

ADVANTAGE SERIES



A BETTER WAY TO MEASURE THE QUALITY OF YOUR LITHIUM ION BATTERY PROCESS

- ▶ Coat Weight
- ▶ Thickness



Making Light Work

Redefining Lithium Ion Battery Measurement

PROCESS CONTROL

COATING

THICKNESS

Production processes for high-performance lithium-ion batteries (LiB) used in mobile devices, electric (EV/HV) vehicles and stationary energy storage systems have to adhere to very high-quality standards to ensure maximum performance, the utmost safety and longest battery lifespan.

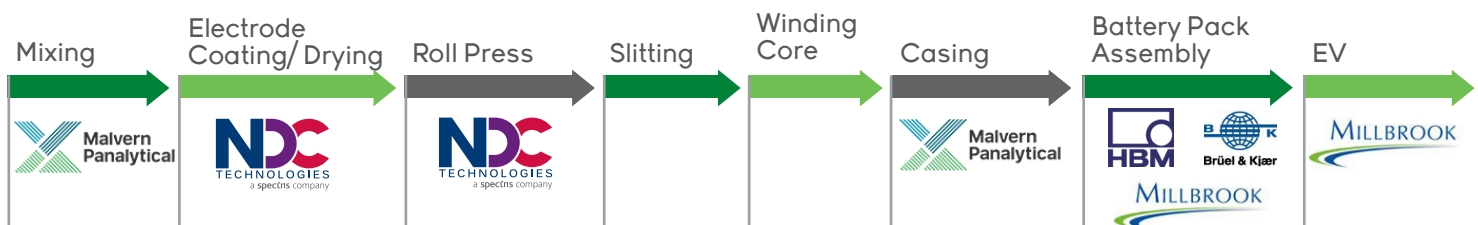
NDC's measurement system solutions for LiB component production stand apart from conventional gauging methods to give you greater process visibility and control, so you exceed the market demand for outstanding quality and performance... while realizing bottom-line benefits.

Unparalleled solutions for LiB coating and press lines

NDC has a long history of delivering proven, reliable measurement systems to global battery producers. We understand your process and continue to advance our gauging solutions as technologies evolve to keep abreast with the current and future needs of LiB battery production. Unlike others, NDC has progressed on several fronts to provide the latest in **safe, "non-nuclear" gauging technology** that delivers precise, stable measurements... critical for the dependable control of coating and calendering processes.

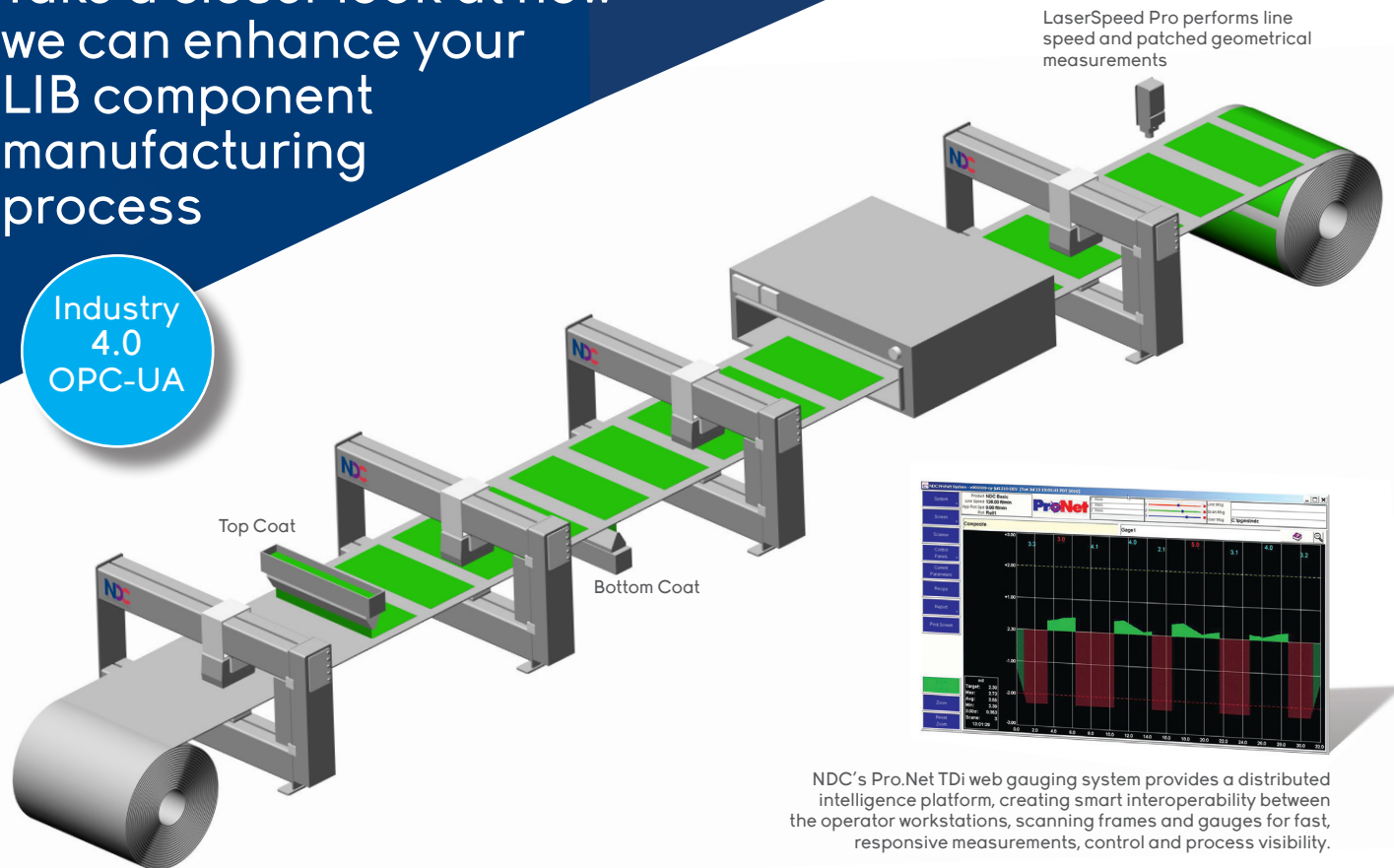
- ▶ NDC's new **Photon Sensor** technology offers huge advantages to manufacturers, providing high-accuracy, no-compromise anode and cathode coating weight measurements
- ▶ The new **MicroCaliper Thickness Sensor** delivers repeatable, sub-micron accuracy for deeper insight into variations in coating and calendering processes

