



Carolina Institute for Battery Innovation (CIBI)

Fraunhofer USA's Role in Advancing Next-Generation Battery Technology



 **Carolina Institute for Battery Innovation**
Molinaroli College of Engineering and Computing
UNIVERSITY OF SOUTH CAROLINA

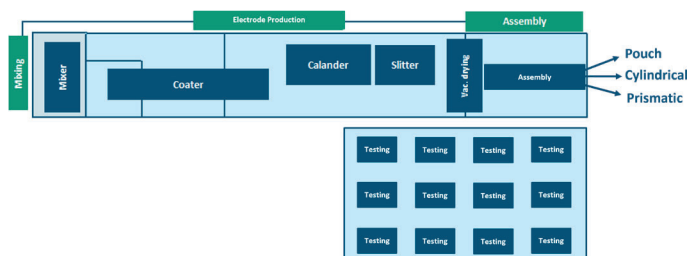
Carolina Institute for Battery Innovation (CIBI)

- Based at University of South Carolina; an institute dedicated to advancing battery technology through research, education, and manufacturing.
- Focuses on innovations at all scales: nanoscale materials, cell-level design, to grid-scale energy storage.
- Research goals include improving energy density, battery lifespan, and safety, along with advancing multi-scale simulations and recyclability of battery systems.
- Provides educational programs: undergraduate, graduate (PhD), and supports the SC Technical College Systems to train the next-generation battery workforce.
- Manufacturing capabilities (online in 2026) will include pilot-scale production of pouch and cylindrical cells to provide a proving ground for industry to validate innovations under realistic conditions.
- Strong industrial and academic partnerships to accelerate translation of research into commercial/industrial application.
- Supports growing regional and national battery industry and economic development.

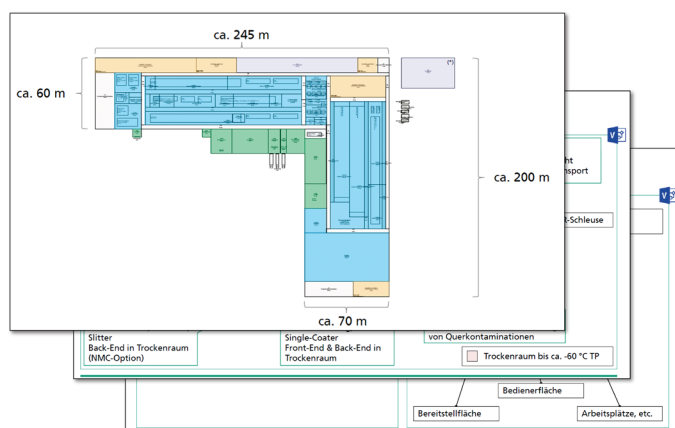


Fraunhofer within CIBI

- Fraunhofer USA is a core project partner in CIBI, contributing German and international expertise.
- Brings proven competences in **cell design** and **cell manufacturing** from lab-scale to pilot-scale.
- CIBI leverages the wealth of experience from building Fraunhofer FFB, Europe's largest battery pilot-line, using it as a blueprint for operation and design.
- Provides structured methods for **space planning and material flow** in Phase I of CIBI.
- Defines electrode manufacturing processes and evaluates suitable vendor technologies.
- Provides a trusted partner for the development of **new operations and processes**, including:
 - Electrode pre-/post-treatment
 - **Dry coating** technologies
 - Electrolyte filling methods
- Develops and standardizes **formation and testing protocols**.
- Establishes **standardized cell designs** to ensure comparability and scalability across research projects.
- Supports **training and workforce development**, both by building programs in the U.S. and by leveraging existing Fraunhofer infrastructure and training platforms in Germany.



From powder to cell: The pilot line covers the complete process chain — from electrode production to final cells in three different formats (pouch, cylindrical, prismatic).



From layout to machine specifications: Fraunhofer applies its extensive experience in designing and implementing pilot lines.

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