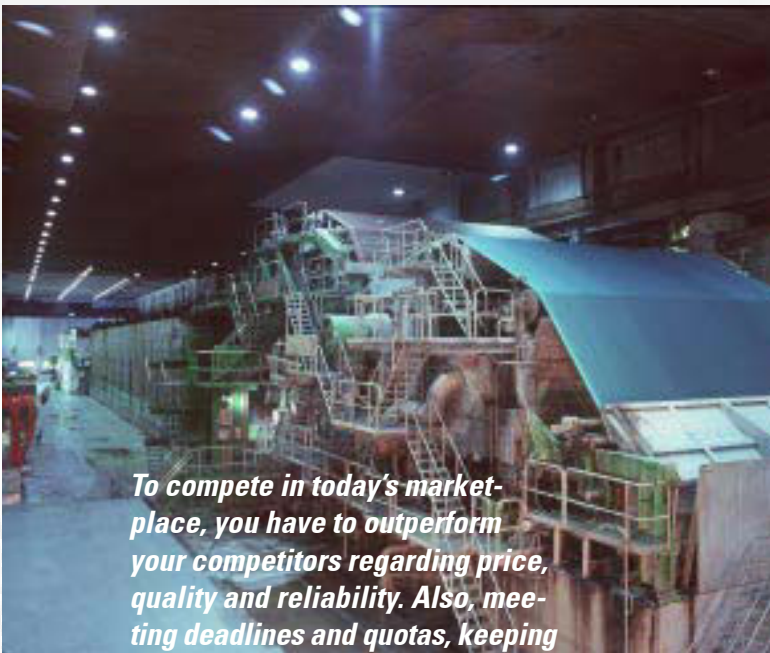


Alignment & Positioning in the

PULP & PAPER INDUSTRY

Fast, easy and accurate alignment of paper machines, pumps, drives, foundations, etc.



***To compete in today's market-
place, you have to outperform
your competitors regarding price,
quality and reliability. Also, mee-
ting deadlines and quotas, keeping
your machines in line and online
are all crucial factors in order to
stay ahead of the competition.
Welcome to explore what Fixtur-
laser can do for your business!***



Machines in line stay online

High vibration levels, premature bearing failures, hot couplings or leaking shaft seals can all be indications of misaligned machines. With Fixturlaser's laserbased alignment systems, you can make a quick check, align your equipment and keep the machines online without risking unplanned stops due to misalignment.

PUMPS AND DRIVES

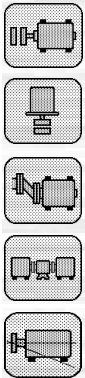
Misaligned pumps and drives result in vibrations and premature wear of bearings, seals and couplings. Cardan shafts also require to be aligned to prevent vibrations resulting in shaft and coupling breakdown.

Benefits

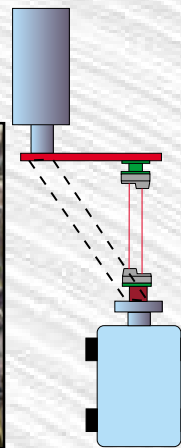
- Reduced vibration levels
- Increased meantime between failures
- Reduced maintenance cost
- Reduced energy consumption
- Increased production quantity

Measurements

- Shaft alignment of pumps, motors and reducers
- Cardan shaft alignment
- Machine train alignment
- Dynamic measurements / thermal growth measurements



Shaft alignment of motor and pump using Fixturlaser Shaft²⁰⁰.

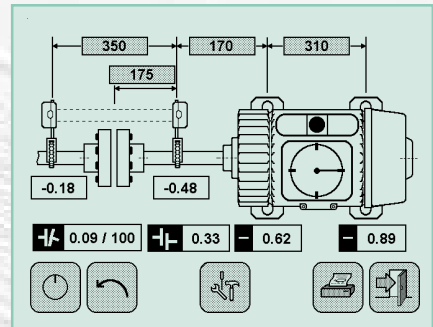


Alignment of offset mounted machines with Fixturlaser Shaft²⁰⁰ and the cardan shaft fixture.

