

Battery solutions

Powering scientific innovation

Empowering battery production with advanced lab equipment solutions



Driving the future of battery technology together

The race toward advanced battery solutions is on, and productivity is key

As batteries play an increasingly crucial role in everything from handheld electronics to electric vehicles, your lab needs to accelerate insights and answers to achieve technology advancements and meet essential sustainability goals. Thermo Fisher Scientific offers a broad range of instruments and tools to support you through the battery manufacturing continuum- from research and development, to cell assembly and production, through quality assurance. It's how we help manufacturers make big strides toward a sustainable, zero-carbon future.

Our commitment to scientific advancement

We offer products and solutions that enable customers to push the boundaries of innovation

Customer focus

Exceptional portfolio

Industry-leading scale

Depth of capabilities

We take pride in helping to empower your success

Building a cleaner, safer world

Our commitment is to help ensure a clean and safe environment- now and for the future. With deep experience across multiple technology areas, we provide guidance to help you find the right battery solutions to meet your business needs. As the world leader in serving science, we stay at the forefront of technology, so that you can stay one step ahead.

Help meet global sustainability goals

Climate change and environmental degradation are existential threats to our world. Batteries that are more sustainable throughout their lifecycle are key aspects of various geographic sustainability investments focused on strengthening clean energy production. Global green initiatives are driving widespread changes across our world. To lead the way in dynamic time, you need an ally that has the expertise, experience and lineup of solutions to advance your work.

Supercharge your innovation, maximize your production

When manufacturing batteries, our range of excellent technologies help organizations gain new insights to improve safety and longevity, decrease charging time and boost power output:

- Reliable heating and cooling solutions to provide temperature control of manufacturing equipment
- Simple and flexible water purification systems to meet water quality requirements
- Accurate, precise water analysis with inline and benchtop electrochemistry analyzers
- Extensive range of general laboratory equipment and consumables
- Team of experts to help enable users of all skill levels to confidently obtain reproducible, high quality results





One comprehensive portfolio, countless ways to drive new battery insights

Proudly offering the broadest instrument portfolio for advanced battery technologies, Thermo Fisher Scientific is your one-stop resource for solutions, innovation and collaboration- all from one trusted source. To help you address rapidly changing research, we're committed to providing the most robust solutions, tools and workflows to meet your dynamic needs. Our solutions help expand your battery knowledge where you need it most- aiding you to drive actionable business outcomes.

Temperature Control

Temperature control plays a vital role in battery manufacturing. From performing pilot production tests, to heating and cooling equipment, ensuring your samples remain at the correct temperature helps provide manufacturing consistency and reduced costs. Unlock access to temperature stability with Thermo Scientific's versatile line of temperature control solutions.



Water baths

Achieve gentle, uniform heating with Thermo Scientific™ water baths. Designed to provide consistent temperature over an extended time period, our water baths maintain ambient temperature to 100°C. Excellent for supporting the many testing protocols required during the research and development (R&D) stage of battery production. Our rugged, high-performance baths range from 2L to 28L, include shallow models and can accommodate a wide range of containers and materials- including test tubes, beakers, flasks, small equipment and more. Benefit from outstanding chemical and corrosion resistance with an epoxy powder-coated exterior, and easy cleaning with a seamless stainless-steel interior.

[Learn more »](#)



Bath circulators and immersion circulators

Obtain accurate temperature control and efficient heat transfer with Thermo Scientific™ bath circulators and immersion circulators. Set and maintain specific temperature levels with high precision- crucial when cooling key analytical equipment necessary for battery research or material verification. Complete with expansive temperature ranges (-45 to 300°C), substantial cooling power (100W to 900W), powerful force/ suction pumps and digital control technology, you can expect superior temperature accuracy and reproducibility. Use it with a wide range of equipment, such as differential scanning calorimetry (DSC) systems, thermogravimetric (TG) analyzers and much more.

