



Rockwell
Automation

Making the move toward agile, **digital** **tire production**

Three key technologies to gain traction in the competitive tire industry

Under pressure

The tire industry is in a period of significant change. To stay competitive, you need smart, flexible, and low-cost tire operations that can help you contend with challenges like:

- **Scaling operations** in response to consumer demand in a challenging economy
- **Maintaining operations** with a potentially remote and changing workforce
- **Cost pressures** resulting from more global competition and a tightening economy
- **More SKUs** to meet the needs of automakers offering more tire options
- **New tire mixes** that promote longevity but create production challenges

Whether you're reallocating resources or shifting your tire operations to address these challenges, digital technologies should be central to your strategy. They're no longer a "nice-to-have" in a manufacturing environment, but a "must-have" in order to respond to changing consumer demands, a shifting workforce and fluctuating economy. They can bring insights that enable personnel to make better design, operation and maintenance decisions. They can transform processes to reduce downtime, optimize speed and improve quality in tire production. And, they can enable you to quickly scale your operations, so you can quickly respond to customer needs and market changes.

When expenses are being managed tightly and the options for digital technologies seem limitless, there are three digital solutions that can have the biggest impact on your tire business.

1 A modern manufacturing execution system (MES)

2 Advanced analytics software

3 Digital twin software

Digital twin software not only recreates a physical object but also brings it to life in a virtual environment.



Overall global tire demand is expected to grow 4% per year in unit terms in 2019-24."

- Tire Manufacturing Trends: New Technologies Improve Efficiencies Amid Industry Evolution, Tire Review, Aug. 16, 2019



MES

Speed, flexibility and scalability are more important than ever as you face changes in your products and workforce, and in your supply chain. MES software can help you manage more complexity in your production process while keeping efficiency and quality top priorities.

Improve how people work

Whether you're replacing seasoned operators or re-staffing a plant, you need workers to deliver high-quality tires even if they have minimal production experience. An MES with enforceable work instructions can guide operators through each production process. This helps make sure workers build tires to spec and reduces the potential for scrap.

An MES also allows production managers to view worker availability against production needs, so they can move operators where they're needed.

Manage complexity

You need to stay agile. Supply chain availability and consumer demand are changing. Being able to ramp up or down and scale tire variations and mixes is going to become a new imperative to remain competitive. As demand for consumers decreases and the demands for trucking increase with a boom in shipping and home deliveries, you need to be ready

to meet the changes. An MES can help you control, sequence, monitor and document tire production faster and more effectively. This can help you stay productive while reducing errors and maintaining high-quality standards in your tires.

For example, an MES can automate data collection in your plants. This can reduce cumbersome paperwork and help you better track everything from material consumption to potentially bad tires.

Move faster

A digitalized business responds to market demands faster, and an MES is a crucial reason. It can connect your operations across plants and global business systems, which allows production personnel to use real-time insights like work-in-process (WIP) updates to make faster, smarter decisions.

Improvements in modern tire materials, including the introduction of silica, have revolutionized the tire industry and drastically reduced older and less-efficient compound materials and manufacturing methods."

*- How's Your Rolling Efficiency Health?
The Earth is Asking,
U.S. Tire Manufacturers Association*





Analytics software

Want to know how your tire plants are performing against demand as it changes, or where they can be running better? The answers lie waiting in your production systems. Scalable analytics software can take the raw data from these systems and turn it into useful information for operators, technicians, and production managers.

Predict maintenance needs

Predictive analytics software can help you improve the uptime of critical assets, like extruders, mixers, and tire-building machines.

The software collects machine data to learn the patterns that precede failures. If it sees those patterns occurring, the software can alert maintenance teams to address the issue proactively. This can help you minimize downtime and reduce the time and money spent on unnecessary repairs.

Optimize tire production

Analytics software can combine production data, tire records, and other information to help you pinpoint the causes of problems like quality issues.

For example, the software can help you uncover operator variabilities in the tire-building process. That data can help you make sure that the tires are consistently made according to their recipes. The software can also identify usage patterns in places like your steam system to help improve its performance and reduce your energy costs.

BUILT TO SCALE



Traditional cloud-based analytics can't provide contextualized information quickly enough to impact your processes immediately. A scalable analytics platform, however, allows you to deliver information in ways that are best suited for different levels of your company.

For example, it can embed analytics at the edge to help plant operators make time-critical decisions. And it can orchestrate data from multiple sources to assist production managers in discovering trends and business insights.

Digital twin software

Using a digital twin to improve how workers do their jobs can help you evolve and keep up with the fast-changing tire industry.

A digital twin is a virtual replica of a physical asset that can mimic the asset's performance and aspects like wear and tear over time. With a digital twin, you can design, test, and prove machines and plants digitally – long before you buy parts or scale up your workforce.

You can create a digital twin of a tire-building machine and apply physics to it to verify that it performs as expected. And you can virtually commission the machine before you deploy it on-site to help avoid the costly, last-minute integration issues that delay startups.

You can also digitally recreate an entire facility, like a tire warehouse, and simulate workflows in it that can help you improve the flow of materials to the lines and reduce WIP. The result? A warehouse that is optimally configured to fulfill orders as fast as possible.

