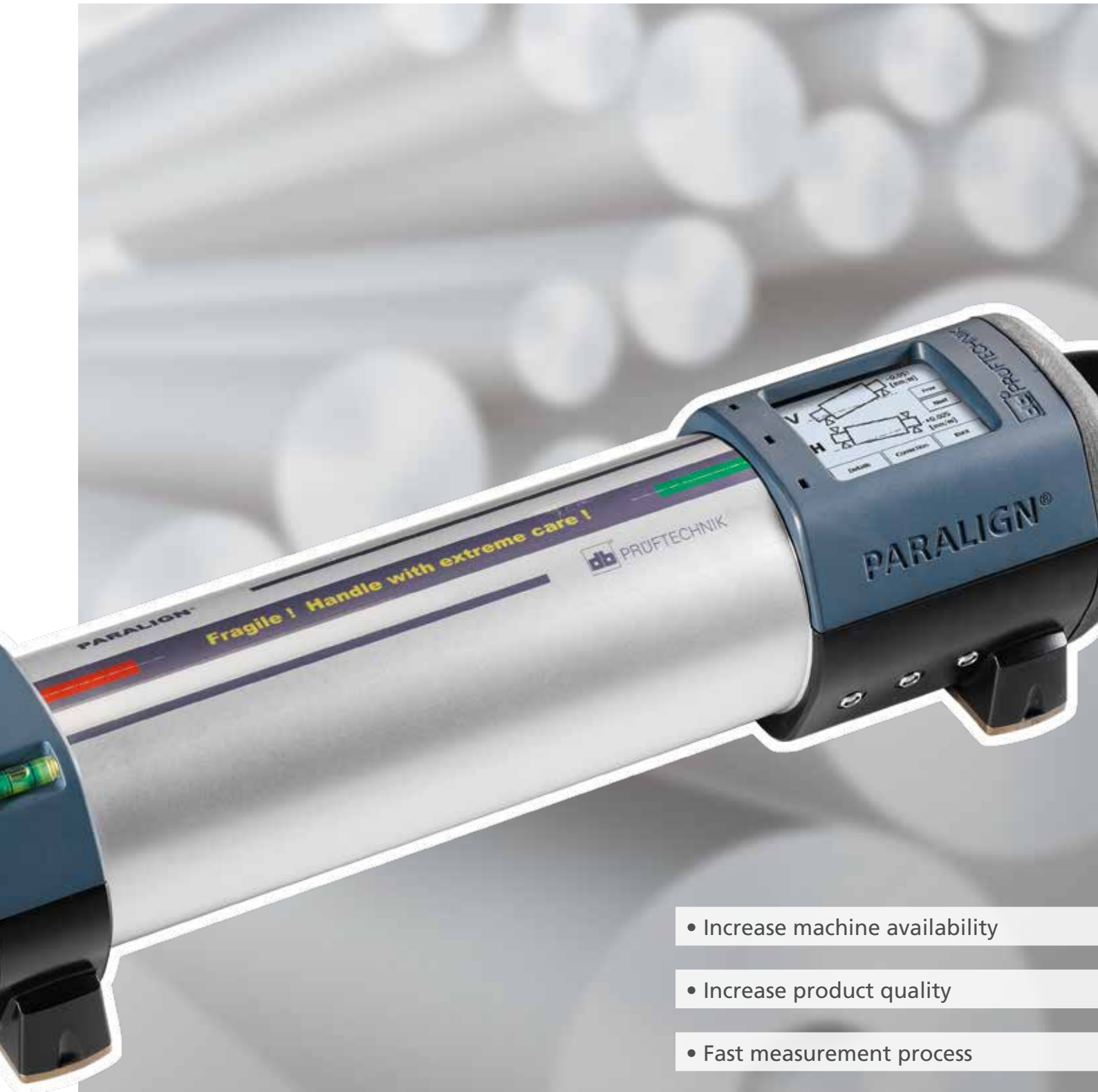


## PARALIGN®

Innovative roll alignment for manufacturers



- Increase machine availability
- Increase product quality
- Fast measurement process

# Roll alignment with PARALIGN® by the innovators of inertial alignment

## About PARALIGN®

PARALIGN® is a unique device using inertial technology designed to measure the parallelism of rolls in production installations in the paper, print, converting and steel industries.