[Learn more »](#)



Recirculating chillers

Attain reliable and efficient cooling with Thermo Scientific™ recirculating chillers. Developed with precise temperature control features and sensors, users can expect to maintain stable temperatures to ensure the accuracy and integrity of experiments, processes and equipment throughout the battery manufacturing lifecycle. A wide temperature range (-10°C to 90°C), outstanding cooling power (900W to 24,000W) and optimal stability (+/- 0.1°C) help provide consistent and reproducible results when cooling analytical instruments and industrial equipment (such as calendaring machines), or when performing end of life (EOL) test cooling- plus much more. With a variety of models available, from simple and budget-friendly, to custom-configurable platforms, you are sure to find a solution to help meet your specific business needs.

[Learn more »](#)



Heat exchangers

Facilitate the efficient transfer of heat between fluids and obtain improved energy efficiency, cost reduction and process optimization with Thermo Scientific™ heat exchangers. The use of industrial lasers is essential throughout the battery manufacturing process. Heat exchangers can be used one-on-one with manufacturing equipment (such as lasers) to provide temperature control and regulate the flow and pressure of fluids. A compact footprint, sufficient temperature range (5°C to 35°C) and eco-friendly cooling capacity (up to 100kW) provide you with the specifications required to reduce environmental impact and improve overall productivity.

[Learn more »](#)

Water Quality

Pure water is elemental to the success of your battery operation. Furthermore, the ability to precisely evaluate water samples is essential to achieving the highest standard in water quality. Your production and your samples depend on it. Utilizing the right instruments is key. With Thermo Scientific's water quality solutions you can achieve dependable performance, accuracy and reproducibility.



Water purification systems

Easily installed at any water source, Thermo Scientific™ water purification systems provide pure and ultrapure water. With the touch of a button, obtain access to Type 1, Type 2 or Type 3 water for your battery research and production needs. Supply purified feed water to analytical instruments and labware washers, or use it for machine cleaning and glassware rinse. Our water purification systems deliver water that is free of impurities, contaminants and harmful substances. Designed with flexibility in mind, a variety of configurations are available to help meet your research and production needs. Choose from benchtop, wall-mounted or free-standing units. Reduce complexity while increasing throughput- intuitive user displays, easy to operate features and low maintenance designs help ensure the success of your operation.

[Learn more »](#)



Water purification cartridges and filters

Remove impurities, contaminants, and particles from your water supply with Thermo Scientific™ water purification cartridges and filters. Designed for use with Thermo Scientific™ water purification systems, our water purification cartridges and filters effectively trap and remove various substances- including bacteria, viruses, organic compounds, inorganic ions and particulate matter. Throughout the battery manufacturing workflow, a variety of heavy industrial equipment requires cooling. When equipment is not properly cooled, it can lead to overheating and cause performance disruptions or destroyed assets. Equipment cooling can be achieved using distilled or deionized water. Our ready-to-connect cartridges provide up to 3,000L/ hour of fully demineralized water for a broad range of industrial applications.

[Learn more »](#)



Inline electrochemistry analyzers

Obtain real-time monitoring and analysis of chemical parameters in liquids with Thermo Scientific™ inline electrochemistry analyzers. Throughout the battery manufacturing workflow, recycled water is commonly used. The resulting wastewater is usually contaminated with ammonia, sodium sulfate, cobalt, nickel and other heavy metals and inorganic ions. To properly treat the wastewater, chemical content must be monitored and controlled. Using our inline electrochemistry analyzers, users are immediately notified when changes are detected in the chemical composition of liquids. Corrective action can be deployed, thereby minimizing the risk of product defects or process inefficiencies. Achieve comprehensive analysis with a wide range of parameter offerings- including sodium, chloride, ammonia, fluoride, calcium and more.

[Learn more »](#)



Benchtop electrochemistry meters

Obtain easy, accurate measurement of liquids and aqueous solutions using Thermo Scientific™ benchtop electrochemistry meters. With diverse applications, our meters support you throughout the battery manufacturing continuum. From conducting research, to inspecting raw materials, to verification of finished goods- reliable data is necessary every step of the way. Featuring easy-to-use interfaces, robust parameter capabilities and durable designs, our meters help you execute critical, routine tasks with ease. Tackle your toughest analytical challenges with a wide range of parameter offerings- including pH, conductivity, dissolved oxygen (DO), biochemical oxygen demand (BOD), oxidation-reduction potential (ORP), ion concentration and more.