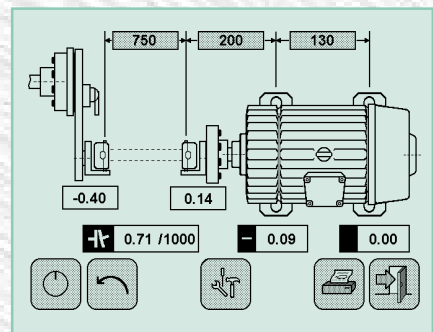


Cardan shaft, paper machine

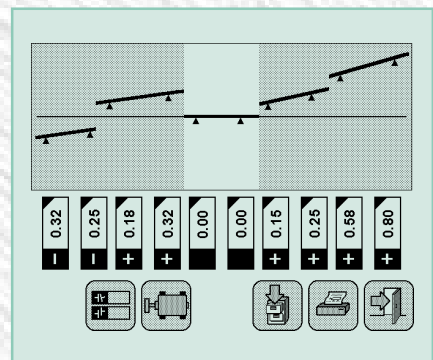
The measurement result is presented on the screen with all relevant information. Angular and offset errors as well as the current foot positions of the movable machine are displayed. All values are continuously updated during adjustment, guiding the operator to a perfect alignment.



Alignment of offset mounted machines/ cardan shafts follows the same procedure as for horizontal shaft alignment. The result screen tells us the position of the machine. The angular error of the coupling/cardan in this case is 0,71 mm/1000 mm.



The most cumbersome part in aligning machine trains is to find out which machine to use as reference. The display screen guides you in finding the best solution in order to accomplish a perfect alignment.



Easy to learn and use

Fixturlaser alignment systems are all equipped with a large touchscreen with symbols instead of text. For the user, this means that the systems are easy to learn and use. If needed, the system can easily be upgraded with functions and new applications. Fixturlaser alignment systems support all three phases of alignment - measure, align and document.

FANS, MIXERS AND PULPERS

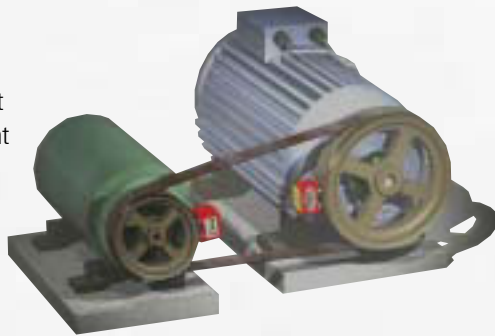
Fans, mixers and pulpers are driven by coupled shafts or belts. They all need to be aligned for cost effective and troublefree operations.

Benefits

- Increased lifetime of belts, bearings, seals and couplings
- Reduced vibrations and noise
- Minimizes downtime and risk for unplanned stops
- Extended operating time between services
- Energy savings

Measurements

- Shaft alignment
- Pulley alignment



Mixer with belt drive and coupled shaft.

FORMING SECTION - HEAD BOX

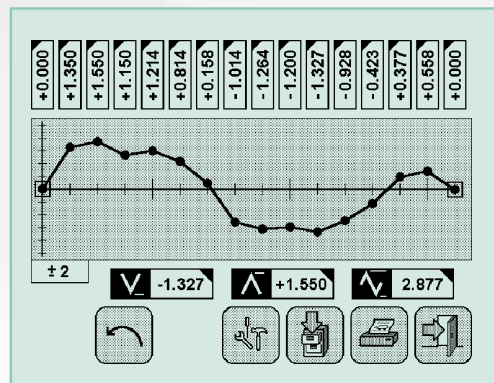
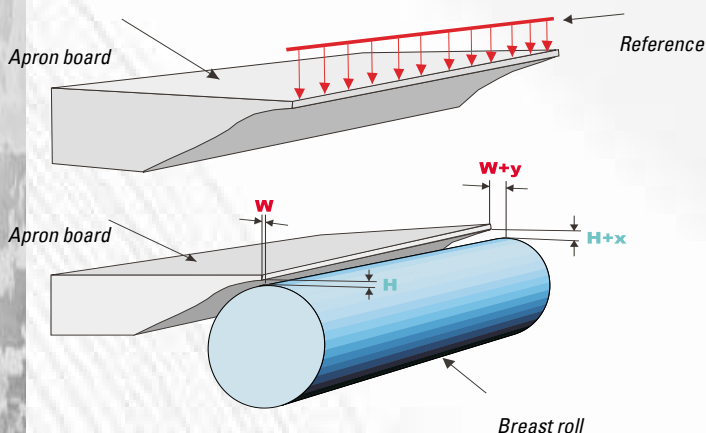
It is important that the breast roll is parallel to the apron board. If the air gap differs, it will cause problems with the consistency of the paper. It is also important that the apron board is straight and the slice gap is correct in order to get a uniform output of paper pulp on to the forming table.

