna/Italy).

In 2020, the Audi Group delivered to customers about 1.693 million automobiles of the Audi brand, 7,430 sports cars of the Lamborghini brand and 48,042 motorcycles of the Ducati brand. In the 2020 fiscal year, AUDI AG achieved total revenue of €50.0 billion and an operating profit before special items of €2.7 billion. At present, 87,000 people work for the company all over the world, 60,000 of them in Germany. With new models, innovative mobility offerings and other attractive services, Audi is becoming a provider of sustainable, individual premium mobility.

The **Volkswagen Group Components** brand, with around 75,000 employees in more than 60 component plants worldwide, is managed by Thomas Schmall as CEO under the umbrella of the Volkswagen Group Technology Department.

Volkswagen Group Components develops and produces vehicle components - organized in the three main business areas "Battery Cell and Battery System", "Charging and Energy" and the "Drivetrain and Platform" area, which also includes engines and cast parts, transmissions and chassis as well as electric drives.

The group-wide, cross-brand management responsibility ensures that efficiency and synergy effects are implemented, the networking between plants and brands is improved and the system capacity is optimally used - for a successful transformation from the combustion to the electric world.
