Successful nonwoven manufacture depends on producing quality fabrics efficiently. For example, accurate measurement translates into greater yield from the raw materials. It also reduces lost time and scrap during product change and at start-up. This all adds up to greater quality, productivity and efficiency that helps drive plant profitability.

NDC’s web gauging platforms represent an opportunity to assist the nonwovens business. Its sensors offer extensive measurement capability with form factors that provide process visibility from critical parts of the line. By combining controls that produce continuous quality and an operator interface that provides real time information, NDC’s solutions help ensure optimum line performance and a sound return on investment.

Customer Benefits:
- Higher quality and productivity
- Lower manufacturing costs
- Improved process visibility
Accurate Measurement Performance

A complete gauging portfolio for the entire nonwovens process

NDC’s Beta transmission gauges feature an ultra high-efficiency detection system and a minimized source activity for safety and performance. Beta gauges measure the basis weight of airlaid carded and spunbond/SMS nonwoven products.

NDC’s NW710S Infrared sensor can measure the basis weight and moisture for specific nonwovens. Its unique optics collect forward-scattered light that has interacted with the nonwoven material. Applications include PP spunbond and meltblown nonwovens.

NDC’s Gamma BackScatter (GBS) gauge family provides a cost-effective basis weight measurement. This compact sensor can provide valuable measurements from difficult process locations.

NDC’s laser gauges measure thickness via a distance triangulation computation of a laser beam. Laser gauges are typically designed to measure thick nonwoven products. The thickness measurement range for NDC’s single-sided sensor is 50 mm, while the dual-sided range extends to 15 mm.

NDC’s X-ray transmission sensor’s energy source is tuned for optimum product measurement sensitivity to provide precise measurement of basis weight or thickness for nonwoven products. X-ray transmission gauges can be used on most nonwovens processes.

The X-ray backscatter sensor’s compact footprint permits it to be installed in difficult measurement locations on the process. The X-ray backscatter sensor is designed to measure the basis weight of spunlace, carded, airlaid & hybrid nonwoven products.
Rugged, Reliable, Maintainable Scanners

High performance intelligent scanners for fast, accurate measurement

NDC’s AccuTrak scanner supports a multiple sensor payload for complex nonwoven applications.

NDC’s AccuTrak O-Frame scanner has been specifically engineered for today’s stringent quality requirements. Its rugged design utilizes a revolutionary head carriage bearing system that provides long-term precise, repeatable measurement performance.

This intelligent iFrame™ scanner delivers fast, accurate, reliable measurement that is tightly integrated into an intelligent distributed web gauging architecture from NDC. Spanning four decades of experience in the industrial measurement and control industry, the AccuTrak O-Frame scanner provides unmatched performance and a low cost of ownership.

NDC’s MiniTrak scanner family offers fast, accurate, reliable measurement that is tightly integrated into an intelligent, distributed web gauging architecture from NDC.

The MiniTrak O-Frame scanner supports up to two quality sensors, for example the intelligent backscatter, reflection and/or transmission iSensors™ from NDC. The 8” box section structure enables this compact scanner to fit into some of the most demanding process locations, while the top mount transport carriage prevents scanner debris from falling onto the sheet.

The MiniTrak S-Frame supports both the backscatter and reflection family of intelligent iSensors™ from NDC. This frame is compact, robust and supports up to two scanning intelligent iSensors. It requires minimal installation space and can provide critical measurements from difficult process locations.

...while NDC’s compact MiniTrak scanners provide cost-effective performance to deliver high-quality nonwoven products.
Proven, Capable Solutions

NDC nonwovens industry expertise
...a solution for each application

► Nonwoven Applications

Spunbond/SMS:
With 12 different sensor designs utilizing 5 different measurement technologies, NDC can provide the optimum measurement solution across the entire family of spunbond/SMS applications.

Spunlace:
Based on its repeatability and accuracy performance, NDC’s X-ray backscatter (XRB) represents the ideal measurement sensor for spunlaced and medical-hygiene products. Also, when combined with the NDC710S infrared sensor, basis weight and moisture can be measured and controlled.

Airlaid, Carded and Hybrid:
Application-matched NDC sensors provide most all of the on-line measurements that are required within the airlaid, carded and hybrid nonwovens markets. This includes basis weight, moisture, special treatments, coating, lofting density and film lamination.