## What is inertial technology?

Inside the PARALIGN® measurement system are three highly precise ring-laser gyroscopes. Such gyroscopes keep their rotation axis unchanged due to mass inertia, even if their base is shifted. This way, the angle of inclination along the rotation axis can be determined.

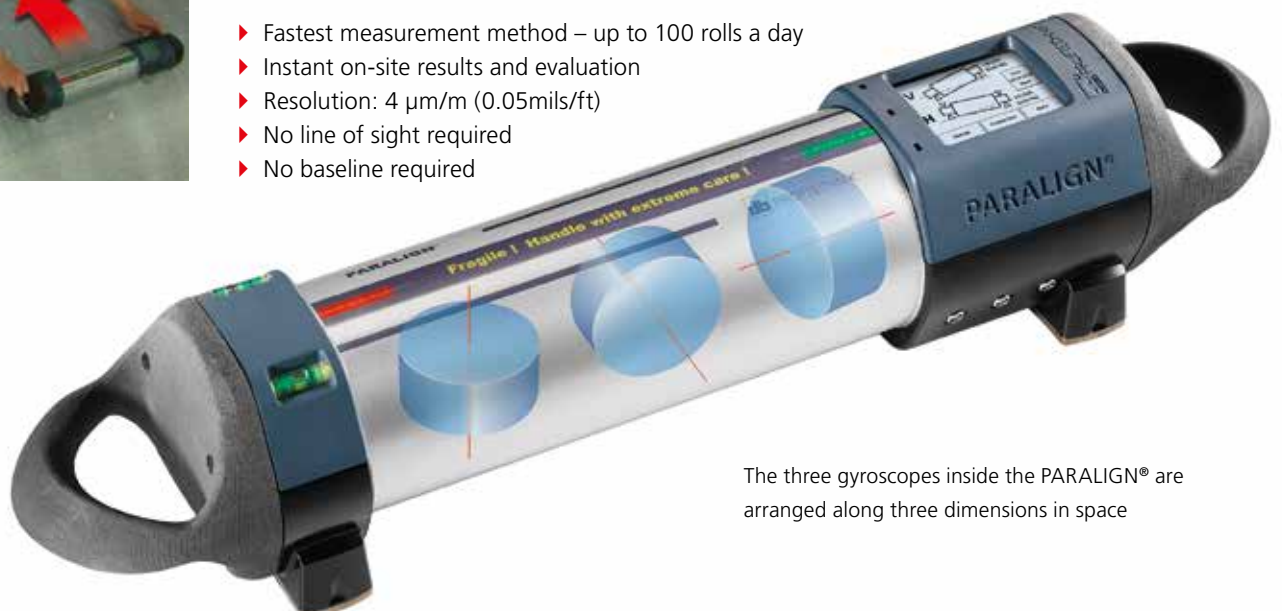
The three gyroscopes in the PARALIGN® system are arranged along three dimensions in space (x, y and z). The three angles – roll, pitch and yaw – that are determined by the system give its exact position in space. This means that PARALIGN® can identify its relative position in space at any time. The same technology is commonly used in aerospace navigation systems.

◀ While its base is being shifted, the gyroscope stays in the same axis, which results in an angle of inclination along the rotation axis

◀ The PARALIGN® device is swept across the roll's surface

## Why PARALIGN®?

- ▶ Fastest measurement method – up to 100 rolls a day
- ▶ Instant on-site results and evaluation
- ▶ Resolution: 4  $\mu\text{m}/\text{m}$  (0.05mils/ft)
- ▶ No line of sight required
- ▶ No baseline required



The three gyroscopes inside the PARALIGN® are arranged along three dimensions in space

