



**Rockwell
Automation**

Tire industry. **Optimized.**

Enabling to quickly scale operations,
reduce downtime, and optimize speed
and quality in tire production



ROCKWELL AUTOMATION

TIRE MES OVERVIEW

Manufacturing execution systems (MES)

are important in achieving ecological competitive advantage in today's fast-paced manufacturing industry. They enable intelligent data management, higher plant productivity, and greater flexibility throughout the production processes.

Rockwell Automation ensures that tire manufacturers achieve higher productivity and that stringent quality specifications are followed for the raw materials selection and process specifications are followed for the mixing operations, which is a challenging task.

Every step of the process – from receiving raw materials and mixing to green tire building, curing, final inspection, and shipping – is key to ensuring that the tires are produced at high quality with relevant compliance regulations per the country.



HOW AN MES SOLUTION DELIVERS VALUE

A modern manufacturing execution system (MES) functions much like a digital project manager. This system can improve production tenfold, managing complexities while prioritizing quality and efficiency. An MES can help you stay on track by allowing you to control, sequence, monitor, analyze, and document tire production faster and more effectively. This makes it possible to remain productive while decreasing errors, improving traceability, and maintaining standards.

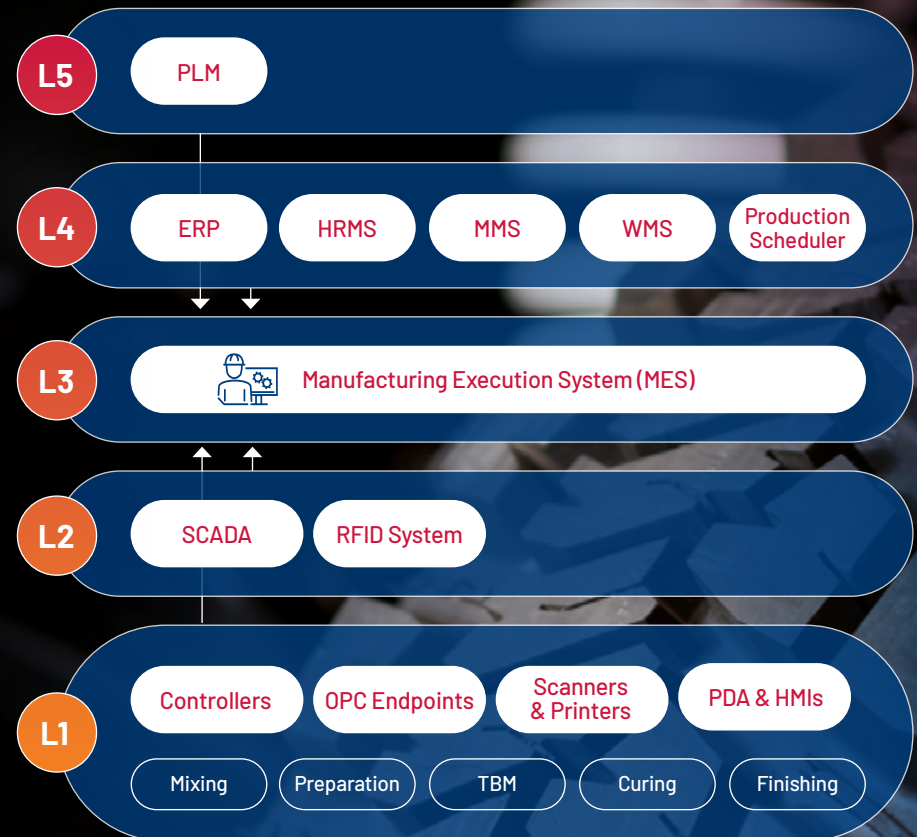
An MES can guide operators through each stage of production to help make sure workers are building tires as per design. It enables production managers to view operator availability and better match personnel resource requirements to production and equipment requirements.

There may be times when production is running smoothly toward one end of the line, but personnel may not be able to see a larger issue on another end.

