NO OTHER RETREAD STARTS WITH SUCH INTENSIVE INSPECTION TO ENSURE RELIABILITY FOR THE MOST DEMANDING APPLICATIONS.

1. **To confirm sound, stable sidewalls**

   Grazing Light Inspection by trained technicians highlights sidewall irregularities that may indicate internal damage such as zippers.

2. **To verify suspected steel damage**

   Fluoroscopic X-Ray Inspection of steel belts and cables reveals the status of suspected conditions such as zippers, road hazard damage, run-flat abuse, and the status of prior repairs. The system is capable of providing a photographic copy of its findings.

3. **To make sure you get leak-free liners**

   Electronic Liner Inspection detects inner liner penetrations far too small and subtle for unaided eyes to see.

4. **To spot separations**

   Our Casing Integrity Analyzer® (CIA®) chamber and Michelin® Automated Casing Evaluation® (ACE®) software use laser beams to detect hidden casing separations — before they lead to downtime down the road.
NO OTHER RETREAD USES MICHELIN® NEW-TIRE TECHNOLOGY DESIGNS, MATERIALS, PROCESSES AND STANDARDS TO DELIVER GENUINE MICHELIN PERFORMANCE.

To build on the best foundation


To give you bonds that endure

Our MRT Cushion To Casing™ System extrudes hot cushion gum onto the casing — filling up skives and buzzouts while laying down an ideal bonding layer.

To deliver genuine Michelin Performance

MRT Treads are built using Michelin® tread rubber compounding technology and road-proven Michelin new-tire tread patterns.

To lay the new tread with new-tire precision

Computer controlled tread builders for our Pre-Mold™ and Custom Mold™ processes.

To cure retreads to Michelin standards

Curing process that uses Michelin® technology and Michelin specifications for time, temperature, vacuum, and pressure.
Why trust your retreads to anyone else?
## Michelin Retread Technologies.
Improving your bottom line through innovation.

<table>
<thead>
<tr>
<th>MRT PROCESS</th>
<th>INDUSTRY STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Inspection with grazing light</td>
<td>Typically visual only without grazing light</td>
</tr>
<tr>
<td>Fluoroscopic X-Ray</td>
<td>Typically not required</td>
</tr>
<tr>
<td>Electronic liner inspection</td>
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</tr>
<tr>
<td>All casings inspected with CIA®</td>
<td>Not all casings inspected</td>
</tr>
<tr>
<td>• Laser Shearography</td>
<td>• Sound waves</td>
</tr>
<tr>
<td>Buffing</td>
<td>Buffing</td>
</tr>
<tr>
<td>• Full computer control</td>
<td>• Semi computer control or template</td>
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<tr>
<td>• Radial buff across crown</td>
<td>• Circumferential buff</td>
</tr>
<tr>
<td>Undertread electronically measured</td>
<td>Pilot skives required, but seldom, but seldom done</td>
</tr>
<tr>
<td>Repair stations</td>
<td>Repair stations</td>
</tr>
<tr>
<td>• Ergonomic, well-lit</td>
<td>• Varies widely</td>
</tr>
<tr>
<td>Tread Building</td>
<td>Pre-cured Tread Building</td>
</tr>
<tr>
<td>• Computer controlled, precise</td>
<td>• manually measured, stretched/compressed</td>
</tr>
<tr>
<td>• Cushion To Casing™</td>
<td>• Pre-calendared cushion</td>
</tr>
<tr>
<td>• Fills skives automatically</td>
<td>• Manually filled</td>
</tr>
<tr>
<td>New-tire rubber, new process</td>
<td>Softer rubber, process-driven</td>
</tr>
<tr>
<td>New tire tread designs</td>
<td>Patent excluded by tire manufacturers</td>
</tr>
<tr>
<td>Pre-Mold Curing</td>
<td>Pre-cured Curing</td>
</tr>
<tr>
<td>• Double enveloped</td>
<td>• Single enveloped, ring seals</td>
</tr>
<tr>
<td>• Under 2 hours</td>
<td>• Longer</td>
</tr>
<tr>
<td>• Temperature variance &lt;5%</td>
<td>• Temperature variance up to 30%</td>
</tr>
<tr>
<td>Final Inspection</td>
<td>Final Inspection</td>
</tr>
<tr>
<td>• CIA® and X-Ray available</td>
<td>• Normally not available</td>
</tr>
</tbody>
</table>

Michelin Retread Technologies is dedicated to improving your bottom line through innovation, offering a range of high-quality retread solutions designed to meet the needs of the modern vehicle market.
RETREADS HAVE JUST BECOME RADICALLY BETTER.