# Why roll alignment?

## Increase productivity and product quality

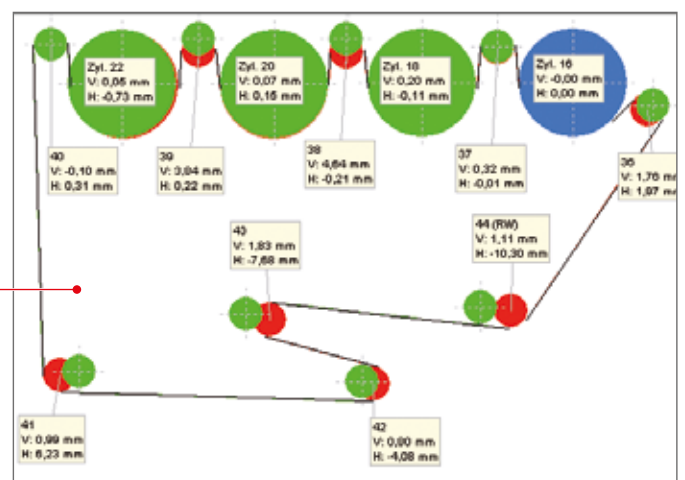
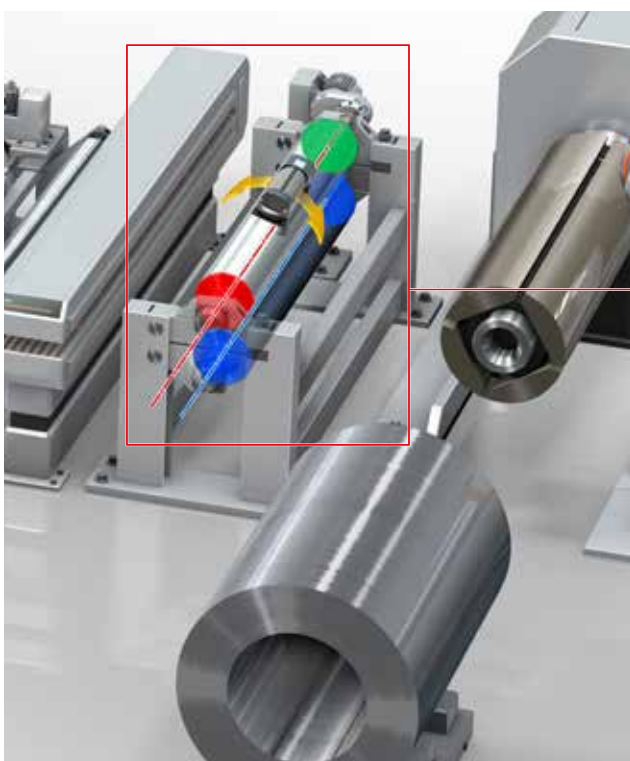
With installations operating at increasingly higher speeds and product quality standards constantly on the rise, precise alignment of the rolls has become a must. Rolls that are well aligned – i.e. parallel to each other – improve product quality and increase productivity through higher machine availability and production output.

