



# Treading safely

How automation enhances workplace  
safety in tire manufacturing.

**CIMCORP**  
FUTURE OF AUTOMATION

# Boost productivity with us

**CIMCORP**

# Better, faster, and safer

Today's tire manufacturers are seeking smarter, faster ways to operate for a competitive edge. Amid the drive to optimize operations, it's important not to overlook the industry's most valuable resource: its people.

Tire manufacturing is one of the most demanding industrial sectors. In many traditional factories, employees manually handle materials throughout the production and distribution process. From interacting with heavy equipment and hazardous materials to performing physically strenuous labor, this environment presents a range of hazards

for workers. As market demands rise, employees face even greater pressure. They must work harder and faster to meet production goals, which heightens the risk of workplace injuries and safety incidents.

But now, productivity and safety don't have to be at odds—thanks to automation.

**In this eBook, we'll explore the inherent risks of traditional tire manufacturing and how modern tire handling automation can help factories run better, faster, and safer.**

# The hazards of traditional tire manufacturing

According to the International Labour Organization, 395 million workers sustain non-fatal work injuries each year, and 2.93 million die due to work-related factors. Studies show that the number of injury cases in the tire manufacturing sector is higher than many other industries. The U.S. Bureau of Labor Statistics reported the incidence rate for all work-related injuries and illnesses in private industry at 2.4 cases per 100 workers—compared to 3.3 cases in tire manufacturing.

# In conventional tire factories, workers face multiple safety risks

## 1 Ergonomic injuries

Tire factory workers perform a multitude of repetitive, physically intense tasks, like lifting, bending, reaching, and pushing and pulling heavy loads across massive facilities. These activities may seem routine, but they put employees in constant danger of musculoskeletal injury.

While some injuries are temporary, employees may develop chronic conditions over time that lead to a lifetime of discomfort and pain.

## 2 Toxic materials

Tire manufacturing involves handling rubber, adhesives, solvents, and numerous other chemicals. During various manufacturing processes, hazardous fumes and fine dust particles are released into the air. Workers regularly inhale these chemical fumes and get covered in dust, which can lead to respiratory problems, skin irritation, and chemical burns. Plus, long-term exposure to carcinogens at work puts employees at an increased risk of developing cancer.

## 3 Machinery hazards

In traditional tire factories, workers come in direct contact with heavy machinery, such as tire building machines and curing presses, as well as material handling equipment with fast-moving parts, like conveyor belts and forklifts. While they play key roles in manufacturing and distribution processes, these machines are capable of causing severe injuries. Risks include crushed limbs, amputations, burns from hot equipment, lacerations, entanglement, and even death.

## 4 Fatigue

Fatigue is a major safety risk, with workers performing manual labor amidst constant noise, high temperatures, and air pollutants.

Fatigued workers are much more likely to make mistakes, overlook hazards, and cause accidents, particularly when they're rushing to meet tight production quotas.

! These labor challenges take a toll on productivity and increase operational disruptions.

! The physically demanding and often dangerous nature of the job contributes to high turnover and persistent labor shortages across the industry.

! For tire manufacturers, failing to address workplace safety doesn't just impact individual workers; it affects the resilience and efficiency of the entire business.

**Together, these hazards create a workplace environment where employees put their health and safety on the line every single day.**

# Transforming safety through automation

Today, modern tire handling automation can help manufacturers create safer, more productive workplace environments.

End-to-end automated solutions use a range of robotic technologies—including gantry robots, monorail transfers, and mobile robots—to handle the storage and movement of materials through the entire tire factory.

Robots perform the heavy lifting, while intelligent software serves as the brain that controls and optimizes each stage of tire production and distribution.

## Raw materials and component manufacturing

Raw materials and compounds are stored in an automated

high-bay warehousing area. Robotic systems transport the materials through mixing and compounding to component manufacturing.

## Green tire building and curing

Robots then automate the transfer process, curing buffer, and press delivery. Factories with high production volumes can also automate the storage and retrieval of green tires.