Benefits

- Uniform paper structure and thickness
- Reduced rate of scrap paper
- Increased efficiency in the dewatering process and possibility to increase production speed
- Reduced risk of breaking the slice tip

Measurements

- Straightness measurement on apron board
- Parallelism between apron board lip and breast roll



The screen displays a straightness measurement. The distances between the measurement points can be individual or equal. Each point can be named individually and commented for traceability purposes.

Short pay-back time

Fixturlaser's alignment systems are userfriendly, guaranteeing frequent use. In combination with the product's upgradeability, the pay-back time for investing in a Fixturlaser alignment system is very short.

FORMING SECTION - FORMING TABLE

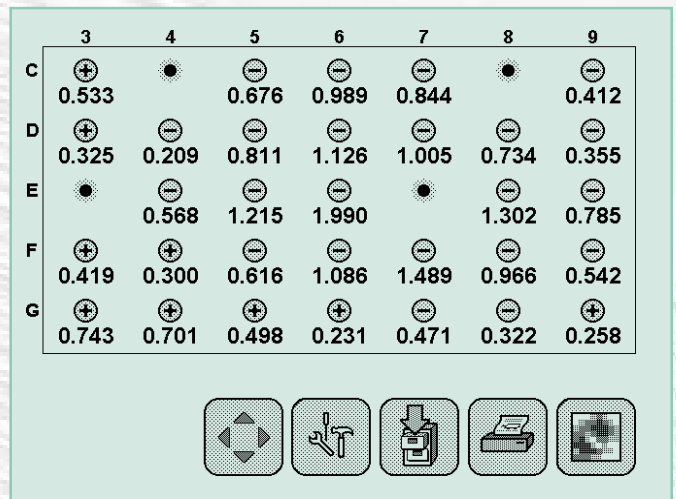
In this section, parallelism between the breast roll and the drive rolls is important, or the drift and wear of the wire will be effected. The surface of the paper sheet is effected if the dandy roll is not parallel to the forming table. The pick up roll and the couch roll may cause breakages and wrinkles if they are not kept parallel, and the suction process may be effected. The levelling of the forming table is another important factor in this section, that will especially effect the de-watering process and the deterioration of the foils.

Benefits

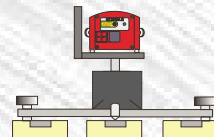
- Efficient de-watering process and uniform fibre structure will improve the paper quality
- Increased de-watering capability gives possibility to increase production speed
- Increased lifetime of the wire
- Reduced energy consumption for the vacuum pumps

Measurements

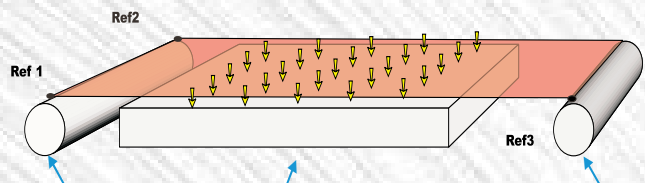
- Flatness measurement and levelling of the forming table
- Parallelism of drive rolls
- Parallelism of forming rolls



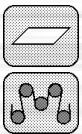
Flatness measurement results with Fixturlaser Geo. The screen displays the status of the measurement points. The graphic with the user defined filter setting simplify the interpretation of the result. Each measurement point can be individually named and commented in the system.



By using a laser measurement system, requirements are met on both accuracy and repeatability. Adjustments can be made at each point with live values and the results are stored for filing and traceability.



The forming table flatness is essential to the effectiveness in the de-watering process. Differences in the distance between wire and forming table has a direct impact on the paper quality.