The production manager can quickly see these imbalances via the MES and move operators to address the problem as needed.



MES Solutions Enable Efficient Operation



A BETTER WAY TO MANAGE COMPLEXITY

Rockwell Automation has been a leader in automation solutions for automotive production since the industry's inception. With Tire, we have trained our expertise in developing game-changing solutions to meet evolving needs. When it comes to tire production, our MES solution delivers extraordinary performance where other systems can fall short.

Not all MES solutions can address this range of applications, with typical solutions tailored to process or discrete control. As a result, tire manufacturers may need separate MES solutions for various process steps, adding more complexity and integration challenges.

Here Rockwell Automation delivers a distinct advantage. Our MES experience extends across various hybrid industries – from food and beverage and mining to tire. Therefore, we have designed our MES solutions without the artificial boundaries common in other systems.

Our tailored MES for Tire is built to manage complex, hybrid production. So you can take a simpler approach – and apply one integrated and information-enabled solution across your operations.

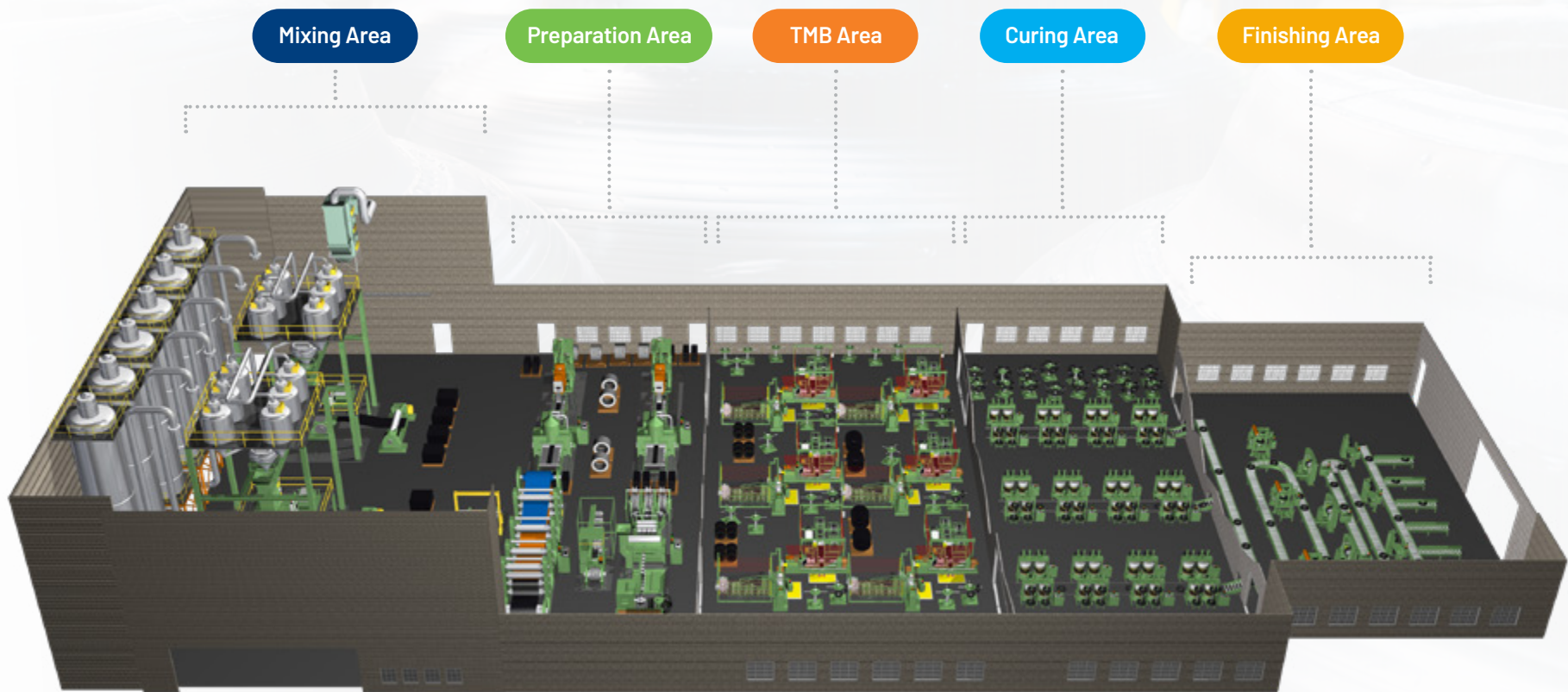
From food and beverage and mining to tire. We have designed our MES solutions **without the artificial boundaries common in other systems.**