Leveraging the Spectris Collective of Advanced Battery Measurement Solutions Across the LiB Process



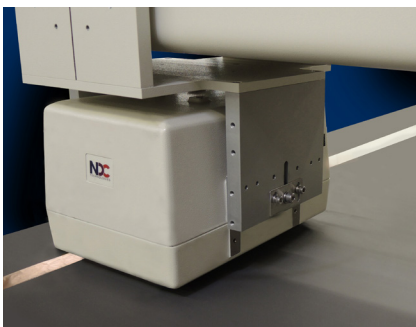
Take a closer look at how we can enhance your LIB component manufacturing process

Industry
4.0
OPC-UA



Improve Coat Weight Measurement of Anode and Cathode

The Industry's Only Photon Sensor Provides Continuous Precision



NDC's Photon Sensor reduces the number of measurement stations needed to cover multiple coatings on anode and cathode lines, keeping capital expenditure costs to a minimum.

NDC's new Photon Sensor delivers a new level of performance and visibility for measuring the coat weight applied to aluminum and copper foil substrates. Working with key LiB manufacturers, NDC developed novel and proprietary technologies to greatly improve electrode coating measurements. The result is a high-speed measurement solution designed for patch, zone and continuous coating lines offering the industry's highest coat weight accuracy on anodes and cathodes.

Get More:

- ▶ Best-in-class streak resolution to ensure flat coatings
- ▶ Visibility of patch coating leading (bead) and trailing edges
- ▶ High-precision coat weight measurement accuracy to keep your process on target
- ▶ Non-nuclear, application- matched sensors for stable and predictable coat weight measurements
- ▶ Simple-to-complex solutions from single scanner to five or more scanners
- ▶ Advanced controls for average coat weight, coat weight flatness and cascade target management

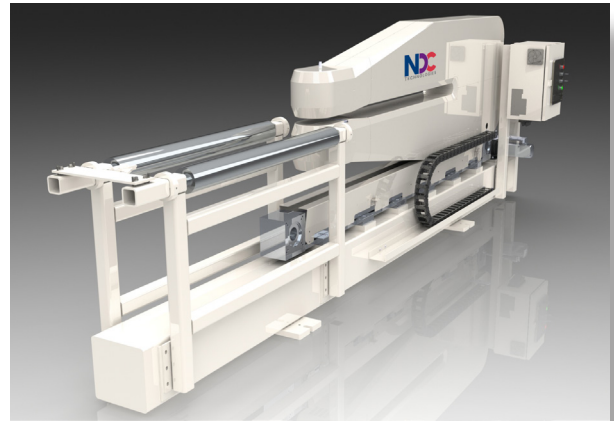
Make Your LiB Roll Press Process Even Better

With Our Advanced MicroCaliper Thickness Sensor

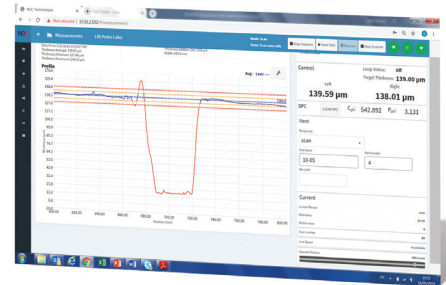
It is well known that after the roll press process coatings exhibit some hysteresis and can change dimensionally. NDC understands the tight operating tolerances demanded by the roll press line. That's why we developed our new MicroCaliper Thickness Sensor, optimized for press-line applications. This innovation provides sub-micron accuracy, high-resolution thickness measurements to produce the most consistent, highest-quality LiB components.