Whether or not you run retreads today, you need to consider two questions. Are retreads as good as they could be? Could Michelin® make them much better? No. And yes. And the proof is new Michelin Retreads. These are the first and only retreads built with Michelin precision, to Michelin standards, using Michelin new-tire tread rubber compounds and tread designs. In short, the world’s most advanced tire technology, from the world’s tire leader.

New Michelin Retreads perform more like Michelin tires than like other retreads. Which means you can use Michelin Retreads just like Michelin tires. With confidence and pride. To save money and downtime. Here is the inside story of why this is so.

Why trust your retreads to anyone else?
Like-new manufacturing. Like-new performance.

To revolutionize retread performance, Michelin® Retread Technologies, Inc.™ (MRTI) took a radically new approach to every step of the retreading process.

The end result is new Michelin Retreads — the first and only retreads built with:

- Michelin precision for:
  - Maximum reliability
  - Minimum downtime
- Michelin new-tire tread designs and tread rubber compounds for:
  - Outstanding driver acceptance
  - Exceptional wear-per-32nd
  - Michelin new-tire fuel efficiency with “No Compromise” traction and handling
  - Lower operating temperature and extended casing life
  - Lower cost-per-mile

The challenge comes down to re-engineering the retreading process to eliminate guesswork and provide consistency. MRTI has stepped up to this challenge.
MRTI Grazing Light Inspection

Verifies sound, stable sidewalls.

**Feature:** A unique lighting technique for inspecting sidewalls from shoulder to bead.

**Advantage:** Helps our trained technicians better detect subtle irregularities that may indicate internal damage such as zippers.

**Benefit:** Saves you money by identifying potential problems.
MRTI Grazing Light Inspection

• It may sound simple to give the eagle eye to each incoming casing. But it takes special expertise — and precise illumination — to perform this first, vital step properly.

• Typical retreading shops do not consistently enforce lighting standards for inspection. At MRTI Retreading Shops, exacting lighting standards for inspection help our trained technicians accurately assess each casing.

• When Grazing Light inspection raises concerns about sidewall, bead or shoulder conditions, we don’t guess; we verify with x-rays. This helps save you money by keeping damaged casings off your truck — and keeping sound and repairable casings out of the scrap pile!
Verifies suspected steel damage.

**Feature:** Advanced x-ray system for visually inspecting the steel belts and cables hidden within the casing.

**Advantage:** Reveals the status of suspected conditions such as zippers, road hazard damage, run-flat abuse, and prior repairs.

**Benefit:** Positively identifies problem casings so they can be repaired or scrapped before they cause you problems out on the road.
MRTI X-Ray Inspection

• We have designed our retreading technologies with a clear understanding of your needs. You need retreads that are affordable to buy and reliable to run.

• For this reason, we have carefully designed our retreading technologies to balance high production efficiency and high product reliability.

• The way we use our Fluoroscopic X-Ray system is a good example of this balancing act. All MRTI shops include the Fluoroscopic X-Ray system as standard equipment. However, we do not automatically x-ray every casing. Why? Because this would add unnecessary cost and turnaround time. Instead, we use the industry’s most thorough preliminary inspection process — our Grazing Light Inspection — to accurately determine which casings require further inspection by the Fluoroscopic X-Ray system.

• Having this system also enables us to verify the dimensions and steel cord preparation of section and nail hole repairs, both prior and current.

• The system is capable of providing a photographic copy of its findings.
MRTI Electronic Liner Inspection

Makes sure you get leak-free liners.