OPTIMIZING PERFORMANCE: END-TO-END

To improve operations, the Rockwell Automation MES for tire production seamlessly manages and tracks your PCR, TBR or OTR -manufacturing process – from raw materials through the batch traceability & unique identification against serialization of every tire.

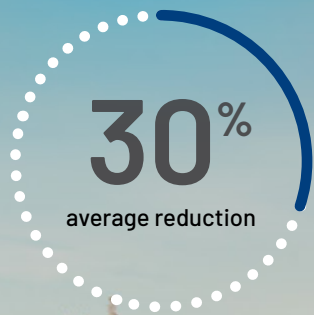
But that's not all. The integrated solution also expands to Raw Material supplier Quality & 3rd Party Supplier module to enable seamless traceability of tire components to the Tire Unique ID. And provides critical information supporting a sustainable Tire that extends to emerging Tire Birth Certificate requirements.



EXPECTATIONS & KPIs

When you choose our MES solution for tire, you can achieve consistent functionality, connected operations – and the agility you need to control and track diverse and evolving processes.

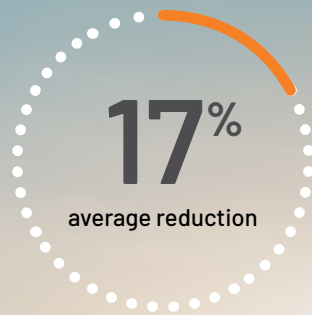
Shortening
production cycle



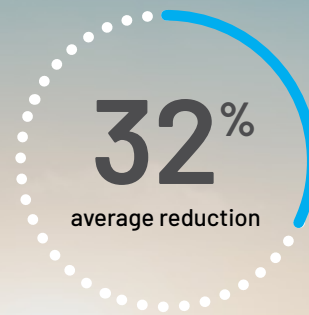
Shortening
input time



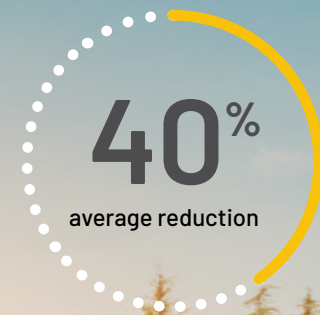
Reducing
WIP



Improving
quality of tire



Reducing
scrap



What can you expect?

Comprehensive product genealogy.

Plus, a new level of intelligence that helps manage quality, enables continuous improvement – and boosts productivity.

CONNECTED. AGILE. TRACKED.

When you choose our MES solution for battery, you can achieve consistent functionality, connected operations – and the agility you need to control and track diverse and evolving processes.

What can you expect? Comprehensive product genealogy. Plus a new level of intelligence that helps manage quality, enables continuous improvement – and boosts productivity.



Production Management

Integrates with the enterprise resource planning (ERP) system to schedule and execute production orders – and compares orders to raw material inventory on hand. Real-time production data is continuously fed back into the system, creating alerts for any disruptions to the schedule.



Quality Management

Handles raw material, inline and visual quality inspection processes. Includes test definitions, LIMS quality, sampling, process control rule definition, live data integration, non-conformance, anomaly capture and corrective actions.



