

Simply create the battery passport with Digital Twins

From February 2027, the digital battery passport will be mandatory in the EU. It must be provided for all traction batteries, batteries for two-wheeled vehicles and industrial batteries with a capacity of over 2 kWh that are placed on the market here. What purpose does it serve and how can it be easily created? We asked Dr. Thomas Kuhn, Division Manager at Fraunhofer IESE, and Jürgen Hamm, Lead Architect NetApp Twin Solution, about this.

What exactly is a battery passport?

Jürgen Hamm: A battery passport is a standardized digital representation, i.e. a Digital Twin of the physical battery. Ideally, it accompanies the entire life cycle of the battery from design to recycling. As a Digital Twin, it is permanently enriched with current data, for example on the raw materials used, their origin and CO₂ footprint, production, quality data or the entire charging cycle of the battery.

What purpose does it serve?

Thomas Kuhn: The Digital Twin represents the entire life cycle of the battery and is therefore not just limited to production. This improves transparency about the condition of the battery at the end of its use in the vehicle, is the starting point for process improvements to reduce CO₂ emissions and facilitates the further use of the battery or the recovery of materials.

How can data be exchanged across company boundaries?

Thomas Kuhn: To achieve this, it is important to define a standard as a uniform technical basis. Plattform Industrie 4.0, as the community of the automation world, the Industrial Digital Twin Association (IDTA) and Fraunhofer IESE, among others, have developed the Asset Administration Shell for Digital Twins. This ensures a standardized interface and thus guarantees that data is machine-readable and can be exchanged across company boundaries.

How can a battery passport be implemented?

Jürgen Hamm: The digital battery passport is an aspect of the Digital Twin of the battery and is technically realized as an Asset Administration Shell Submodel. Fraunhofer IESE, NetApp and Congatec used a demonstrator to show this at the Hannover Messe. It illustrated how the CO₂ footprint of a battery module changes with each production step during battery production.

NetApp provides the necessary intelligent and scalable data management infrastructure to ensure that data is always made available where it is needed and that the number of Digital Twins in an organization can be scaled almost indefinitely. Digital Twins can be created close to the point of origin, can be stored in the local data center or in the cloud.

How can companies easily create digital battery passports?

Thomas Kuhn: Preconfigured solutions for Digital Twins and digital battery passports are provided to make it as easy as possible for companies to get started with digitalization. Fraunhofer IESE, NetApp, Congatec and other partners offer these as software-as-a-service containers as part of the AAS Dataspace for Everybody.



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- Scharnhausen (near Stuttgart)
- Ulm
- Weinheim



Further details and dates can be found online!

<https://s.fhg.de/basys-roadshow>