

CASE STUDY

PARALIGN® roll alignment system drives savings for global tire manufacturer



Misalignment of rolls on a tire line eventually leads to costly problems such as poor tracking, stretching, wrinkling, uneven coating, and ultimately, product defects.

Maintaining the parallelism of rolls is vital to overall production performance of the machinery. Precisely aligned rolls improve product quality and increase machine availability resulting in increased product volume. Keeping rolls parallel is particularly critical when machines run at high speeds or close to each other.

Causes of misalignment

- **Foundation shifting**
- **Regular wear and tear**
- **Roll change-outs**
- **Major overhauls**

For more than a century, Yokohama Tire Manufacturing Mississippi, LLC, a Tokyo-based Yokohama Rubber Co subsidiary, has driven global advancements in tire technology, design, and development. The company recognizes the

value of keeping its machinery rolls aligned and therefore incorporates Prüftechnik ParAlign services into its maintenance strategy. ParAlign roll alignment is a unique device that uses inertial technology to measure the parallelism of rolls.

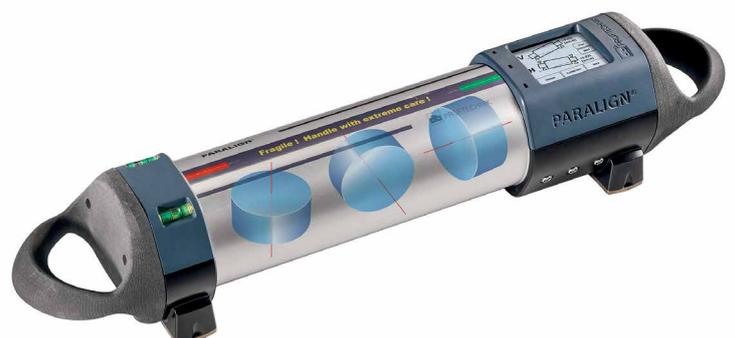
A service team from the Prüftechnik division of Fluke Reliability visits the plant regularly to measure each roll in the calendaring process to ensure they are within tolerance.

“I chose to utilize the PARALIGN service because I trust it,” said Clayton Everet, engineering manager for Yokohama Tire Manufacturing Mississippi. My past experiences with the technology showed me that the service would provide me with accurate data in a quick and simple fashion.”

During a recent service visit, the Fluke Reliability team checked 104 rolls in less than 10 hours using the ParAlign roll alignment system. Within that same timeframe, in-house mechanics adjusted several rolls and remeasured with ParAlign. Adjustments were made with the help of precision shims.

ParAlign gyroscopic technology

ParAlign technology adapts to all industries where sheets are produced with critical tolerances. Operating as an inertial measuring system, like those used with spaceships and satellites, it enlists three ring-laser gyroscopes positioned in the x, y, and z axes to measure the angular velocity in each direction.



No line-of-sight is needed. The gyroscopes measure the roll, pitch, and yaw of the ParAlign as the technician sweeps it across the circumference of each roll.

- Requires twenty degrees of sweep or more to measure the center axis of the roll
- Points are collected along the arc, and corresponding software equates an angle through geometrical equations
- Establishes the horizontal and vertical offsets using the length from bearing to bearing of each roll

A visual graphic report enables mechanics to instantly see and understand what adjustments are needed to make the proper corrections using precision shims and dial indicators. Because it only takes around 30 seconds to measure a roll, an entire machine can be regulated in less than a single day.

Summary

Aligning the rolls in calendering lines is vital to maintaining tire quality and extending mechanical component life. Routine inspections to identify possible issues ensure machines continue to operate and produce superior products. By regularly inspecting the parallelism of rolls, ParAlign customers increased throughput, uptime, and equipment reliability.

Yokohama Tire Manufacturing Mississippi routinely schedules ParAlign visits to optimize machine performance and ensure finished products always meet customer expectations.



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