Newsflash

Lithium-ion batteries successfully pass ageing test carried out by independent research institute Bosch PV storage system impresses with very high cycle stability

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The BPT-S 5 Hybrid from Bosch uses lithium-ion batteries, which continue after years of intensive use to reliably provide households with electricity from its own PV system without the need for maintenance. This has now been proven through ageing tests, which have been carried out by the independent Institute for Power Electronics and Electrical Drives (ISEA), RWTH Aachen University and the Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW). This provides assurance for customers that they will not encounter any unexpected costs throughout the service life of their system. The batteries will not require any maintenance work or need to be replaced because they no longer provide the required output. “Cost efficiency is a very important concern for our customers. These tests enable us to prove that we are not only able to keep our promise in terms of the durability of our batteries but also that we can clearly surpass that promise. This means we can provide our customers with a high level of planning security and set ourselves apart from our competitors,” says Dr. Armin Schmiegel, Portfolio Manager for Innovation at Bosch Power Tec.

The tests subject the batteries to extreme loads. In this way, the equivalent of more than 10,000 full cycles is achieved over a period of five years at a 60% depth of discharge. In calendar ageing tests at 25 °C over four years, the battery cells do not show any significant signs of ageing. In an accelerated ageing test, in which the cells were heated to 55 °C, the batteries lost only 10% of their original capacity over a period of four years. “By extrapolating the results gathered until now, our tests show that these types of cell can achieve a service life of up to 36 years. This exceeds the average market service life by more than 150%,” says Ghada Merei, M.Sc., a researcher at the ISEA institute.

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The service life of batteries is made up of cyclical and calendar service life. The cyclical service life shows how many times a battery can be charged and discharged before its capacity falls below a predetermined level. In the test carried out in this case, this was 70% of the original capacity. The calendar service life gives an indication of how long a battery works reliably until, for example, chemical ageing processes lead to an equivalent loss in capacity. The batteries used in the BPT-S 5 Hybrid are based on nickel-cobalt-aluminium technology (NCA) and are made by SAFT. They have already proven successful in other industry applications, such as automotive technology and aircraft construction.
“Simulations based on our laboratory test results and those of our colleagues at ZSW, show that, with consideration given to both ageing processes, the batteries in the BPT-S 5 Hybrid are serviceable for up to 20 years,” adds Ghada Merei.

In addition, the batteries meet the highest safety standards. The battery system has been developed to comply with safety standard SIL 2, which also applies in a similar manner in automotive and railway technology. The entire system is also subjected to extensive safety tests. The BPTS Hybrid is the only system in the world, which has a safety certificate as a whole system.