

Tire Manufacturer Drives Safety Initiative in Its Plants

A Rockwell Automation safety solution helps a Goodyear Tire & Rubber Company plant reduce downtime by 34 percent.

In 1898, the Goodyear Tire & Rubber Company, founded in the United States in Akron, Ohio, got its start in the business by selling tires for bicycles and a new product called the automobile. Today, the global manufacturer – with operations in Asia Pacific, Europe, Latin America, Middle East & Africa and North America – reports sales of nearly US\$20 billion.

The tire manufacturing process includes many steps. Tire manufacturers build tires from rubber “fabric” transported throughout the factory on huge spools. During production, the rubber is wound onto enormous spools known as “wind-ups” and then “let off” those spools for the next phase in the process. In the United States, the Occupational Health and Safety Administration reports three to five serious injuries each month in this industry, and the Rubber Manufacturing Association has deemed wind-ups and let-offs a target area for safety improvement.

That’s because operators must continuously monitor these applications, initiating the load and unload processes manually in cells that are adjacent to skivers with automatic knives cutting through steel-reinforced belts and reassembling the steel into cross-bias sheets. Operators must also reach across rotating frames on build drums to precisely align tread components to make green tires.

For a time, the Gadsden, Alabama, Goodyear plant in the United States experienced safety issues firsthand in its wind-up and let-off processes. During a 12-month period, two injuries occurred when employees were caught in the let-off shear.

Goodyear corporate management issued a directive to improve the safety rating of its global facilities, with the initial

focus on machines with wind-ups and let-offs. Management ordered a mandatory safety release (MSR) to achieve a Level 1 safety rating on these machines in its worldwide plants.

To help evaluate its safety needs, the Goodyear Gadsden plant turned to Rockwell Automation®, which recommended a modular, kit-based solution including presence-sensing equipment and light-activated barriers. These devices prevent the wind-up and let-off machines from running if operators put their hands in them. The kit also included new e-stop equipment, replacing the former safety cables and belly bars, as well as new safety interlocks and fencing.

The solution was designed to retrofit onto existing tire machines to improve machine safety without ripping out or replacing existing control systems. Because the kits are modular, Goodyear was able to implement them in 67 wind-up and let-off applications in its Gadsden plant in 20 weeks.

Scott Howe, Rockwell Automation market development director, says, “The value of our solution is in its simplicity. It

detects operator presence and can adjust modes of operation accordingly so that productivity is not sacrificed for safety.”

Charles Skaggs, Goodyear’s health and safety manager, reported that the Gadsden facility improved its safety performance and record by 61 percent in the approximate 12 months that the solution has been in place. The safety project also helped reduce downtime by 34 percent.

In February 2009, Rockwell Automation introduced the Allen-Bradley® Wind-up and Let-off preconfigured safety control solution for tire, metal and paper manufacturing applications. The core technology is based on the Allen-Bradley GuardLogix® safety controller or the Allen-Bradley SmartGuard™ 600 compact programmable safety controller.

The solution comes with standardised software that supports plug-in device connections, including e-stop and trip devices, presence-sensing devices, gate interlocks, two-hand controls and drives with integrated safety functionality. It provides a safety architecture based on plug-in modules that are fully assembled, tested and ready to run. With a minimal overall footprint, field wiring is reduced for easier deployment.

Its flexible design helps machine builders and manufacturers deploy a solution on an existing line with minimal cost and engineering time. A trained staff of global consulting engineers from Rockwell Automation can help design and configure the system as well as assist manufacturers and machine builders to conduct audits to verify and document compliance for a variety of safety standards. AT

