

Battery Research & Cell Manufacturing

EQUIPMENT PORTFOLIO

Super Scientific Instruments (SSI) supplies equipment and consumables for battery research, cell development and laboratory-scale fabrication.

From electrode preparation to cell assembly and performance testing, build a practical workflow around your cell format and research goals.

FROM MATERIALS TO MEASURABLE CELL PERFORMANCE



ELECTRODE PREPARATION



CONTROLLED CELL ASSEMBLY



FORMATION & CYCLING

01

Prepare electrodes

02

Assemble cells

03

Fill & seal

04

Form & test

CAPABILITY ACROSS EVERY MAJOR CELL FORMAT

Coin-cell research

Disc cutting, controlled assembly, crimping and low-current cycling.

Pouch-cell development

Stacking, pouch forming, tab welding, filling, sealing and degassing.

Cylindrical-cell making

Electrode winding, case grooving, electrolyte filling and crimping.

Materials & test systems

Slurry preparation, coating, drying, calendaring and battery cyclers.

Electrode Preparation

Prepare powders, slurries and coated electrodes for repeatable cell development.

01 / MATERIAL PROCESSING



Planetary ball mill

Powder milling and blending for electrode material development.

4 × 500 mL jar configuration

02 / SLURRY PREPARATION



Vacuum slurry mixer

Mix, disperse and degas electrode slurries before coating.

500 mL and 5 L options

03 / ELECTRODE COATING



Laboratory film coater

Controlled film coating on a vacuum chuck with a heated cover.

Programmable coating stroke

04 / ELECTRODE DENSIFICATION



Heated roll calender

Compress coated electrodes and control the final thickness.

Dual-servo differential rolling

05 / VACUUM DRYING



Vacuum drying oven

Dry electrodes and battery components under reduced pressure.

50 L chamber | up to 200°C

06 / ELECTRODE SHAPING



Electrode die cutter

Cut anode and cathode sheets with current-collector tabs.

Semi-automatic pouch electrode cutting

MATERIALS & CONSUMABLES

Cu / Al foils, electrode materials, binders, separator films and current collectors.

Coin-Cell Research

A compact workflow for electrode screening and laboratory coin-cell assembly.

01 / DISC PREPARATION



Precision disc cutter

Punch circular electrodes and foil discs for cell research.

Selectable dies: Ø5-24 mm

02 / CELL CLOSURE



Hydraulic coin-cell crimper

Crimp coin-cell cases using format-specific tooling.

CR20xx tooling | other dies optional

03 / POST-TEST ANALYSIS



Coin-cell disassembler

Open crimped coin cells for electrode inspection and analysis.

CR20xx series | alternate dies optional

04 / CONTROLLED ATMOSPHERE



Purification glovebox

Handle and assemble sensitive cell components in inert gas.

H₂O and O₂ <1 ppm configuration

05 / ELECTROLYTE DOSING



Electrolyte filling pump

Dispense small liquid quantities during laboratory cell assembly.

Compact precision dispensing system

06 / ELECTROCHEMICAL TESTING



Low-current battery cycler

Evaluate coin-cell charge, discharge and cycling performance.

8 channels | 5 V / 20 mA

CELL COMPONENTS & TOOLING

CR20xx cases, spacers, springs, separators and format-specific crimping dies.

Pouch-Cell Development

Equipment for stacked pouch-cell prototypes, from assembly to final sealing.

01 / ELECTRODE ASSEMBLY



Pouch-cell Z-stacker

Alternate electrodes and separator to build the cell stack.

Semi-automatic | adjustable stack size

02 / POUCH PREPARATION



Pouch case former

Form aluminium-laminated film into the required pouch cavity.

Pneumatic forming | adjustable depth

03 / TAB CONNECTION



Ultrasonic tab welder

Join electrode foils and current-collector tabs.

1,000 W option | copper / aluminium

04 / INITIAL SEALING



Top & side heat sealer

Heat-seal the pouch edges before electrolyte filling.

Separate upper / lower temperature control

05 / ELECTROLYTE WETTING



Vacuum filling & standing

Combine electrolyte injection with vacuum-assisted soaking.

2-in-1 filling and standing system

06 / FINAL CELL SEALING



Degassing & vacuum sealer

Remove formation gas and complete the final pouch seal.

Automatic piercing and vacuum sealing

A CONNECTED POUCH-CELL WORKFLOW

Electrode cutting, stacking, tab welding, pouch forming, filling, sealing and degassing.

Cylindrical Cells & Testing

Build cylindrical prototypes and evaluate the performance of finished cells.

01 / JELLY-ROLL PREPARATION



Cylindrical cell winder

Wind electrodes and separator into a cylindrical cell core.

Manual and semi-automatic options

02 / CASE PREPARATION



Cylindrical case groover

Form the groove in a cylindrical cell case before closure.

18650 / 21700 / 26650 / 32650 dies

03 / CELL CLOSURE



Pneumatic cell crimper

Close cylindrical cases with the selected crimping die.

18650 / 26650 / AA / AAA options

04 / POST-TEST ANALYSIS



Cylindrical disassembler

Open cell cases for inspection after assembly or testing.

Interchangeable dies for cell formats

Battery Formation & Cycling



Charge / discharge • Capacity • Cycle life

REPRESENTATIVE TEST CONFIGURATIONS

APPLICATION	CHANNELS / RATING
Coin-cell research	8 ch / 5 V / 20 mA
Cell R&D / formation	8 ch / 5 V / 12 A

Voltage / current accuracy: $\pm 0.05\%$ FS

Also available: multi-station electrolyte filling and vacuum standing for cylindrical cells.

Build your battery workflow with SSI.

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