► Nonwoven Controls

Machine Direction & Cross Direction Controls:
NDC control options include basis weight, moisture, thickness, treatments and coatings. These controls can be used to optimize raw material consumption, energy optimization and productivity.

► System Options

- FFT (Fast Fourier Transform) analysis
- SPC quality reporting
- 3D profile analysis displays
- System integration: NDC’s web gauging systems can be integrated with SCADA systems, metal detectors, web inspection equipment and OEM controls using OPC connectivity.

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Range</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW710S</td>
<td>8-90g/m²</td>
<td>Transmission IR measurement Polypropylene basis weight Spunbond/SMS basis weight</td>
</tr>
<tr>
<td>NW710S</td>
<td>0-5% moisture</td>
<td>Transmission IR measurement Spunbond/SMS moisture</td>
</tr>
<tr>
<td>NDC710S</td>
<td>0-90% moisture</td>
<td>Single-sided IR measurement Moisture measurement</td>
</tr>
<tr>
<td>NDC710S</td>
<td>0-1000g/m²</td>
<td>Single-sided IR measurement Speciality coating and treatment measurements</td>
</tr>
</tbody>
</table>

NDC’s advanced infrared and X-ray non-nuclear technologies offer superior performance that is ideal for most hygienic applications.

<table>
<thead>
<tr>
<th>Beta 302</th>
<th>12-1200g/m²</th>
<th>Basis weight or thickness measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Airlaid Carded Spunbond/SMS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XRB 318</th>
<th>5-25,000g/m²</th>
<th>Basis weight measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Spunlace Carded Airlaid &amp; Hybrids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XRT 312A</th>
<th>5-8000g/m²</th>
<th>Basis weight measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PET Spunbond/SMS</td>
</tr>
</tbody>
</table>

X-Ray sensors offer a non-nuclear alternative with minimal licensing issues and provide measurement across a wide range of nonwoven applications.

<table>
<thead>
<tr>
<th>Laser 172, 2 Sided</th>
<th>0-15mm</th>
<th>Thickness measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser 170W, 1 Sided</td>
<td>1-50mm</td>
<td>Thickness measurement</td>
</tr>
</tbody>
</table>

Laser gauges are available for nonwoven processes where density is not constant and true thickness measurement is required.

Laser gauges are intended for use on thicker product applications.

<table>
<thead>
<tr>
<th>GBS 103</th>
<th>0-1500g/m²</th>
<th>Backscatter basis weight measurement</th>
</tr>
</thead>
</table>

The GBS (Gamma Backscatter) or OptiMike gauges can be installed in limited space locations and where a low-cost measurement solution is required.
Company overview

Combining industry-best performance and reliability with a global support structure

NDC Technologies, headquartered in Dayton, Ohio, designs, develops and produces a wide range of process measurement and control instrumentation for a broad scope of manufacturing industries.

NDC has manufacturing facilities in Dayton, Ohio and Maldon, UK, with Technical Centers of Excellence at each of these locations including Irwindale, California and Loncin, Belgium. In addition, there are direct sales and support facilities in China, Japan, France, Germany and Italy. There is also a highly trained network of Sales and Service distribution channels in more than 60 countries around the world.

NDC Technologies is strategically structured to serve the following key industry segments:

► Extrusion and Converting
  NDC provides basis weight, thickness, coat weight and moisture measurement and control systems for a diverse array of applications in the film extrusion and converting industries and also provides solutions for customers in nonwovens and calendering.

► Food and Bulk
  NDC delivers both on-line and at-process analyzers for the measurement of key constituents such as moisture, fat, oil and protein. NDC’s broad spectrum of measurement solutions are used in the food, chemicals, minerals building materials, pharmaceutical and tobacco industries.

► Cable and Tube
  NDC serves the wire, cable, fiber optic, pipe and tube industries with a broad portfolio of on-line and off-line measurement and control solutions for the dimensional monitoring of diameter, ovality, wall thickness, eccentricity, length and speed, and other parameters.

► Metals
  In the steel and aluminium industries, NDC offers advanced solutions for the measurement of thickness, width, flatness, edge shape, coatings, and length and speed of sheet and long casted products.