## How does it work?

To perform a measurement, the PARALIGN® device is placed on the roll. The device is swept across the roll's surface around its rotation axis, or the roll is spun with the device on it.

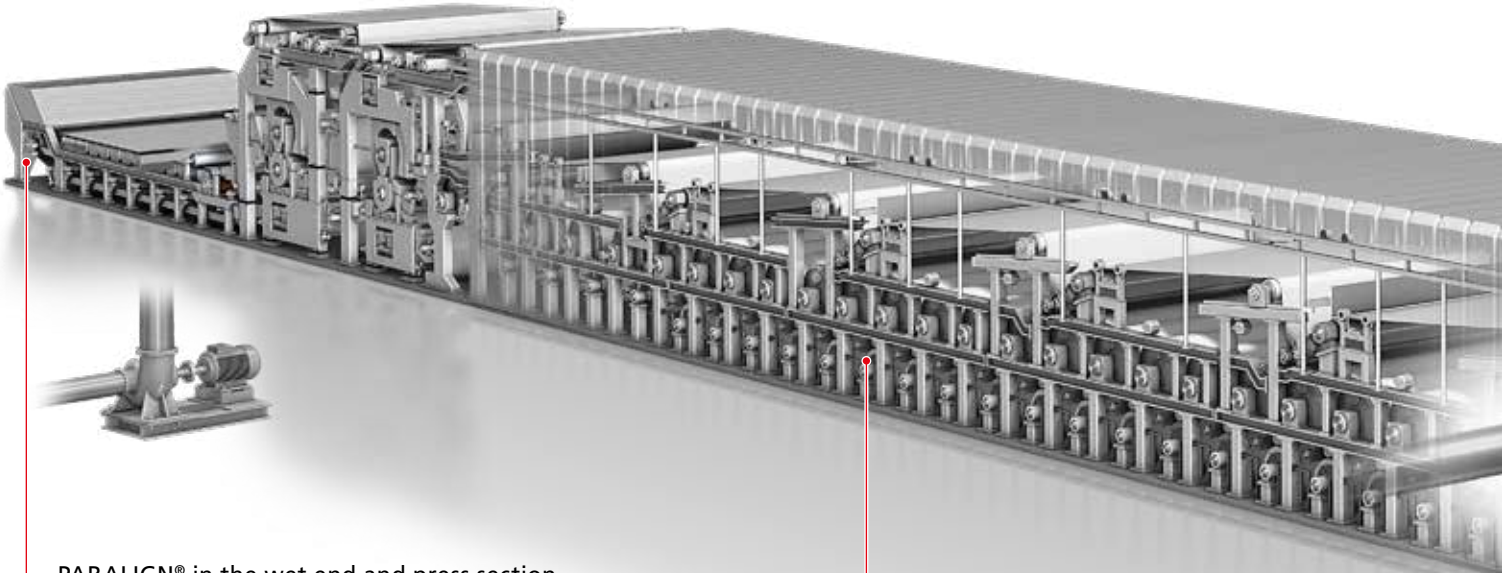
An angular range of 20° is enough to determine the roll's exact position in space. Low quality measurement values, for example through the nonparallel placement of the device on the roll, are filtered out automatically by an effective algorithm. The measurement values are immediately transmitted wirelessly to a laptop.