Improve uptime

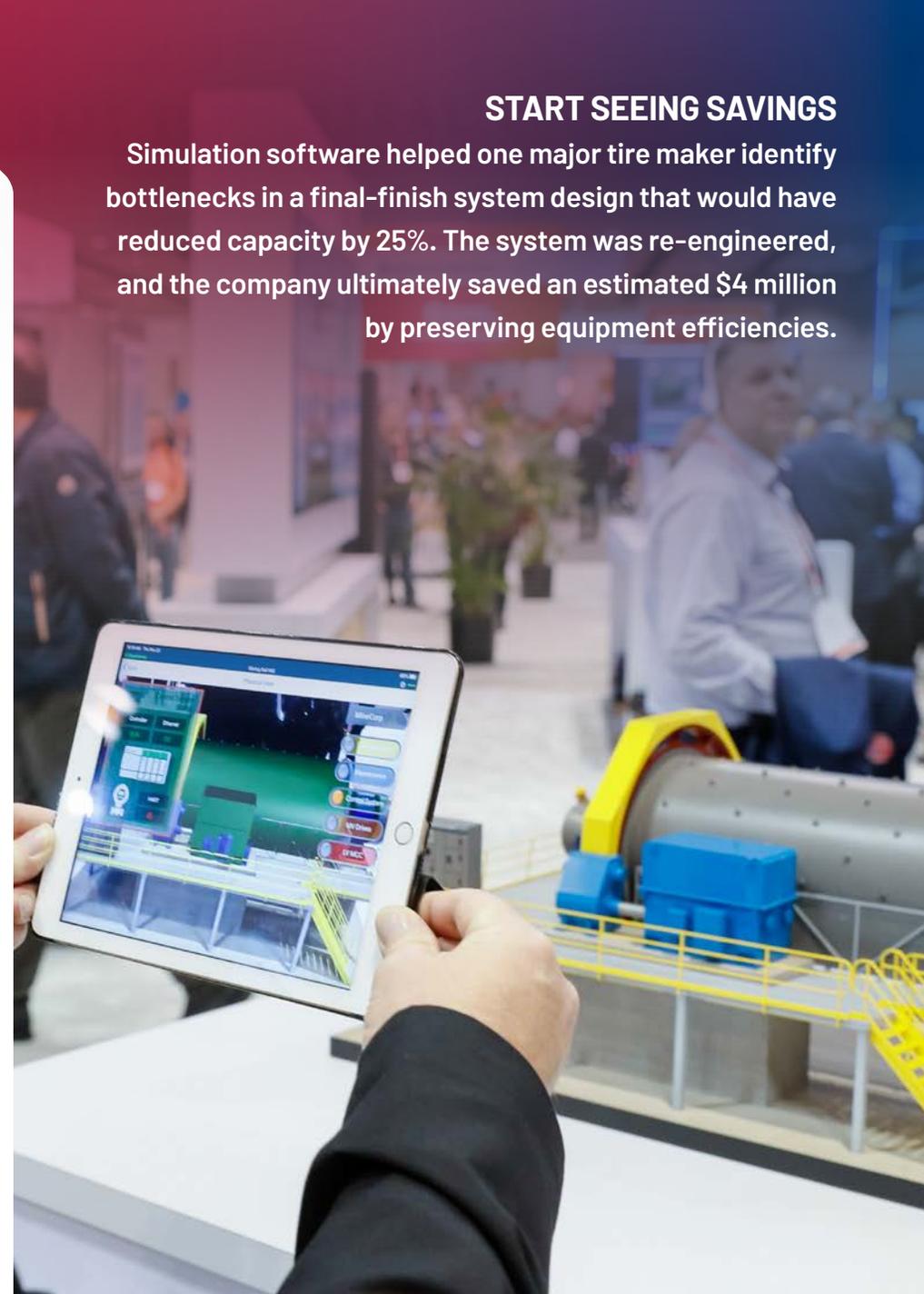
A digital twin's value doesn't stop at the commissioning phase. It can also help you optimize production.

You can use a digital twin, for example, to provide training in a secure, virtual environment. Operators can learn how to run production in an ideal state and how to respond to scenarios that may be difficult to recreate with physical equipment.

You can also use a digital twin to provide guided maintenance and reduce the need for a workforce working in close physical proximity to one another. A technician could look at a digital copy of a machine in an augmented-reality (AR) environment to quickly diagnose it. Then, they could receive digital instructions to quickly and accurately repair it.

START SEEING SAVINGS

Simulation software helped one major tire maker identify bottlenecks in a final-finish system design that would have reduced capacity by 25%. The system was re-engineered, and the company ultimately saved an estimated \$4 million by preserving equipment efficiencies.



Go digital with less difficulty

Some tire makers choose to develop their digital applications internally. But this do-it-yourself approach comes with drawbacks.

Along with the time they take to develop, homegrown applications can end up with limited in-house expertise to support them. They can also be challenging to integrate with the many different technologies in your operations. And if you have different teams or regions developing their own solutions, you can end up with inconsistent deployments across plants.

Digital solutions that have already been proven in tire production can save you time and effort. They're ready to use and, in some cases, can start providing value in mere minutes. They can integrate with your existing tools and processes – rather than replace them – and can be supported by a global team. And can be deployed in a consistent, standardized manner across one or many plants.



DON'T WAIT ON IMPORTANT INSIGHTS

Edge-level analytics software that's preloaded on an appliance can provide value in fewer than five minutes. All you need to do is plug in the appliance and add it to your network. Then, you can immediately start getting device health and diagnostics.

Get started

To learn more about how digital technology can help you transform what's possible in tire production, contact a Rockwell Automation sales representative, or visit our **automotive and tire webpage**.

Connect with us.    

[rockwellautomation.com](https://www.rockwellautomation.com)

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AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

ASIA PACIFIC: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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