Alignment & Positioning in the

PLASTICS INDUSTRY

Fast, easy and accurate alignment of extruders, mixers, rollers, pumps, drives, foundations, etc.

To compete in today's marketplace, you have to outperform your competitors regarding production cost, quality and reliability. Also, meeting 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 Fixturlaser can do for your business!

FIXTUR LASER

Sharpen your competitive edge

With proper alignment, the scrap production will decrease and productivity improve. As a result, the cost for repairs and spare parts will drop significantly. Also, your customers will have quality products delivered on time, strengthening your competitive advantage within the industry.

EXTRUDER

Under great pressure the extruder screw forces the plastic material forward, filling the die. A misaligned extruder barrel will increase the wear of the extruder screw, shortening its lifetime. Also, the screw friction causes the heat to rise, which may affect the characteristics of the plastic material, risking the quality of the end products.

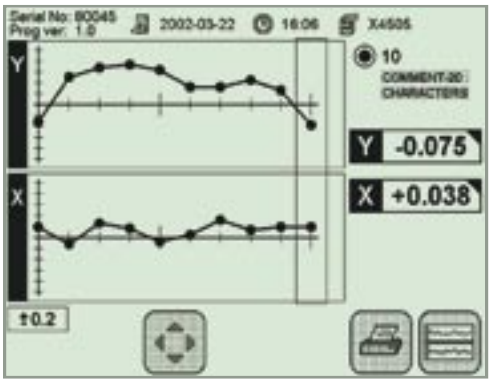
Benefits

- Increased screw lifetime
- Increased production time between service stops
- The amount of scrap decreases
- Improved product quality

Measurements

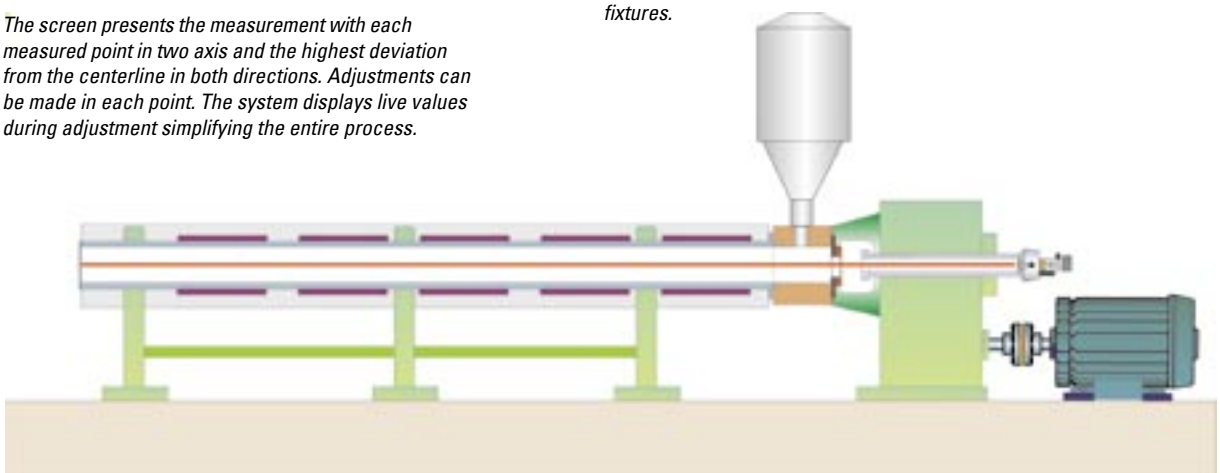
- Measurement of the position of extruder barrel to the gearbox's rotational axis

A laser transmitter is mounted on the drive shaft. The laser beam is roughly aligned with the drive shaft's rotational center. The detector is slided throughout the barrel with firm support in 6 points to the pipe walls. The results are displayed as two diagrams; x-values and y-values respectively. Adjustments can be made in each measurement point with guidance from live values.



The screen presents the measurement with each measured point in two axis and the highest deviation from the centerline in both directions. Adjustments can be made in each point. The system displays live values during adjustment simplifying the entire process.

Registration of measurement values using the Fixturlaser Extruder fixtures.



Extruder alignment system for precise measurement and alignment of the extruder barrel, according to the gear box's and the screw's axis of rotation .

Do not loose valuable time – make a quick alignment check

Wrinkles at the edges of the plastic film can be caused by unparallel rolls. Parallelism between the rolls in a machine line is very important. The slightest misalignment of only one roll may otherwise result in a scrapped product.

FILM BLOWING

Film blowing is one of the many different production processes in the plastics industry. It is mostly used for the production of for example plastic bags. In film blowing, the plastic is extruded through the die (a spiral mandrel) forming a tube or bubble. By adjusting the line of speed, the air flow and pressure inside the tube or bubble is stabilized and cooled down during transport through the tower. The tower is a frame holding a set of rolls above the die that controlls the collapsing of the bubble before winding.

In order to satisfy customer demand regarding quality, it is essential that the die center is aligned with the tower above. Otherwise,1 the film will shrink or stretch in variuos directions causing non uniform product quality.