With the high precision measurement values, PARALIGN® calculates the roll's rotational axis. After the measurement, the offset of the rolls measured in relation to the chosen reference roll is displayed in a clear graphical report and instantly available for evaluation.



▲ PARALIGN® measurement report showing the reference roll in blue, the offset values and the necessary corrections in red color

# PARALIGN® in the paper industry



## PARALIGN® in the wet end and press section

- ▶ Prolong life time of wires, felts and roll covers
- ▶ Decrease folds and creases
- ▶ Ensure uniform moisture profile

## PARALIGN® in the drying section

- ▶ Prolong life time of fabrics and roll covers
- ▶ Decrease folds
- ▶ Ensure uniform thickness profile

## Why roll alignment in the paper industry?

Productivity is a key success factor for paper manufacturers. High machine availability, low failure rate and short setup times are essential to keeping production costs low. The premature wear of parts such as wires and felts due to poor roll alignment have a negative impact on machine availability as they cause more frequent production stops for maintenance and repair.

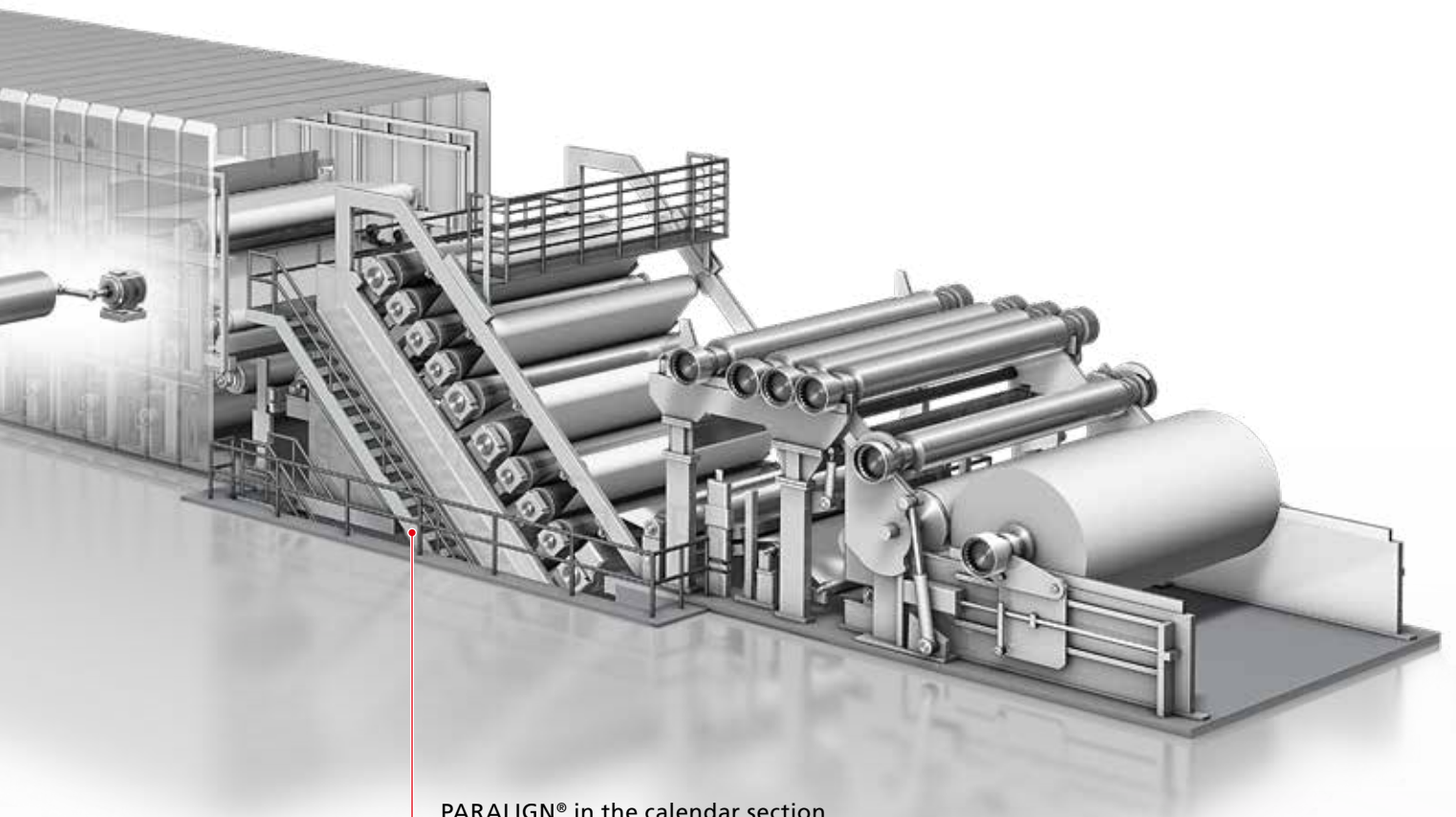
Product quality also has high priority in paper manufacturing. Faults such as paper folds, asymmetrical winding of the web and paper breaks are the direct result of roll misalignment. Not only do they lower product quality and increase waste, but they can also lead to unexpected downtime.

