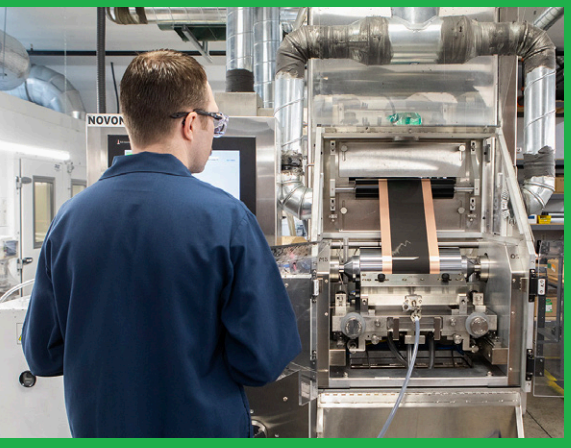
NOVONIX™

Research & Development Services

With the battery industry growing, there is a shortage of facilities, infrastructure, time, capital, personnel, and knowledge. We provide a range of services and co-development models to help our customers gain the insights they need to make the right decisions at the critical R&D stage.



NOVONIX™

Research & Development Team

Our team holds a wide array of expertise in engineering, metrology, and electrochemistry that establishes them as industry experts.

We support customers with:

INDUSTRY INSIGHT:

Expertise from material synthesis to full-cell design and analysis

FLEXIBLE PROTOTYPING FACILITY:

Small-to-medium scale cell prototyping up to 20 Ah

EXTENSIVE TESTING CAPABILITIES:

> 3,000 cell testing channels including NOVONIX UHPC equipment

DATA ANALYSIS AND REPORTING:

Our team of battery experts assist you with interpretation and analysis of your data

EVALUATION SERVICES:

Range of materials analysis capabilities

NOVONIX engages with customers in a variety of ways: assisting with project scoping, cell designing, testing and evaluation protocols, analyzing process and performance data, and making recommendations.

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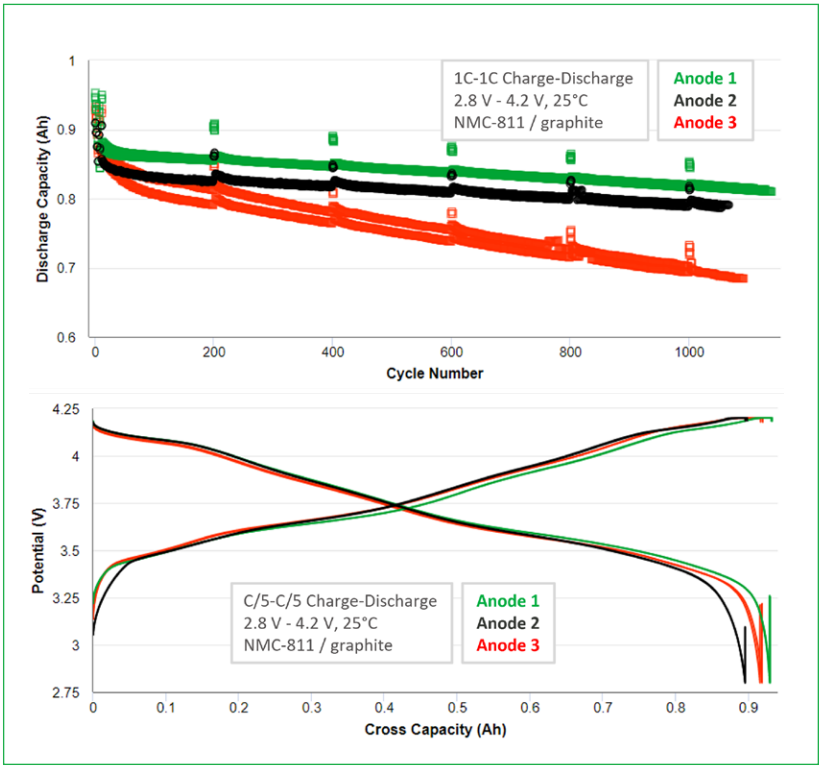
Prototyping Services

We provide our customers with detailed cell build information and high-quality cell performance data that allows robust insights to support making the best decisions possible regarding their cell design, materials, and performance.

The NOVONIX team works with the following cell formats:

- Stacked pouch cells up to ~20 Ah
- Wound pouch cells: flexible sizes up to multiple Ah
- Cylindrical cell formats: 18650, 21700



Our cells are high quality and consistent which enables accurate analysis when conducting material optimization, validation, comparison, electrolyte optimization, cell performance characterization, and more.