## Finished tire testing and palletizing

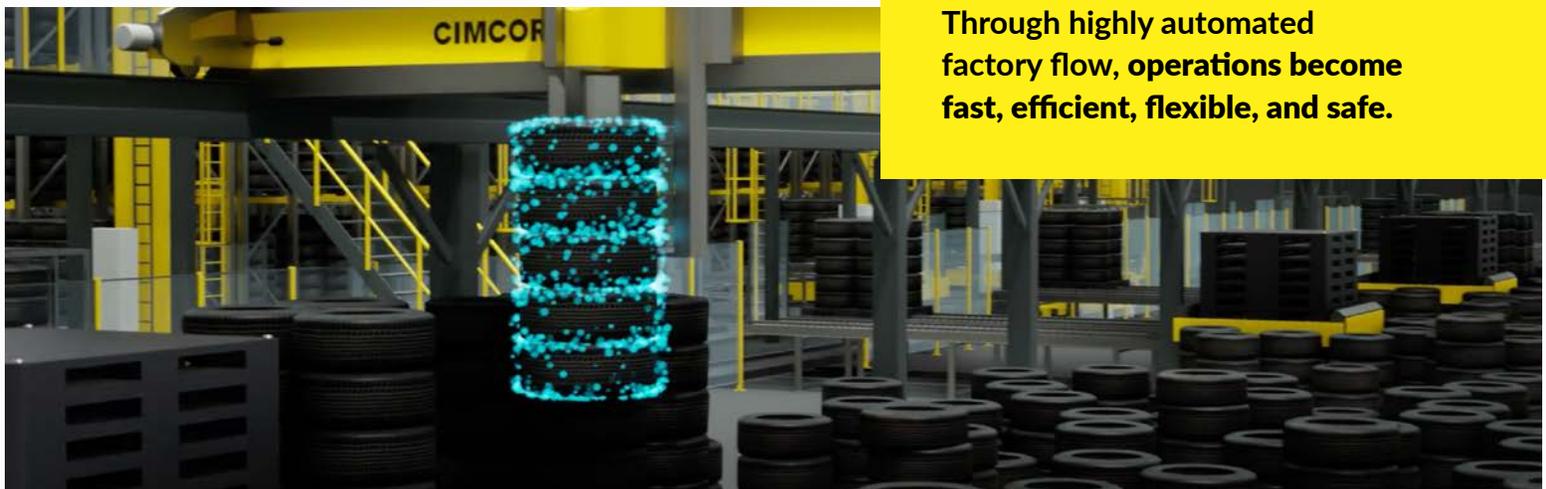
The system receives finished tires, with continuous curing

press unloading. Finished tires flow through precise quality testing, and they're either sent on to the next process or rejected based on testing results.

## Warehousing, picking, and shipping

In the warehousing area, automated systems handle receiving, sorting, and storage functions. Robots rapidly pick units for customer orders with high speed and 100-percent accuracy.

Through this highly automated factory flow, operations become fast, efficient, flexible, and safe.



Through highly automated factory flow, operations become fast, efficient, flexible, and safe.



# From fatigue to focus with smarter systems

## **Eliminating repetitive strain and fatigue**

Automation significantly reduces the need for manual handling of tires. Factory workers no longer need to perform manual lifting, carrying, and positioning tasks.

This results in significantly less physical stress and fewer repetitive strain injuries. Workers are less fatigued and more alert, creating an overall safer environment.

## **Minimizing exposure to hazardous environments**

In an automated factory, employees can stay at a safe distance from potentially hazardous environments. With automation handling the

transfer of tires through curing and building processes, workers no longer need to be in close contact with high-temperature machinery or heavy equipment.

By minimizing direct human contact with hot surfaces, pressurized systems, moving parts, and air pollutants, manufacturers significantly reduce the risk of injury and long-term health issues.

Moreover, automated systems can monitor equipment in real time, providing immediate alerts if safety hazards or mechanical issues arise. This proactive approach reduces the likelihood of accidents and ensures quick intervention when problems occur.

## **Standardizing safe practices**

Automated systems provide consistent tire handling, without the variability associated with human fatigue or error.

Safety protocols are followed consistently, which significantly reduces the risk of accidents caused by exhaustion, lapses in attention, incorrect handling, or procedural shortcuts.

**Eliminate repetitive strain injuries, and reduce the risk of long-term health issues and human error.**



# Creating a new era of tech-focused jobs

Automation is not meant to replace humans. Rather, it supports workers by providing a safer and less stressful working environment.

## Instead of manual labor, employees can take on more engaging responsibilities

- Operating and overseeing automated systems
- Performing system maintenance
- Analyzing performance data and identifying optimization opportunities

By offering such tech-enabled roles, tire manufacturers can significantly improve employee retention and even attract a whole new generation of employees that want to work with technology.

To help employees work successfully alongside automation, tire makers should look for a solutions provider that offers tailored training packages.

As the automation expert, the solutions provider can upskill existing workers and recruits with the necessary skills to excel in everything from system operations and maintenance to ongoing optimization.

**Keep your employees committed and content – and attract a whole new generation of motivated workers.**



# Fit for new and legacy plants alike

Thanks to innovative modular solutions, the benefits of automation are attainable for both greenfield and brownfield plants.

