

Digital Battery Passport: Driver for a Sustainable E-Mobility

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EXTENDED ABSTRACT

The automotive industry's shift towards electrification has led to a significant increase in the proportion of a vehicle's lifecycle CO₂ emissions occurring during the production phase. Consequently, vehicle manufacturers and suppliers must now prioritize optimizing the entire product lifecycle rather than focusing solely on the 'in-use phase.' This paradigm shift necessitates a comprehensive approach to product development that encompasses all stages of a vehicle's lifecycle. In this context, the circular economy and sustainable battery solutions have garnered significant attention from global authorities and regulatory bodies. A pivotal development in this area is the EU battery passport regulation, set to come into force in 2027. This regulation mandates new reporting requirements for all electric vehicles and industrial batteries larger than 2kWh, irrespective of the battery's origin. The regulation aims to enhance transparency and accountability in battery lifecycle management, thereby promoting sustainability. Digital battery passports represent a transformative innovation in the rapidly evolving landscape of sustainable energy. These passports are poised to revolutionize battery lifecycle management by providing detailed information on the battery's origin, composition, and performance throughout its lifecycle. However, the implementation and integration of battery passport solutions present several challenges, including data traceability, data integration and quality, and compliance with regulations. These challenges are particularly significant given the nascent stage of the market for battery passport solutions and the scarcity of reference projects. Addressing these challenges requires a holistic approach that combines robust platforms, specialized know-how, and comprehensive consulting and advisory services. This presentation will explore various options for applying the EU battery passport regulation and the legislative boundary conditions for batteries within the EU. It will also showcase best practice examples and

strategies for CO2 reduction in battery production and lifecycle management. The second part of the presentation will delve into a real-life application of battery passport definitions within a battery production environment, highlighting practical insights and lessons learned.