Get More:

- ▶ Precise control of machine- and cross-direction spatial measurements
- ▶ True picture of coating flatness
- ▶ Insensitive to flutter and changes in color or texture
- ▶ Dynamic compensation for gap changes
- ▶ Compact, rugged and easy to maintain

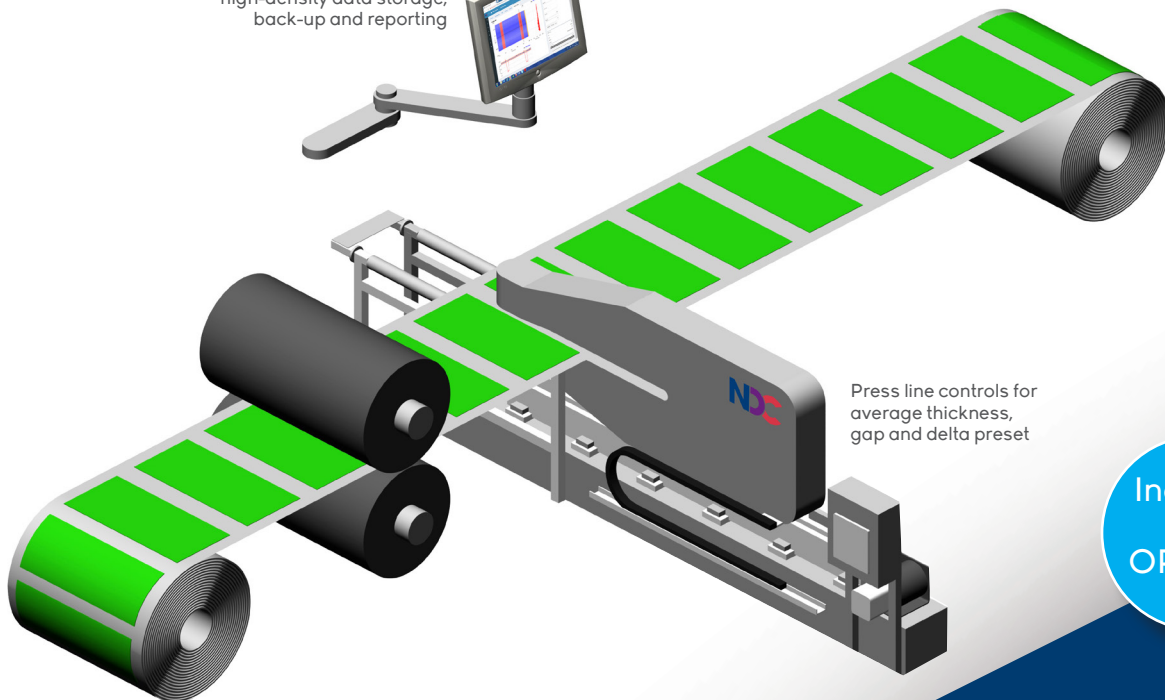


Ultra-fast, high-resolution, opposing dual-displacement sensors provide continuous on-line thickness measurements using laser beam distance triangulation.



Total Distributed Intelligence for real-time process control, quality reporting, Industry 4.0 communications and data analytics.

Archive Station enables high-density data storage, back-up and reporting



Press line controls for average thickness, gap and delta preset

Industry
4.0
OPC-UA

NDC Enables You to Truly Measure the Difference

NDC Technologies is a leading global provider of measurement and control solutions, transforming today's measurement experience through innovations. Our legion of satisfied customers benefit from:

- ▶ Over 50 years of producing a wide range of measurement and control instrumentation for a broad scope of manufacturing industries – including the largest organizations in China
- ▶ More than 30,000 sensors installed across the globe
- ▶ NDC depth and breadth of technical experience and resources
- ▶ World-class service and support organization with 24-7 myNDC cloud availability
- ▶ Fastest ROI and lowest cost of ownership
- ▶ Lifetime partner philosophy with customers to cooperatively develop solutions and improve competitiveness
- ▶ Peace of mind knowing that you are working with a stable, reliable organization for the long term

Applications We Serve

NDC provides measurement and inspection solutions for the following lithium ion battery markets:



Electric Vehicles



Energy Storage Systems (ESS)



Electronics
(cell phones, computers, etc)



Toys



Military



Aerospace



Medical

Optimizing Your Investment with World-Class Service and Support

NDC's technical expertise comes from deep experience supporting thousands of products at the world's leading manufacturers. Our portfolio of support offerings leverages this expertise to assist you through the service lifecycle. We offer a complete range of cost-effective support solutions including commissioning, training, technical support and service agreements. Customers rely on our 24-7 availability via myNDC – the industry's most progressive service cloud portal. Whether it's configuring new equipment, training your technical staff or solving a technical problem, you can count on our experienced team to help maintain the health and performance of your NDC product.

Visit myNDC service cloud at ndc.custhelp.com.



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In line with its policy of continuous improvement, NDC reserves the right to revise or replace its products or services without prior notice. The information contained in this document may not represent the latest specification and is for indicative purposes only.

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