## Why use PARALIGN®?

PARALIGN® is the fastest roll measurement method in the market. Measurement reports are available immediately. Thanks to the quick setup and measurement time, a PARALIGN® service can be performed even during a short scheduled maintenance downtime.

PARALIGN® can even measure rolls in enclosed sections or across multiple levels of a machine because, unlike optical measurement systems, it does not require any line of sight. In addition, no baseline is needed for the measurement since the offset is defined in relation to a reference roll.



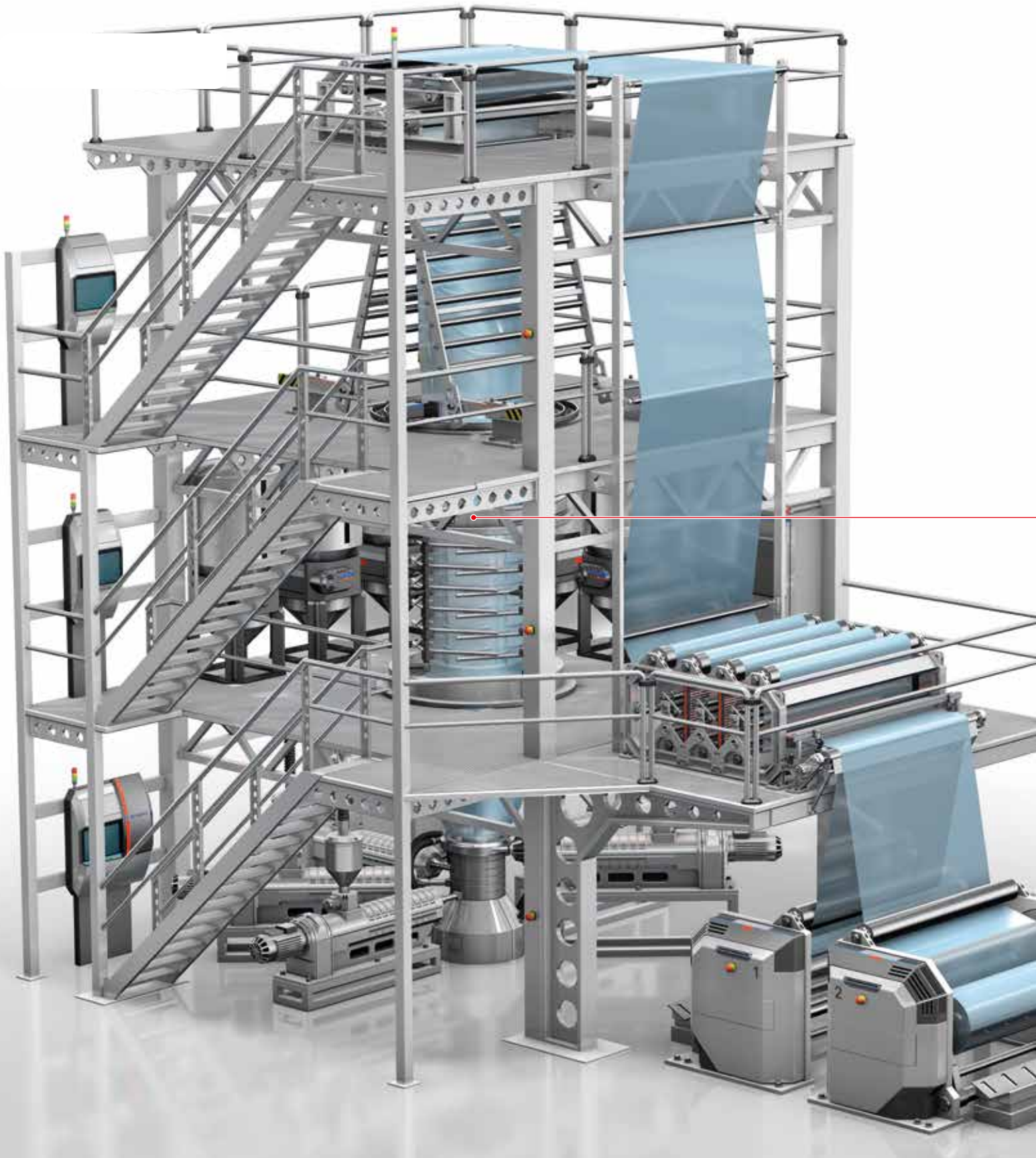


PARALIGN® in the calendar section

- ▶ Prolong life time of bearings and rolls
- ▶ Decrease paper folds and breaks
- ▶ Reduce waste
- ▶ Ensure uniform winding

PARALIGN® in the paper machine  
increases machine availability  
and product quality

PARALIGN® in the converting and packaging industry



## Why roll alignment in the converting and packaging industry?

Productivity is an indicator of performance in the converting and packaging industry. High machine availability, reduced production stoppages and low waste are essential to keeping production costs low.

Product quality also has high priority for converting professionals. Folds and creases or the asymmetrical winding of the film – the so-called 'long sides' – are the direct result of roll misalignment. Not only do they lead to lower product quality and higher rejects, but also they often cause unexpected downtime.

## Why use PARALIGN®?

PARALIGN® is the fastest roll measurement method in the market. Measurement reports are available immediately. Thanks to the quick setup and measurement time, a PARALIGN® service can be performed even during a short scheduled maintenance downtime.

PARALIGN® can even measure rolls in enclosed sections or across multiple levels of a machine because, unlike optical measurement systems, it does not require any line of sight.

Manufacturers use PARALIGN® to measure the alignment of rolls in blown film extrusion lines, corrugated cardboard, laminating and cast film machines.