Performance Management

Measures and analyzes key performance data continuously to determine key corrective actions required to improve overall equipment effectiveness (OEE) – and “first time right” (FTR) production.



Resource Management

Guides operators and tracks their current and completed tasks. Operator traceability provides important data for OEE comparisons between worker, shifts and plants. And delivers insights that improve worker coaching and training.

The MES also integrates with training systems as required to monitor and manage the worker certification process. The system only allows operators to complete tasks for which they are certified.



Material Management: Raw Materials to Finished Goods

Interfaces with the ERP, laboratory information management system (LIMS) and warehouse management system (WMS). Delivers full management and tracking for raw materials, including material receipt, quality sampling, lot creation, warehouse storage – and material retrieval and release in line with “First In, First Out” (FIFO) or First Expiry, First Out” (FEFO) procedures.

The system continues to manage aging and track materials through work-in-progress (WIP) to finished goods.



Recipe Management

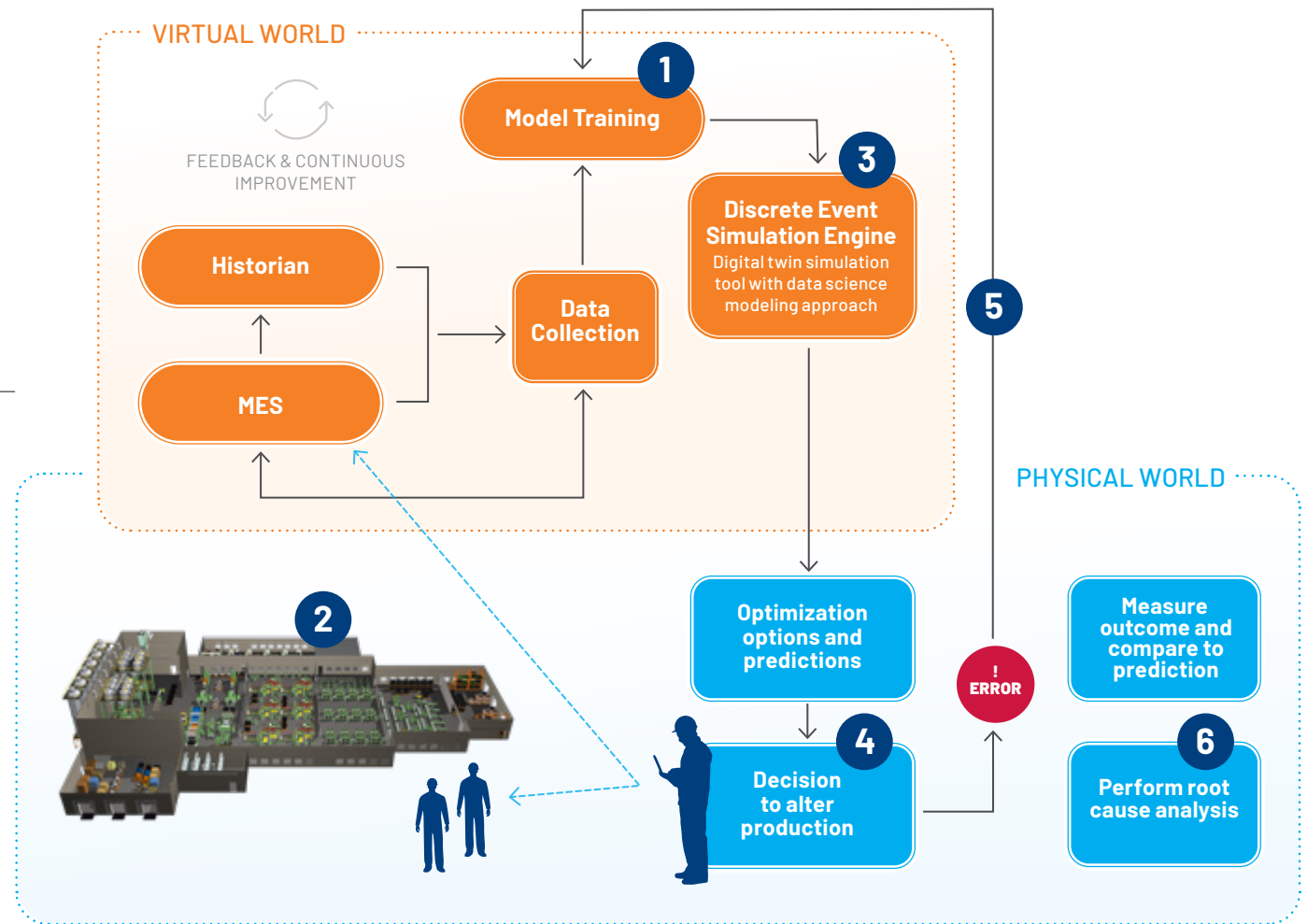
Manages recipe creation and download, golden copy generation, machine and parameter mapping and processing reports. The solution also delivers descriptive analysis on contextualized process parameters.