Do not loose valuable time - make a quick alignment check

Paper wrinkles and breakages at the edges of the sheets can be caused by unparallel rolls. With Fixturlaser systems you can fast, easily and accurately correct and document the misalignment. Other occasions when alignment is needed, could be when documenting alignment conditions prior to removing machines from service, or prior to new or rebuilt machines are being put into production.

PRESS SECTION

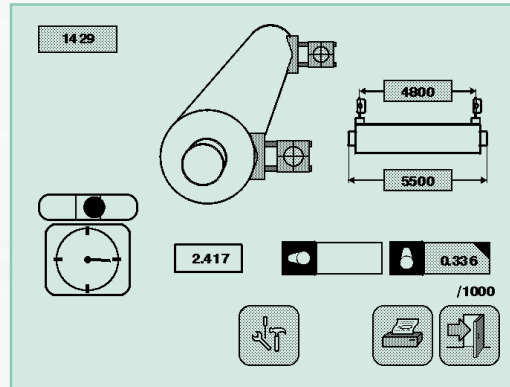
The parallelism of the rolls, both vertically and horizontally, may effect the drift and wear of the felt, the drying capacity of the paper and may cause breakages in the paper. Especially parallelism in the press nip is important or the pressure will be uneven causing problems with the de-watering process.

Benefits

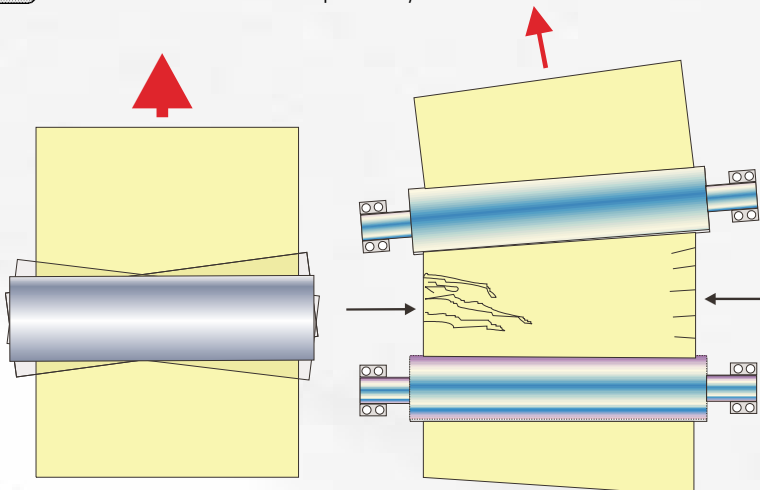
- Less scrap due to uniform fibre structure
- More output due to the possibility to increase production speed
- Increased time between replacement of wire gives less downtime
- Less energy consumption due to efficient de-watering

Measurements

- Horizontal and vertical parallelity of rolls



The measurement process is easy to follow. The information on the screen guides the user, thus minimizing input errors.



Roll parallelism has a direct impact on the paper transportation. Compensation is made by adjustable rolls, but severe misalignment can result in wrinkles and breakages at the edges.



DRYER SECTION

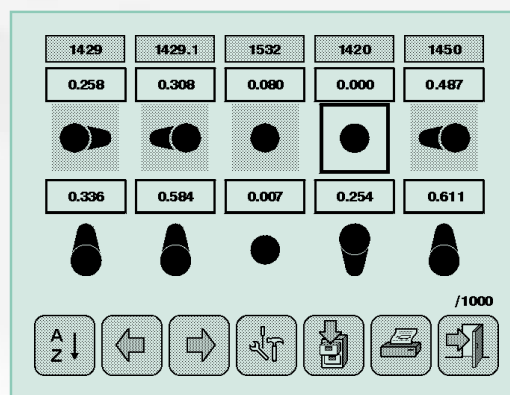
In this section, the problems are similar to the press sections, although we would like to point out the problem with wrinkles and breakages in the paper sheets. The amount of rolls in the web path is large in the dryer section and increases the importance of roll parallelism.

Benefits

- Increased uptime
- Increased time between felt changes
- Reduced scrap production
- Increased product quality
- Possibility to increase production speed

Measurements

- Horizontal and vertical parallelism of rolls
- Straightness of doctor blades



This is the result screen from a roll alignment. A reference is used during the measurement, such as a roll or floor datum mark. In the result screen any measured roll can become reference by just selecting its icon. Each measured roll is individually named and the result can be stored in the memory and/or printed out on the supplied printer.



