



VOCUS GmbH

BatteryShow 2024

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SafeBatt2Drive

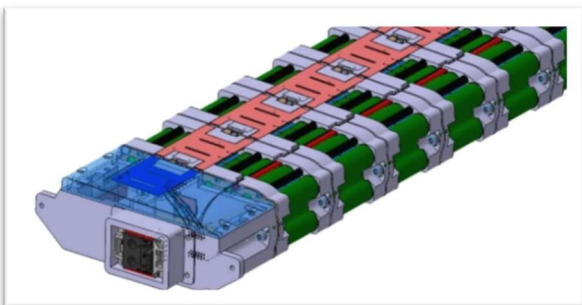
At BatteryShow 2024, AdvanTec GmbH will present the prototype of a novel battery system with an innovative battery management system (BMS).

Project status SafeBatt2Fly

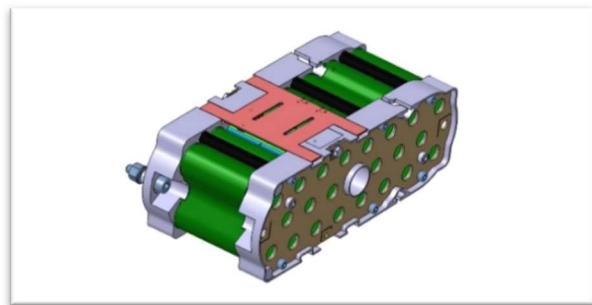
The technical design of this battery system is conceived in such a way that it can be easily adapted for various applications in aviation, such as electric drives for ULs, airplanes, UAMs, STOLs, VTOLs, and more. A groundbreaking innovation in this development is the wireless data transmission from the BMS modules to the monitoring and control unit, which is extremely lightweight and also modular. The innovation developed by AdvanTec enables bidirectional communication of the individual modules without complex and fault-prone cabling, allowing for simple and quick replacement of defective or aged modules. A specially developed innovative battery management system (BMS) monitors and regulates the batteries during the charging and operating cycle and records all relevant processes. This systematic monitoring of the batteries allows for appropriate responses to disturbances and optimizes the lifespan through gentle charging cycles.

Another innovation of SafeBatt2Fly is a redundancy system within the BMS that connects the battery modules and ensures the continued operation of all intact modules in the event of individual cell or module failures.

The total weight of the new batteries, including the control electronics housed in the two wings of the research aircraft, is approximately 80 kg. The flight testing of the new battery system is scheduled for March/April 2024, and the prototype of the "SafeBatt2Fly" battery system will be completed and integrated into the research aircraft at that time. This will increase the onboard power capacity of the AT01 by an additional 17 kWh to a total of 21 kWh of electrical energy, enabling a cruising range of about 150 km to approximately 450 km at 110 km/h in calm air.



Initial modul © AdvanTec GmbH



Singel modul © AdvanTec GmbH

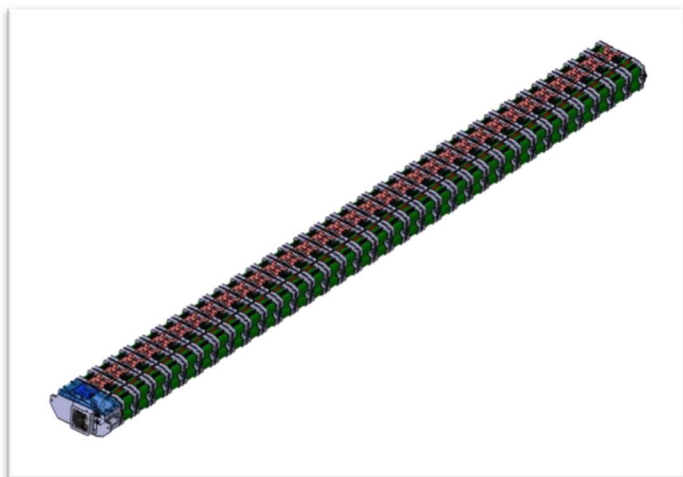
Sustainability:

- Minimal number of components
- Modular design: aging modules/cells can be replaced with minimal effort, without the need to replace the entire battery pack
- Reusability/Recycling of modules in series is the goal
- The existing battery pack can be used with new/better cell chemistry

Current Status

The ground testing in January 2024 was successfully completed. During this phase, charging and operating cycles that simulated aircraft usage were conducted in the laboratory. Additionally, the first successful ground runs of the battery pack with the propulsion system on the research aircraft were carried out. The tests even exceeded the simulated and calculated results.

CAD-view Battery pack with 30 modules © AdvanTec GmbH



Prototyp Battery pack for the wing AT01 © AdvanTec GmbH



Further information:

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