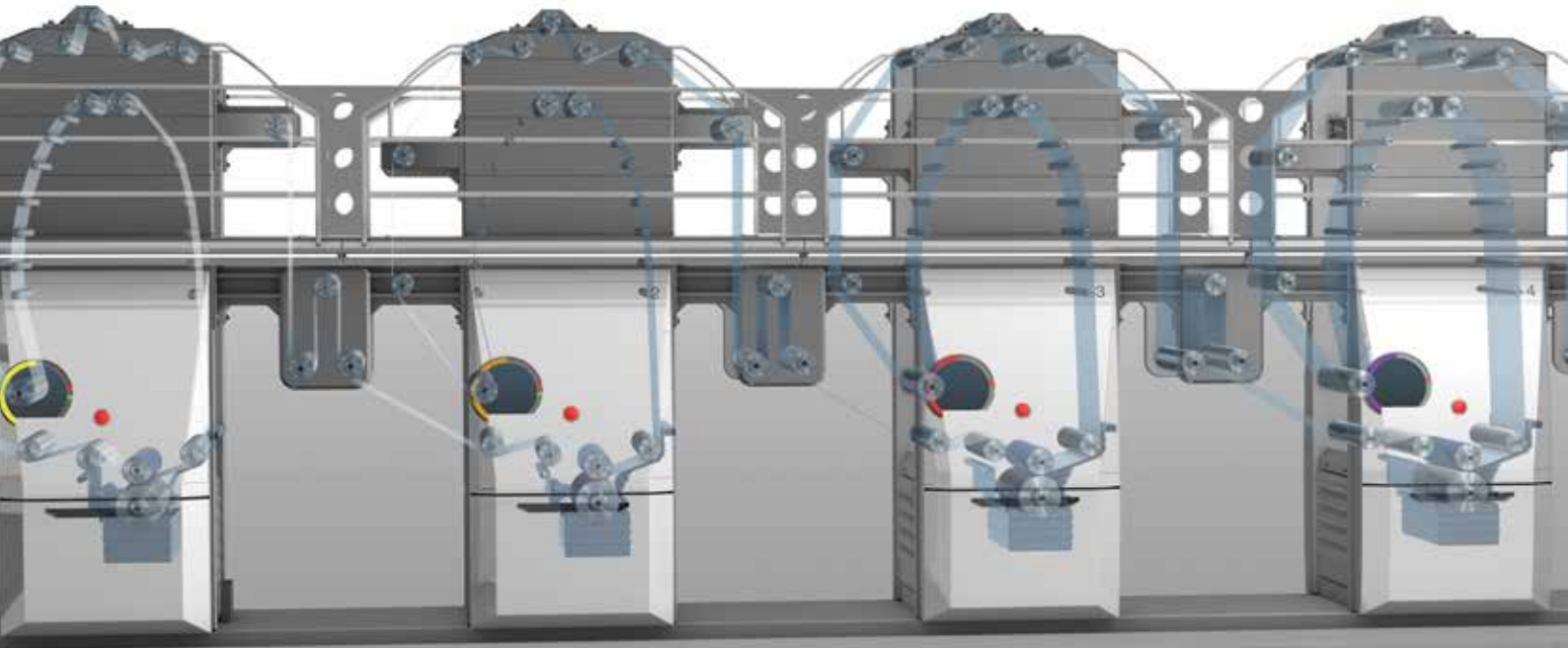
## PARALIGN® in the blown film extrusion line

- ▶ Prevent and reduce 'long sides', or the asymmetric winding of the web
- ▶ Ensure uniform thickness profile
- ▶ Decrease folds, creases and web breaks
- ▶ Increase product quality
- ▶ Reduce waste

PARALIGN® helps prevent web folds, creases and the so-called "long sides"



## PARALIGN® in the printing industry



### Why roll alignment in the printing industry?

Printing presses are often located at the end of the production chain. These machines largely define the perception of the end product. Special attention must therefore be paid to the quality of the printing process.

Roller parallelism is also essential for achieving the required register precision and for trouble-free creasing and folding.