Sharpen your competitive edge

With proper alignment, the rate of scrap paper will decrease and productivity improve. As a result, your customers will get the very best quality products delivered on time. This will give you a competitive advantage within the industry.

FINISHING - CALENDERS

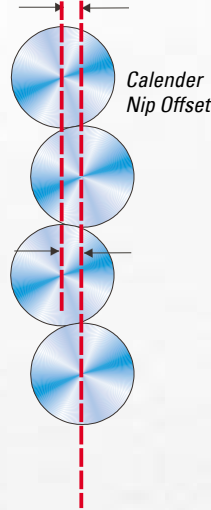
The parallelism is important in the calender, both vertically and horizontally, or the roll nip will differ over the roll length. In some calenders, there is a nip offset that has to be considered.

Benefits

- Uniform gloss
- Reduced scrap production
- Increased time between roll replacement
- Possibility to increase production speed

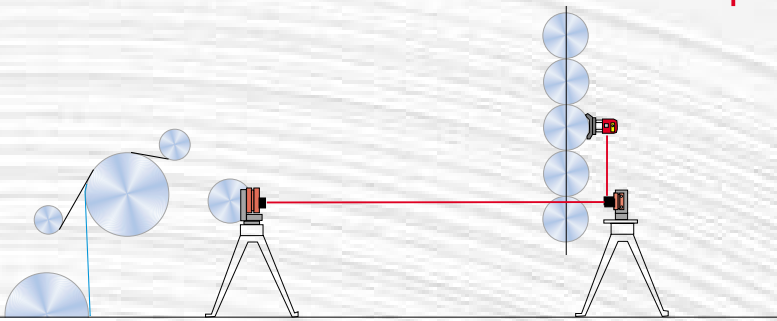
Measurements

- Horizontal and vertical parallelism of rolls
- Set calender nip offset



Calender stacks can be measured and aligned with the floor datum line as reference.

Calender stack



WINDERS

Poor parallelism between the calender rolls, the reel drum and spool may create problems with a high rate of scrap paper as a result. Also the paper may drift sideways during the reeling, creating problems with wrinkles and difficulties when cutting the paper.

Benefits

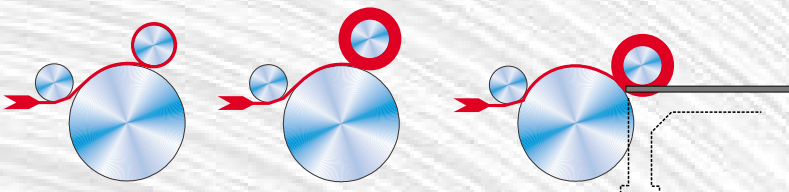
- Less scrap paper
- Increased production capacity

Measurements

- Horizontal and vertical roll parallelism



Roll parallelism in the winding section is crucial in order to control the quality of the finished roll and ultimately the sales result.



"Turn-up" sequence. The spool mechanism has to be measured and aligned in order to prevent drift sideways and wrinkles during winding.

Critical machines need extra attention

Critical machines need extra attention. With Fixturlaser you can go one step further when it comes to shaft alignment of critical high speed machines. You are now able to take all dynamic movements into account, when measuring and aligning a machine from hot to cold, or vice versa. The result is an even more correct alignment and machines operating at their optimum.

FOUNDATIONS

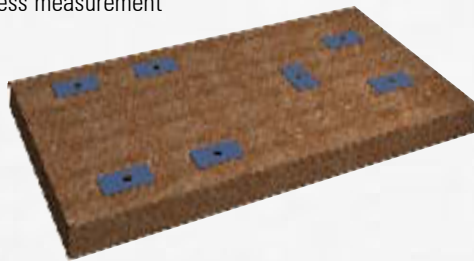
Before installations of new machines, it is important to check that the foundation is aligned. This to prevent tensions within the foundation and to minimize the stress of machine housings.