[Learn more »](#)

General Laboratory Equipment and Consumables

Essential to scientific labs and research facilities, general laboratory equipment is the foundation to any successful lab. From chambers designed to control temperature, to pipette tips and sample containers, it includes a wide range of tools and supplies. Measure and manipulate samples with Thermo Scientific's general laboratory equipment and consumables.



Vacuum ovens

Achieve fast and gentle drying of samples with Thermo Scientific™ vacuum ovens. Battery production consists of several fragile pieces, which if handled incorrectly can lead to lost operational costs. Electrode samples, for example, must be dried to remove all traces of liquid. Our vacuum ovens help you easily remove moisture, solvents, or other volatile substances from materials. Dry or degas samples in a controlled fashion, while minimizing the risk of oxidation or degradation. Rapid heat-up time and excellent heat transfer minimize production time and cost. Double-paned safety-glass windows provide an added layer of safety with implosion protection. For applications with flammable solvents, vacuum ovens are available with additional safety features.

[Learn more »](#)



Environmental chambers

Stimulate and replicate various environmental conditions using Thermo Scientific™ environmental chambers. Understanding how temperature impacts the performance of battery components is critical. During the research, testing and manufacturing process, operations can evaluate the function, reliability, and durability of products or materials under specific environmental conditions. Our environmental chambers provide a wide range of temperature testing (0°C to 70°C), with and without humidity. A directed airflow system enables optimal temperature uniformity and recovery, even under a full load. A number of chamber models are available to accommodate various sample sizes- from small benchtop units to large floor-standing models.

[Learn more »](#)



Muffle furnaces

Conduct electrolyte research to determine thermal runaway reactions with Thermo Scientific™ muffle furnaces. Perform flammability tests and uncover thermal limitations to govern safety parameters prior to mass production. Use it for sintering of oxide-based all-solid-state batteries (ASSB), solid state electrolytes (SSE) and the processing of lab-produced, “green pellets” for the investigation of SSE samples and the assembly of small coin-cells. Equipped with four heating elements- located on the chamber top, bottom and sides- our muffle furnaces provide enhanced temperature uniformity during testing. A built-in vent port removes undesirable contaminants and moisture to extend the life of the heating element and unit.

[Learn more »](#)



Additional laboratory equipment and consumables

A wide range of additional laboratory equipment and consumables are available to enhance your battery research and production workflow. Speak with a member from our team to learn more.

- Sample containers (beakers, bottles, plates, tubes, vials, etc.)
- Pipettes and pipette tips
- Rockers, rotators, mixers and shakers
- Hot plates and stirrers
- Centrifuges and vacuum concentrators
- Safety, organization and cleaning supplies
- Plus much more- ask to speak with a member from our team!

[Learn more »](#)

Forward-looking, future-focused

Together we can achieve
a greener, cleaner world

Whatever your task, we've got the solution. Thermo Fisher is your one-stop source for the world's widest range of lab equipment and support tools- plus the expert guidance to help you stay one step ahead. Our systems span from research and development to quality control. Explore the categories below to see how Thermo Fisher Scientific is enabling the latest advances in battery technology.

Thermo Fisher products	Research & development	Manufacturing & production	Quality control
Bath circulators and immersion circulators	⚡	⚡	
Benchtop electrochemistry meters	⚡		⚡
Environmental chambers	⚡		⚡
Heat exchangers		⚡	
Inline electrochemistry analyzers		⚡	⚡
Muffle furnaces	⚡		
Recirculating chillers	⚡	⚡	⚡
Vacuum ovens	⚡	⚡	
Water baths	⚡		
Water purification cartridges and filters	⚡	⚡	
Water purification systems	⚡	⚡	



Keep getting results, we've got your back

There's no time for downtime. You depend on your analytical instruments to support daily operations. Experience exceptional service solutions from Unity™ Lab Services. Our comprehensive service offerings are designed to keep you up and running. Choose from a variety of equipment plans and on-demand offerings. Our team is ready to help to help you maximize uptime and maintain peak performance.

See how Unity Lab Services has your back 

Empower this relationship forward— let's get started

Contact a Thermo Fisher Scientific representative today

 Learn more at thermofisher.com/batteryresearch

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