**Feature:** Electronic system for detecting inner liner penetrations.

**Advantage:** Pinpoints inner liner penetrations too small to spot by eye.

**Benefit:** Leak-free casings which better maintain optimal inflation pressure for longer life and lowered downtime.
MRTI Electronic Liner Inspection

• Can your eyes spot individual air and water molecules? Neither can ours! Which means that even inner liner defects too small to spot by eye can let air pressure out. That’s why we use a sensitive electronic inspection system to pinpoint liner penetrations.

• This system works by exposing the casing to powerful electrical currents as it slowly rotates. Where the casing has been penetrated, a bright arc pinpoints the otherwise-invisible injury, and the technician marks the spot for repair.

• By reliably finding and repairing inner liner penetrations, we help reduce premature casing separations. The benefits to you?
  - Increased reliability
  - Lowered downtime
  - Lower cost-per-mile

• All MRTI shops require this equipment and procedure. Other retread shops do not require electronic liner inspection.
Spots trapped air separations.

**Feature:** A highly-advanced system that detects casing separations and grades casings accordingly.

**Advantage:** Eliminates the guesswork, human error, and inconsistencies associated with less-sophisticated systems.

**Benefit:** Helps to lower your tire-related downtime while maximizing your yield of dependable retreads.
MRTI Casing Separation Detection

- In the MRTI Casing Integrity Analyzer® (CIA®) chamber, laser beams photograph the inner contour of the casing.

- Then, the casing is photographed under vacuum, which causes any trapped air separations present to swell slightly, changing the contour. Differences between the first and second images represent separations.

- Casings that contain separations may be scrap, or suitable for restricted service, or fully sound, depending on the size and location of the separations. Accurately making these distinctions helps us lower both your downtime and your cost-per-mile.

- The ACE™ (Automatic Casing Evaluation™) proprietary software aids the operator in identifying trapped air separations and does not require the operator to view the screen during operation. All images are stored and print-ready to provide to the customer.

- Other retreaders use less-sophisticated technology that may not detect as many separations and is highly dependent on operator interpretation.
Michelin® Retreads feature precise undertread depth for cooler running and higher reliability.

Feature: An automated, Computer-Controlled Radial Buffing System guided by a casing specification database and an Undertread Proximity Sensor.

Advantage: Consistently creates undertread of the optimal contour, depth, and buffed texture.

Benefit: Cooler-running retreads for longer tread and casing life.

Conventional retreads can have excess undertread depth, raising operating temperatures and lowering reliability.

Creates a truly trustworthy foundation.
MRTI Undertread Control and Buffing

Precise buffing is critical to retread performance because:

- Correct undertread contour promotes long, even treadwear.
- Ideal undertread thickness is key to cool running for lower downtime and longer casing life.
- Proper buffed texture strengthens the tread-to-casing bond.

Here’s how our automated, Computer-Controlled Radial Buffing System creates the optimal undertread, casing after casing...

1. The system’s comprehensive database “knows” the undertread contours designed into virtually all of today’s common casings.

2. Proximity sensor technology measures undertread depth in real time during buffing, which enables the buffer to precisely cut down to the ideal undertread depth with no need for pilot skives. Competitive, manual buffing systems rely on guesswork, templates, and require pilot skives.

3. Unlike most other buffers, our system cuts perpendicular to tire rotation, producing an ideal, crepe-like buffed texture every time and reducing the chance that air will be trapped between casing and tread.
Gives you bonds that will endure.

**Feature:** A system that extrudes hot cushion gum onto the casing to promote a strong tread-to-casing bond.

**Advantage:** Automatically fills skives and buzzouts while depositing an ideal bonding layer.

**Benefit:** Raises retread reliability by eliminating unfilled skives and buzzouts due to operator error.
MRTI Cushion Extrusion

• To give you bonds that will endure, our MRTI Cushion To Casing™ System extrudes hot cushion gum onto the casing. This flexible, flowing bonding rubber fills skives and buzzouts while providing an ideal adhesive layer.