Benefits

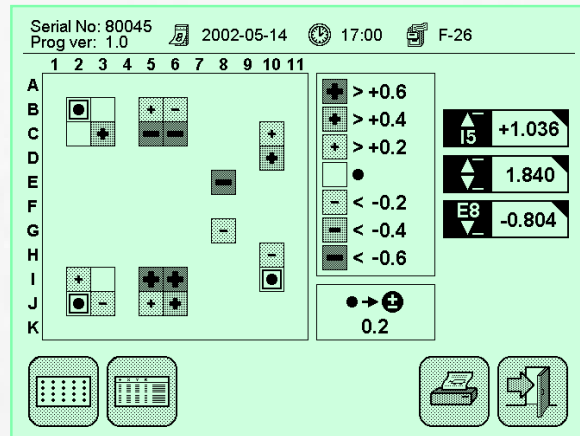
- Prolonged lifetime of machines
- Save costs for breaks in foundations
- Minimizes downtime and unplanned stops

Measurements

- Flatness measurement



Foundation, pump and motor.

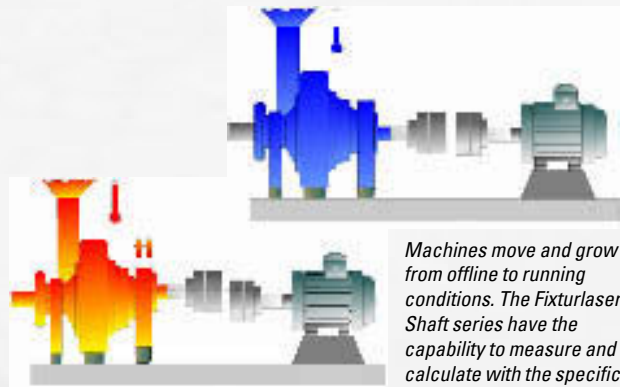


Above the documentation of the flatness alignment process is displayed on the result screen and print out. As you can see the distance between measurement points do not have to be equal. It is up to you to choose.

MORE APPLICATIONS COMMONLY FOUND IN THE PAPER INDUSTRY

Measurements

- Roll profile - straightness
- Coating process - parallelism of rolls
- Slitters - parallelism of slitting blades
- Roll grinders - straightness of rails/guides
- Dynamic measurements - line shafts, refiners, overhung fans
- Measurements of reference line of paper machine

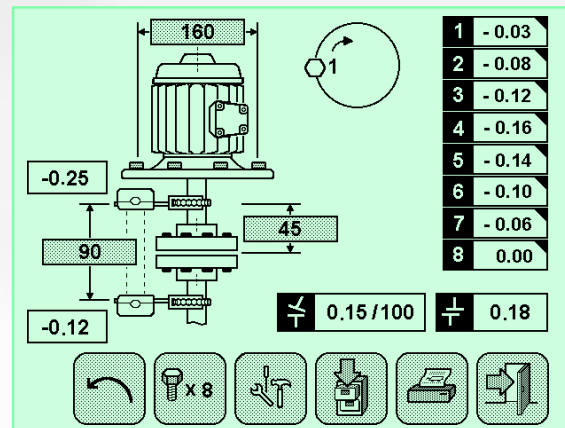


Machines move and grow from offline to running conditions. The Fixturlaser Shaft series have the capability to measure and calculate with the specific deviation values.

MORE APPLICATIONS COMMONLY FOUND IN THE PULP INDUSTRY

Measurements

- Refiners
- Debarking drums
- Digesters
- Filters
- High and low pressure feeders
- Vacuum pumps
- Conveyers
- Chipper drives
- Chemical recovery
- Ariator drives



Vertical shaft alignment with Fixturlaser Shaft series. The result screen shows the current position of the motor and clearly advises necessary shimming.

AFTER SALES SERVICE AROUND THE WORLD

DISTRIBUTION NETWORK AND AFTER SALES SERVICE

Fixturlaser markets and distributes products in more than 70 countries around the globe. Our distributors are experienced, skilled engineers and measurement technicians carefully selected and certified by our training institute.

One of Fixturlaser's strongest features is the after sales service. Owners of a Fixturlaser system will always have access to assistance in operation and application support throughout our organization. Our certified service centers around the world perform maintenance and calibration of systems.

Fixturlaser also offers all customers product and application training. During training, held by experienced application engineers, we go through all the three phases of alignment - measure, align and document. All practical training is performed on real rigs.

For more information, contact your local distributor or go to www.fixturlaser.com.



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