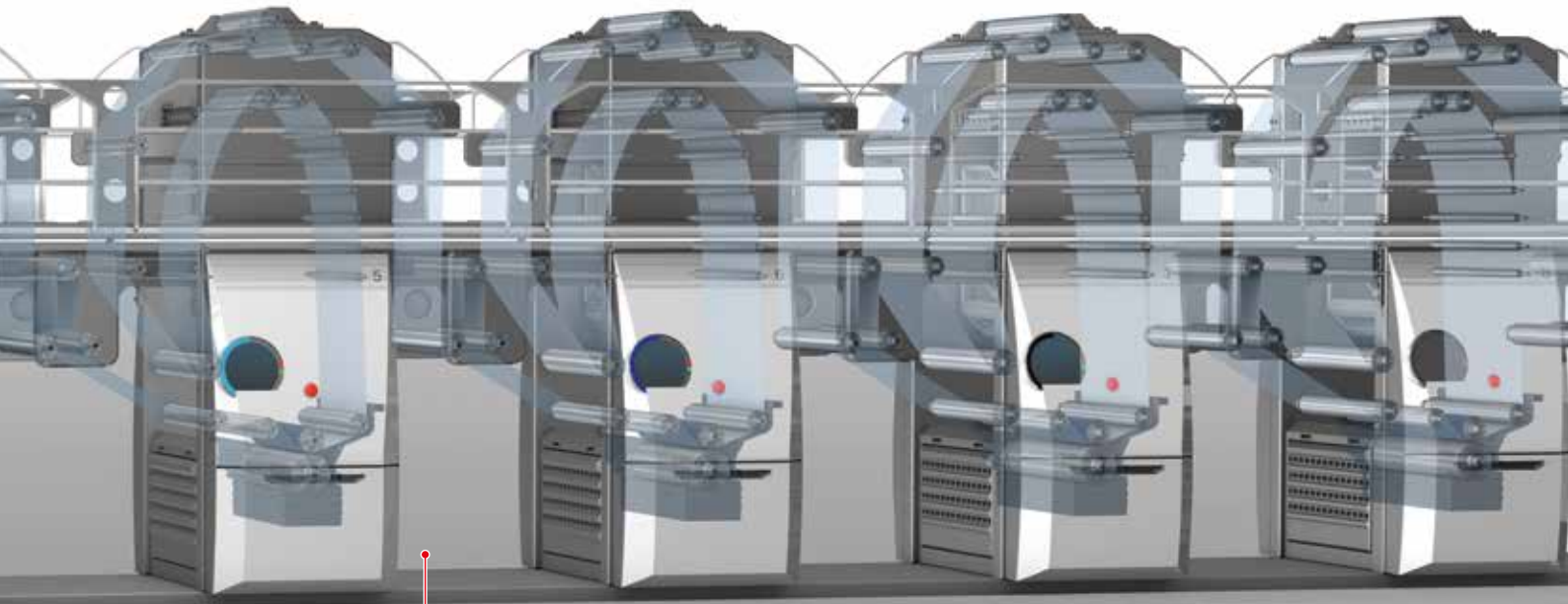
PARALIGN® is used in all types of printing presses to increase machine availability and product quality. It has even become a must in machines with very long webs, such as newspaper web printers and gravure presses.

### Why use PARALIGN®?

PARALIGN® offers unprecedented advantages in the printing industry. Unlike traditional optical measurement methods, PARALIGN® can measure rolls in housings or in parts of the printing machine that are hard to access because it does not require any line of sight.

PARALIGN® is the fastest roll measurement method in the market. Measurement reports are available immediately. Thanks to the quick setup and measurement time, a PARALIGN® service can be performed even during a short scheduled maintenance downtime.






#### PARALIGN® in the printing press

- ▶ Reduce maculature, spoilage and waste
- ▶ Decrease web folds and breaks
- ▶ Short setup times when the product is changed
- ▶ Correct passers and gauge pins

PARALIGN® is used to align rolls  
in flexo, digital, offset  
and gravure presses

## PARALIGN® in the steel industry



### PARALIGN® in the tandem rolling mill

Although the tandem line has no rolls with high wrap, the requirements for roll alignment are higher here than in the hot wide strip mill since the strip is much thinner.

- ▶ Prevent asymmetrical thickness profile
- ▶ Decrease web movement due to improved position of the support rolls
- ▶ Ensure uniform surface density

### Why roll alignment in the steel industry?

Roll alignment in steel manufacturing can help decrease costly unscheduled downtimes, enhance product quality and increase competitiveness.

Web movement and surface density are highly dependent on the position of the rolls. These parameters are critical to ensure high production standards such as adequate product quality, a quieter operating environment and reduced maintenance downtimes.

### PARALIGN® in the annealing furnace / hot-dip galvanizing line

- Reduce web movement and fluttering
- Align rolls enlaced by more than 90° (S-rolls)

### Why use PARALIGN®?

PARALIGN® offers unprecedented advantages in the steel industry. Unlike traditional optical measurement methods, PARALIGN® can measure rolls in sections of the facility that are hard to access because it does not require any line of sight.

PARALIGN® is the fastest roll measurement method in the market. Measurement reports are available immediately. Thanks to the quick setup and measurement time, a PARALIGN® service can be performed even during a short scheduled maintenance downtime.



PARALIGN® in the push-pull pickling line / cold rolling mill

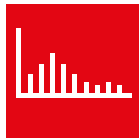
- ▶ Prevent strip misalignment
- ▶ Reduce downtime due to strip failure

PARALIGN® can even measure rolls  
over long distances and rolls  
that are difficult to access

# PRUFTECHNIK delivers maintenance solutions worldwide



Alignment Systems



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Ultrasonic Testing Systems



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