CONNECTING EXECUTION WITH REAL TIME ANALYTICS

To improve operations, the Rockwell Automation MES for tire production seamlessly manages and tracks your tire-manufacturing process, from raw materials to each tire's unique identification and serialization.

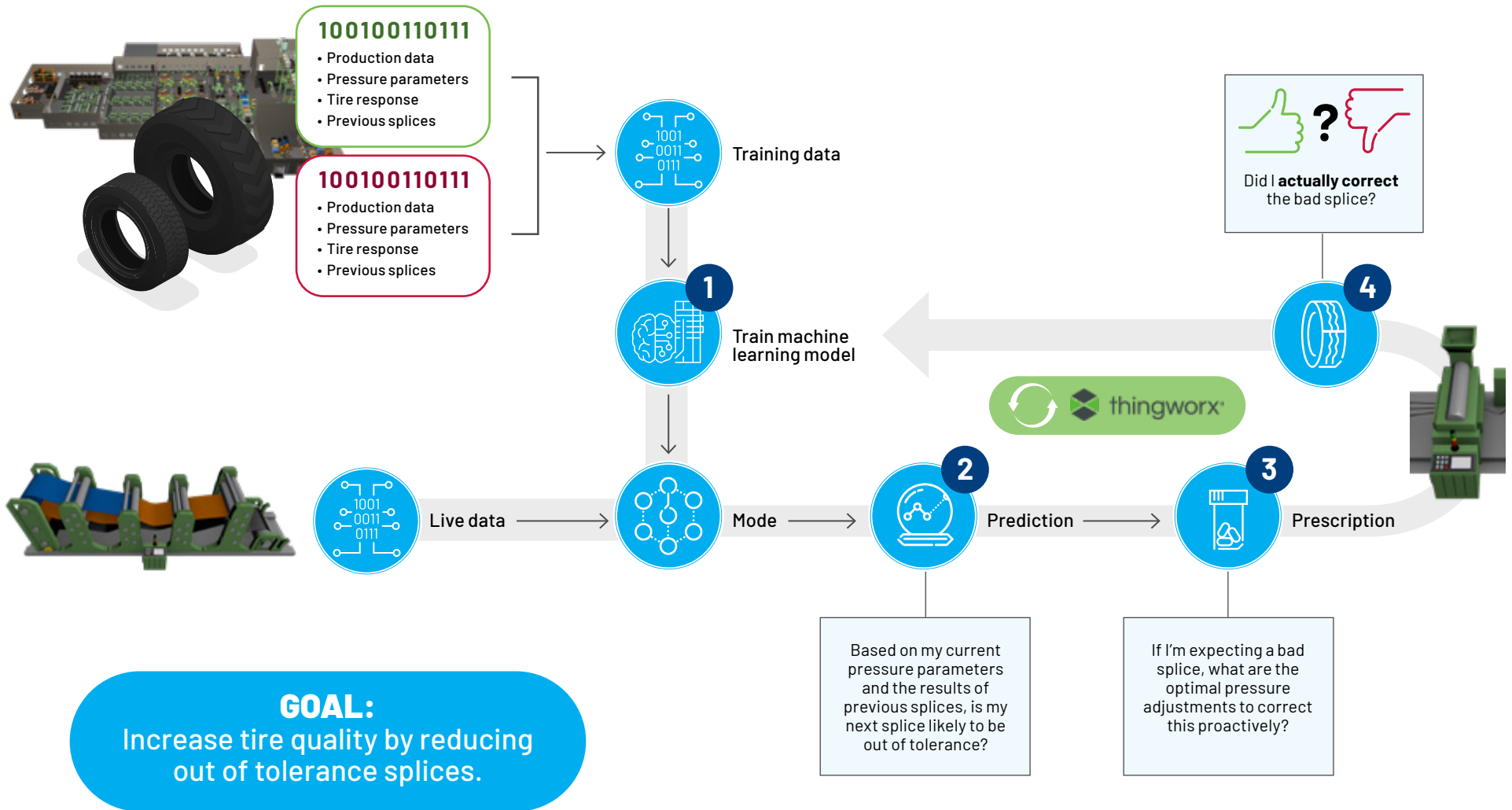
But that's not all. The integrated solution also expands to assembly and packaging to enable seamless traceability of tire components to the vehicle. And provides critical information supporting a sustainable tire chain that extends to recycling and emerging tire passport requirements.