• Most competitive retreads use a cold, non-pliable layer of cushion gum that makes it necessary to manually pre-fill skives and buzzouts. Missed spots can lead to separations in the finished retread.

• MRTI’s Cushion To Casing System reduces the chance for errors, and raises retread reliability.
Deliver genuine Michelin® performance.

*Feature:* Treads built with genuine Michelin® new-tire tread rubber compounds and tread patterns.

*Advantage:* Michelin’s industry-leading technology, materials, and designs.

*Benefit:* Retread performance that rivals the performance of corresponding new Michelin tires.
MRTI Pre-Mold™ and Custom Mold™ Treads

- Michelin® Treads are built using genuine Michelin new-tire tread rubber compounds and proprietary, road-proven Michelin new-tire tread patterns.

- These tread rubber compounds and tread designs draw upon over a century of research, innovation, and industry leadership in heavy truck tires, plus 60 years of worldwide experience in truck tire retreading.

- Michelin’s status as the world’s leading tire manufacturer both reflects and enables its extensive investment in advanced research and proprietary production facilities.

- These corporate strengths bring you down-to-earth benefits. For example, Michelin Retreads not only offer exceptional wear-per-32nd — they also feature an outright advantage in tread depth. It takes the unique properties of genuine Michelin tread rubber compounds to deliver compelling benefits like this.

- On quality casings of any brand, Michelin compounds and tread patterns produce outstanding retreads. On Michelin casings, they extend Michelin “No Compromise” performance throughout the full life-cycle of your tires.
Lays the new tread with new levels of precision.

**Feature:** Computer controlled tread builders for our Pre-Mold™ and Custom-Mold™ processes.

**Advantage:** Built-in precision reduces tread-building variables.

**Benefit:** Maximized tire durability and smoothness, with like-new appearance.
MRTI Pre-Mold™
and Custom Mold™ Tread Building

- In simplified terms, a key goal of tread building is to approach like-new dimensions, and then apply a new tread which mates with the casing just as the original tread did.

- The MRTI Pre-Mold™ Tread Builder automatically centers the tread on the casing, eliminating the variables associated with the joint seam found in conventional retreads.

- The MRTI Custom Mold™ Tread Builder precisely extrudes uncured Michelin® tread rubber compound, applying a precisely shaped and centered layer with the exact volume required to fill the mold. Special engineering enables our tread builder to handle Michelin new-tire tread compounds. Other mold-cure processes use softer, thinner-bodied tread compounds that are less demanding to extrude and apply, but do not match the performance of Michelin tread compounds where it matters most. On the road.

- Because Michelin retreads look and drive more like new tires than like ordinary retreads, they help you satisfy and retain discriminating drivers, and reassure your most demanding, time-sensitive customers. This is image enhancement that builds your bottom line.
MRTI Pre-Mold™ & Custom Mold™ Curing

Manufacturing

Gets retreads ready for a long, new life.

Feature: Curing process that uses Michelin® technology and Michelin specifications for time, temperature, vacuum, and pressure.

Advantage: Raises curing uniformity and enhances full integration of all repairs.

Benefit: Maximized retread durability, dependability, and longevity to help lower your cost-per-mile.
MRTI Pre-Mold™ Curing

- Unlike most other retreads, which are vacuum enveloped from the outside only, Michelin® Pre-Mold™ Retreads are double vacuum enveloped.

- Double enveloping means that all surfaces of the retread — inside and out — are subjected to uniform pressure and temperature. This promotes uniform curing and complete integration of any repairs — from the crown to the bead.

MRTI Custom Mold™ Curing

- The molds and presses used to cure Michelin® Custom Mold™ Retreads are technological first cousins of Michelin’s new-tire systems, incorporating proprietary, Michelin new-tire tread patterns and new-tire precision.

- Exceedingly tight control of curing time and temperature yields exceptionally consistent, high-quality retreads. The curing protocols used minimize heat stress on the casing for maximum casing life and reliability.

- The finished Michelin® Custom Mold™ Retread — especially when built around a Michelin casing — is in both performance and appearance the closest rival yet to a new Michelin tire.
Why trust your retreads to anyone else?