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Ultra-high frequency traceability solution for battery production

How can traceability be used in battery production?
Traceability technology to enable traceability in battery production. The tracking of an object with its corresponding information to facilitate holistic quality management is challenging due to the complexity of battery cell production.

Does a holistic framework enable traceability within battery cell production?
Therefore, the need for the introduction of a holistic framework deploying a set of technologies to enable traceability within battery cell production is required. This research will introduce such an approach, outline its functionality within a pilot line facility and present the benefits for future data-driven approaches.

Are lithium-ion batteries traceable?
A traceability concept for lithium-ion batteries needs to bear two main challenges: At first, identification markers need to be preserved or new identifiers need to be applied during a batch changeover as several process-related changes in the batch structure are occurring during production .

How can a holistic approach be used in battery production?
A holistic approach is needed to eliminate the information gaps between the processes and to ensure the traceability of components and process steps up to the finished product. Thus, a solution morphology for the integration of traceability concepts with focus on identification technologies in battery production was developed.

What is a traceability system?
State of the art 3.1. Traceability system A traceability system includes both forward tracking and backward tracing within the value chain. It collects information from trace objects along phases of the product life cycle. Trace objects are the units that are tracked during an entire production process or from a specific processing step.

What data sources are used in battery cell production?
Data sources in a complex production environment such as battery cell production are highly heterogeneousand large in volume. Mapping the existing data streams following the required trace requests can be supported by technologies such as ontology-based data models,introducing semantics to previously static data.

OPTEL"s battery traceability solution enables authentication with auditable controls for compliance with industry standards for electric vehicles. ... This blog series looks into the origins ...

On the other hand, by tracing the defects back to the cell level, the influence can be better described. A

traceability system as part of the quality management system offers the right opportunity ...

Battery manufacturing is classified into three major production areas: Electrode manufacturing; Cell assembly; Finishing formation, aging and testing; These processes require flexible and efficient automation solutions to ...

RFID systems, operating 93 at low, high and ultra high frequencies (LF, HF and UHF respectively), were tested and 94 compared with the aim of evaluating the performances and limits of each solution at 95 different stages of the production process.

RFID technology is commonly used for inventory management, asset tracking and supply chain management, as it utilises ultra-high frequency (UHF). Can be used for bulk reading f.ex. reading several cartons on a pallet ...

The production of battery cells involves a complex process chain with interconnected steps leading to unknown cause-and-effect relationships and production inaccuracies, contributing to ...

BLEFA stainless steel kegs also come with a 2D barcode as standard and you can also equip them with a low-frequency (LF) tag or an ultra-high frequency ... The high-end solution in the field of keg traceability are active systems that work on the basis of a long-life battery and use different technologies to communicate their respective ...

Similarly, improved traceability of long-ripened cheeses (Bra Tenero, Bra Duro, Raschera and Toma Piemontese) with automatic movement recording during production, handling in ripening room and ...

A real implementation of a continuous traceability solution for electrode production is not described in scientific or technical publication formats. ... [10, 21]. 4.3. Morphological analysis of traceability in battery production For bringing the identification techniques together with different process cluster and its tracing objects, a ...

The storage of agrochemical data in a field log is an essential step in the plant production process in order to guarantee a safer traceability system, and grapevine health observations can help ...

To enable improved data-driven approaches and address challenges in battery production from a traceability perspective, a framework introducing a set of technologies that enable unique traceability in battery ...

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