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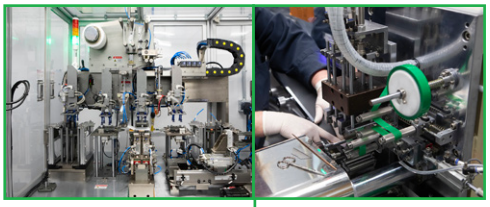
Our Pilot Line

NOVONIX works with customers to customize a statement of work that ensures the project deliverables meet their needs. Whether it's electrodes made from raw materials, full-cell building and testing, or something in between, our pilot scale manufacturing line allows the flexibility for projects to start or stop anywhere in the process.

- 2 roll-to-roll compression machines

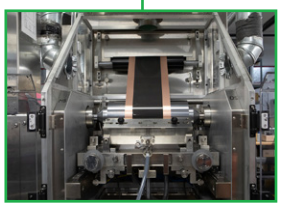
- Winding and stacking equipment are semi-automated

- 2 L, 5 L, 15 L planetary mixers

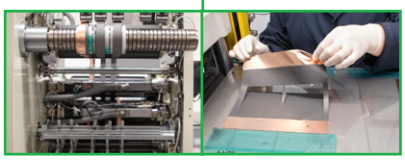


Slurry Mixing | **Calendering** | **Stacking/Winding (Dry Room Assembly)** | **Pouch Sealing** | **Cell Filling**

Coating | **Slitting and Punching** | **Electrolyte Mixing** | **Testing**

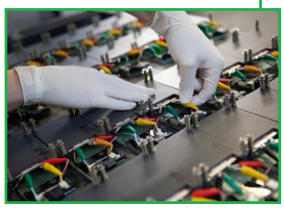


- 2 slot-die coating machines



- 2 roll-to-roll slitting machines
- Auto and manual die punching machines

- Customized electrolyte formulations available



- Extensive range of advanced testing, diagnostic tools, and in-house electrochemical performance testing

NOVONIX™

Testing Services

NOVONIX optimizes cell test selection and cell testing protocols by collaborating with customers, providing the data they need from each project.

Common Testing Types:

- Cycle and calendar aging
- Direct Current Internal Resistance (DCIR), Hybrid Pulse Power Characterization (HPPC), rate mapping, etc.
- Electrochemical Impedance Spectroscopy (EIS)
- Gas volume and cell thickness studies
- Failure and post-mortem analysis

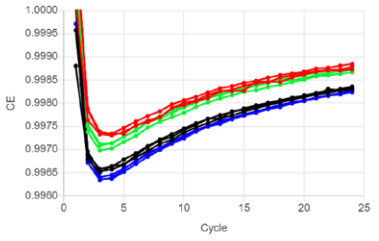
Test Equipment Capabilities:

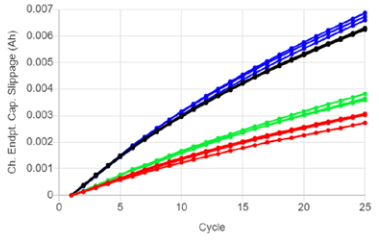
- > 3,000 cell testing channels
- Up to 400 A, 5 V cell testing
- -40°C - 180°C temperature range

NOVONIX Ultra-High Precision Coulometry (UHPC) systems offer the most advanced and precise battery testing equipment in the industry. Our systems are fully capable battery cyclers that allow our customers to test electrochemical processes within cells rapidly and in various form-factors, providing them with robust data that can improve decision making about their development programs.

NOVONIX UHPC Enables Rapid Insights

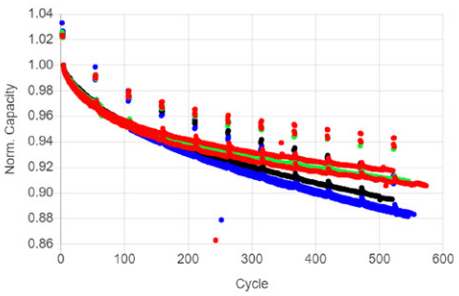
3 Weeks of UHPC Testing





- Differences emerge in days
- Data yields insight into degradation mechanisms
- Here, significant electrolyte decomposition at the cathode leads to high 'endpoint slippage' and lower CE

6 Months of Cycle Life Testing



- Differences takes months to emerge
- No detailed insights into degradation mechanisms

UHPC results can be used to quickly inform lifetime predictions and to understand failure modes of your cells.

NOVONIX™

We're providing revolutionary clean energy solutions to the battery industry

Contact us to discuss your next project and to receive a quote.

novonixgroup.com/contact-us

Bluewater

177 Bluewater Road

Bedford, Nova Scotia Canada, B4B 1H1

Simmonds

110 Simmonds Drive

Dartmouth, Nova Scotia Canada, B3B 1N9

@Novonix

@NovonixBattery

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Learn More About
NOVONIX R & D Services

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