

Cell manufacturing safety

A look at one leading supplier's launch of a new and high-tech formation process that optimizes large format lithium cell manufacturing

▶ PEC delivers the key building blocks for the development and manufacturing of advanced energy and power cells. This includes cell and battery test equipment, automated cell finishing lines, and in-line test equipment.

For its cell finishing lines, PEC covers all technologies in-house, from right after electrolyte filling to assembly as well as aspects such as final testing of the battery pack.

Cell handling, initial testing, formation, degassing, aging, grading, and sorting are all integrated into one turnkey production system using an

automated storage and retrieval system (ASRS) for material handling. Such impressive capacity means that PEC offers well-known formation and grading electronics at the heart of the process.

The system is managed by a manufacturing execution system that routes the cells through the line, controls the material handling equipment, guarantees individual cell traceability, and presents management with accurate, real-time reports.

Typical systems will hold thousands of cells at various steps in the process and at different

An input/output machine swings into full operation, helping to produce new cells



PEC Formation Towers enhances safety levels when it comes to cell manufacturing

states of charge. Therefore safety is an important factor when considering the automation of these lines, with many of the lithium chemistries posing a considerable risk to factories, equipment, and operators in case of thermal runaways or electrolyte leakage.

PEC has designed its new 2011 formation towers to deal with these hazards. The formation stations are equipped with several features to withstand catastrophic and non-catastrophic cell failures, all without requiring additional fire suppression or flushing gasses, such as Argonite or CO₂.

Each formation station has a sectional door at the front side. The door is opened by the onboard controls for loading and unloading the cells by the ASRS. During normal operation mode, the doors remain closed to prevent propagation of fire and smoke outside the formation station in case of a cell failure.

All new formation towers come equipped with this technology, as well as integrating several other features: accurate temperature

conditioning (cooling and heating); accurate cell grading; automated cell connection; individual channel control; individual cell monitoring; and early warning systems for cell failure detection.

The PEC cell finishing lines are designed to full building height by installing the formation towers on different mezzanine levels accessible by the ASRS.

The advantage of this approach is to create a compact footprint for the complete cell finishing area, but without compromising on safety.

PEC offers these cell finishing lines for different cell types such as pouch, cylindrical, and prismatic.

PEC designs, manufactures, and supports its solutions from several locations across the globe, including Belgium, Hungary, the USA, China, and Japan.

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