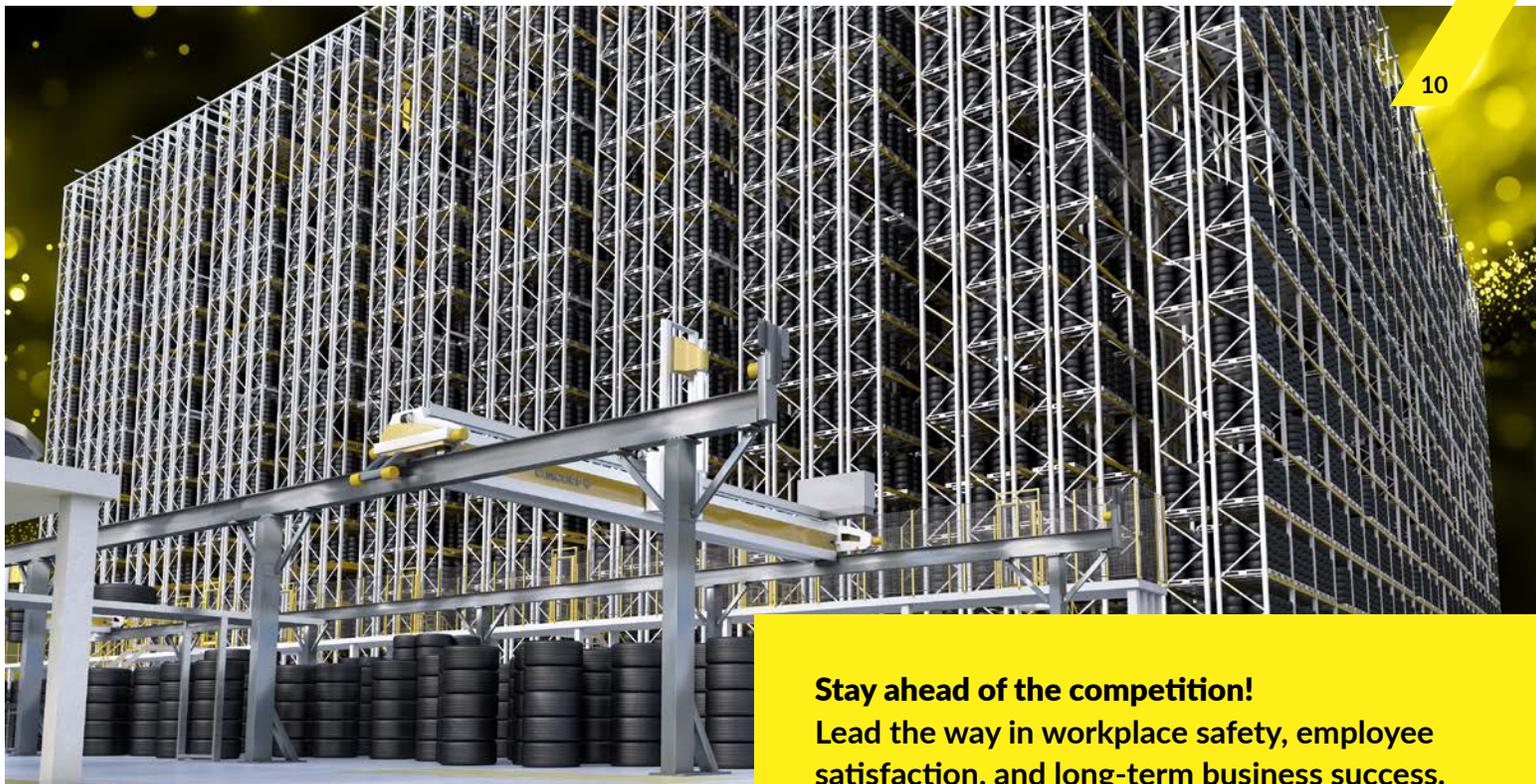
Modular solutions are made up of independent, standardized blocks of automation that can be configured to fit any facility. When building a new plant from the ground up, tire manufacturers can design their factory with an ideal layout for end-to-end automation. When the factory is up and running, every process will

be optimized, from raw materials handling to the shipping dock.

For a retrofit project, tire makers can gradually introduce modular automation into their existing facility—without disrupting ongoing operations. Manufacturers can first automate areas that will generate the biggest return on

investment, then expand over time.

With modular automation, employees can enjoy a safe, ergonomically friendly workplace—whether they work in a brand-new, state-of-the-art factory or a legacy plant that's been running for years.



**Stay ahead of the competition!**  
Lead the way in workplace safety, employee satisfaction, and long-term business success.

# Safer plants, stronger performance

While improved safety is a compelling reason to automate, the benefits of automation extend across operations.

Automated systems work 24/7 with minimal human intervention, allowing tire plants to maximize productivity and minimize errors.

As the industry evolves, automation is proving to be a critical component of the modern tire factory. Tire manufacturers that invest in automation will stay ahead of the competition, leading the way in workplace safety,

employee satisfaction, and long-term business success.

**With this level of speed and precision, tire makers can**

- Consistently meet high production quotas
- Reduce scrap and waste
- Ensure that every tire meets strict quality standards
- Enhance customer satisfaction

**Ready to boost safety, productivity, and quality in your tire plant?**

As a reliable automation partner that puts safety first, Cimcorp can help you protect your team while achieving your production goals.

**Get in touch today!**  
**CIMCORP.COM**

**Dream Factory**

Boost your productivity.

**EASY  
EFFICIENT  
RELIABLE**

**CIMCORP** FUTURE OF AUTOMATION

AUTOMATION INTEGRATOR FOR TIRE | [CIMCORP.COM](http://CIMCORP.COM)