- 1 **Simulate** outcome with new input data
- 2 **Test** changes to machine setpoints and/or planning parameters
- 3 **Predict** impact on target variable
- 4 **Prescribe** proactive actions to achieve desired result based on predictions
- 5 **Validate** results, comparing physical and digital assets
- 6 **Improve** the model



THINGWORX SOLUTION SUMMARY

ThingWorx IIoT platform provides the capability to connect, manage, monitor, and control diverse automation devices and software applications through one intuitive user interface. And you can expect consistent operations and visibility at every facility to drive better performance worldwide.



GOAL:
Increase tire quality by reducing out of tolerance splices.

SOLUTIONS YOUR WAY

Tire production is evolving rapidly to meet the needs of the automotive industry. And the learning curve is steep for startups focused on niche solutions – and legacy automakers entering unfamiliar industrial territory.

At Rockwell Automation, we have tailored our solution delivery to meet you wherever you are on your journey.

Some producers have yet to deploy the equipment, networks, and standards that enable a modern Manufacturing Execution System (MES) – and must start with fundamentals. Others have a robust digital infrastructure in place.

To address diversity and deliver the right fit, our solution methodology:

- Focuses first on consulting to determine your needs and expectations.
- Prioritizes steps you can take now to ready your operation for an MES solution.
- Builds a functional requirement specification (FRS) document. The FRS defines what the system must achieve and serves as a continuous reference point to keep your solution on track.
- Includes a functional design specification (FDS) document. The FDS defines how the system will achieve the functionality required – for example, how the MES integrates with the controllers or how the interface is designed. The FDS minimizes any ambiguity regarding the end result.
- Delivers an execution and deployment plan that considers your budget – and outlines ways you can start small and expand as you grow.

Consistent global delivery

Many MES suppliers are challenged to support their solutions globally – and instead rely on regional system integrators to deliver their solutions. But because not every integrator applies solutions in the same way, deploying a globally consistent MES requires significant coordination and management.

At Rockwell Automation, we take a different approach. Unlike other suppliers, our MES solutions are planned, executed and supported by our in-house global team.

The result? You can achieve a “common core” solution globally, yet tailored to fit regional needs. And you can expect consistent operations and visibility at every facility to drive better performance worldwide.

[Learn more about our solutions for Tire production >](#)

Rockwell Automation was recognized by Gartner® as a leader in their Magic Quadrant™ Report for MES.

Connect with us.    

rockwellautomation.com

expanding **human possibility**[®]

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