POUCH BATTERY CELL ASSEMBLY UNIT

The Pouch Battery Cell Fabrication Lab is a cutting-edge teaching and research facility where students gain hands-on experience in the fabrication of pouch cells, one of the most common energy storage technologies in electric vehicles, portable consumer electronics, and renewable energy systems. The lab is designed to bridge the gap between theoretical knowledge and the reality of battery fabrication processes.

Students in this experiment go through a process of cell assembly sequentially, beginning with the blending of active battery materials to create the electrode slurry. They then coat the slurry on metal foils (typically copper for the anode and aluminum for the cathode), dry, and calendaring for proper adhesion and flatness.

Subsequently, the students conduct electrode cutting and cell assembly, in which they align and stack or wind the electrodes with separators to create the cell structure. The assembled pouch is subsequently filled with electrolyte in a dry room or controlled environment, and lastly vacuum sealed to securely enclose the cell and prevent moisture contamination.

After sealing, the cell will undergo formation and testing, a very important phase in which the battery is charged and cycled for the first time to turn on the electrochemical reactions. Students also learn how to test the performance and safety of the cells using some diagnostic tools.

During the process, the lab focuses particularly on the use of safety procedures, cleanroom protocols, and specialized equipment, including glove boxes, vacuum sealers and precision coaters. Not only do students gain practical skills, but they also gain a detailed understanding of battery chemistry, cell design, and the engineering challenges of the production of reliable, high-performance energy storage devices. Together, the Laboratory for Pouch Cell Fabrication has the responsibility to train students to become professionals in clean energy technology, battery engineering, and material science.

POUCH BATTERY CELL ASSEMBLY UNIT

Vacuum Sealer:

Product Introduction: This equipment is mainly used for vacuum pumping and hot press sealing after liquid diffusion of pouch cell Li-ion batteries (medium, small size). By accurate control for the main vacuum pumping box and pneumatic heat sealing components to automatically complete the vacuum heat sealing of laminated aluminum case.

Vertical Electric Hot Rolling Press Machine:

This equipment is mainly used for electric rolling press of battery materials, a few precious metal materials like gold and silver,

nonferrous materials like copper and aluminum in the lab under a certain hot temperature. The rolling thickness can be regulated, it is easy to operate. This equipment is especially used for thickness reduction and density increase of clean energy material Li-battery electrodes.

POUCH BATTERY CELL ASSEMBLY UNIT

Auto Film Coating Machine with Heater:

This product is widely used in all kinds of high-temperature film coating research like ceramic films, crystal films, battery material films, and special nano films, and can adapt to the technology development of high temperature film coating in future.

Pouch Cell Edge Sealing Machine:

This machine transmits heat to sealing heads(copper) through resistance heating tube and uses heat conduction effect to affect film packing material of lithium ion battery(laminated aluminum film) and soften the material to the molten state under certain pressure.

POUCH BATTERY CELL ASSEMBLY UNIT

Pouch Cell Die Cutter:

This equipment is used for cutting battery anodes and cathodes.

POUCH BATTERY CELL ASSEMBLY UNIT

Aluminum-laminated Films Case Forming Machine:

It’s used for pouch cell aluminum-laminated films case forming .

Glove Box:

This is used for battery cell assembly in an inert atmosphere.

POUCH BATTERY CELL ASSEMBLY UNIT

	**Battery Tester:** This is used for testing the batteries for their cyclic stability.