

# Mill Roll Inspection

## Rollmate®

### Equipment Highlights

- Inspects rolls of any alloy, forged and cast.
- Detects surface and sub-surface defects, core-shell disbond, and soft spots (bruises).
- Surface crack detection, in all orientations, as small as 0.1mm in depth.
- Provides measurement of shell thickness.
- Expert system to monitor performance and estimate remaining life.
- Insensitive to roll magnetism.
- Fully automated, installs on any grinder.



The Rollmate is an automated inspection solution for inspecting metallic mill rolls of any alloy, forged and cast.

Innerspec Technologies' patented inspection technique uses a multi-channel sensor array to perform simultaneous detection of defects on the surface and subsurface of the roll, detect core-shell disbond, measure shell thickness, and detect soft spots (bruises) in one pass.

The results are presented in easy-to-understand C-Scan defect maps and bar graphs. All the results and statistics are stored in a database together with other roll details. An optional Expert System can be used to monitor roll performance and estimate remaining life.

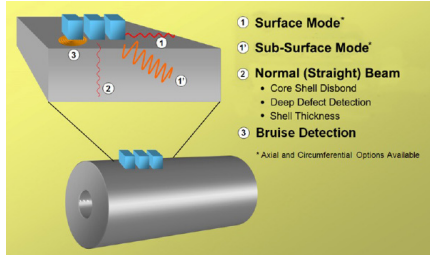
The inspection is performed during the grinding process with no additional cycle time. The system provides continuous, real-time feedback of the condition of the roll while grinding, permitting removal of as little material as possible while guaranteeing a defect-free roll.

The Rollmate is designed to be integrated on any grinder. The actuator can be part of the instrumentation cabinet and installed as one piece, or can be separated from the instrumentation and mounted at any angle on the roll.

The system has negligible operation and maintenance costs, and can be fully automated requiring no human intervention.



# Rollmate® - Specifications

<p>Materials Inspected</p>	<ul style="list-style-type: none"> <li>All metallic rolls, both forged and cast (all grades and chemistries).</li> <li>Rolls with diameters greater than 250mm.</li> <li>Surface may be wet or dry before testing.</li> <li>Surface should be free of gross physical discontinuities such as spalls, missing material, grinder plunges, or similar that could cause damage to the transducer during scanning.</li> </ul>
<p>Inspection Technique</p>	<ul style="list-style-type: none"> <li>Surface cracks (0 to 2mm from the roll surface).</li> <li>Sub-surface flaws (2 to 50mm from the roll surface).</li> <li>Core-shell disbond and other laminar flaws, (approximately 10mm to 200mm from the roll surface).</li> <li>Shell thickness measurement (from 10mm to 200mm).</li> <li>Defects deeper than 50mm.</li> <li>Bruise detection.</li> </ul> 
<p>Software Features</p>	<p>Real Time Acquisition &amp; Processing</p> <ul style="list-style-type: none"> <li>Uses fast FPGA-based signal acquisition and processing.</li> <li>Provides uninterrupted control and analysis of all time sensitive operations, including real-time display and disposition.</li> </ul> <p>Link &amp; Render</p> <ul style="list-style-type: none"> <li>Connects real-time acquisition &amp; processing with the user interface using standard communication protocols.</li> <li>Decouples acquisition from user interface for easy hardware upgrades, and rapid customization of user interface.</li> <li>Organizes and prepares data received from real time acquisition &amp; processing for representation in user interface.</li> </ul> <p>NDT-Web™ User Interface</p> <ul style="list-style-type: none"> <li>Provides display and user controls customized for the application using proprietary NDT-Web™ real-time web technology.</li> <li>Broadcasts its own Wi-Fi signal for simple access by any device using a regular browser and IP address (no client software needed). Alternatively, users can connect to the equipment using an external video monitor or ethernet port.</li> <li>Permits easy customization of user controls and display without affecting the operation of the equipment.</li> <li>Includes built-in features for web support and ordering of spare parts when connected to the internet.</li> </ul>
<p>Sensor Head Assembly</p>	<ul style="list-style-type: none"> <li>Modular design that can incorporate all currently available inspection techniques into one sensor assembly. The inspection modules include: <ul style="list-style-type: none"> <li>- Axial surface and sub-surface inspection (rolling and counter-rolling direction).</li> <li>- Circumferential surface and sub-surface Inspection.</li> <li>- Core-shell disbond and shell thickness measurement.</li> <li>- Bruise (soft-spot) detection.</li> </ul> </li> <li>Modules designed for a helical scanning pitch of 20mm.</li> </ul>
<p>Data Acquisition Electronics</p>	<ul style="list-style-type: none"> <li>The instrumentation cabinet is housed in a NEMA 12 rated enclosure.</li> <li>Approximate dimensions are 380mm x 760mm x 760mm (15" x 30" x 30") at 33kgs(72lbs).</li> <li>The cabinet can be mounted to the grinder deck floor or platform so that the actuator/sensor assembly is aligned to the center point of the roll. If actuator/sensor assembly is mounted separately, the cabinet can be located in any convenient location within 50m (164') of the sensor assembly.</li> </ul>
<p>Power and Environmental Ranges</p>	<ul style="list-style-type: none"> <li>Supply electrical power, single phase, 115/220VAC (+/-10%), 60/50Hz, minimum circuit capacity at 20/10 A</li> <li>Operating temperature 32 °F (0 °C) to 105 °F (40 °C).</li> <li>Humidity non-condensing 5% to 95% RH.</li> </ul>