An example of a film blowing machine, where the film is blown upwards from the die through the tower of rolls ending up in the winding section.

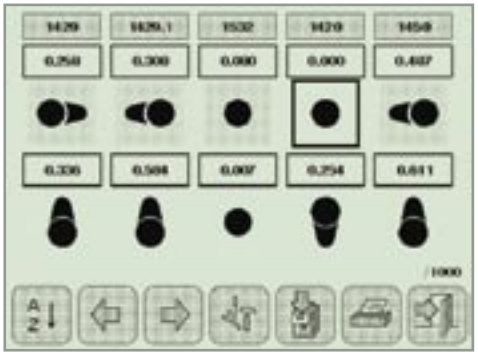
Benefits

- Less scrap due to uniform structure and thickness
- Larger production volumes due to the potential of increasing the production speed

Measurements

- Centering
- Horizontal and vertical parallelism of rolls

To the right, you have the results of a roll alignment displayed. 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.



THE WINDING SECTION AND THE PRINTING SECTION

In the winding section, one of the major problems is the wrinkles caused by unparallel rolls, resulting in large amounts of scrapped products.
In the press section the product is given a final touch with printed patterns in black and white or color. Here it is vital that the rolls are parallel in order to avoid blurred colors and prints.

Benefits

- Increased uptime
- Reduced scrap production
- Improved product quality
- Possibility to increase production speed

Measurements

- Horizontal and vertical parallelism of rolls
- Straightness measurement

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 the risk of suffering unplanned stops due to misalignment.

DRIVES AND PUMPS

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

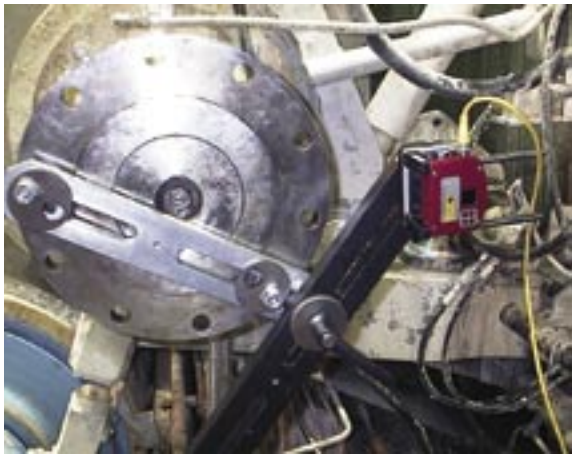
Benefits

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

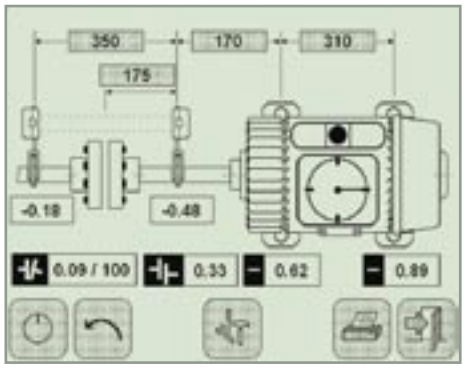
Measurements

- Horisontal and vertical shaft alignment
- Cardan shaft alignment
- Machine train alignment
- Dynamic measurements / thermal growth measurements

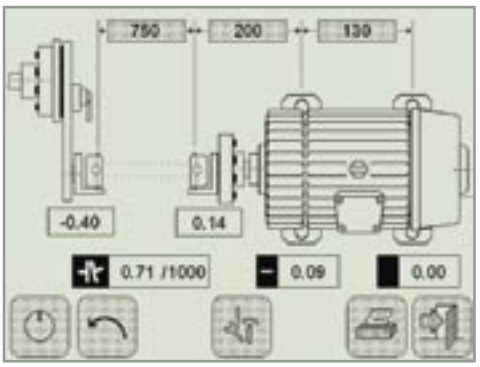
Misaligned machines contribute to huge costs in repair and production loss every year. By introducing preventive machine maintenance including regular alignment control, you minimize the number of unplanned stops due to machine breakdowns.



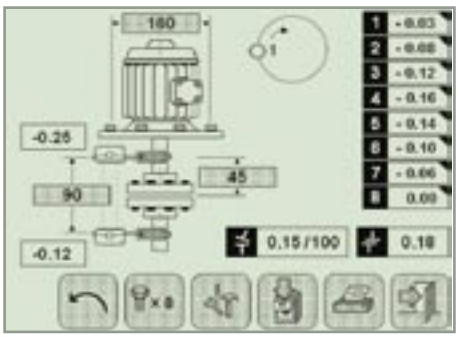
Alignment of offset mounted machines with Fixturlaser Shaft [200] and the cardan shaft fixture.



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 result .



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.



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

Critical machines need extra attention

Critical machines need extra attention. You are now able to take all dynamic movements into account, when measuring and aligning a high speed machine from hot to cold, or vice versa. The result is an even more correct alignment and allow machines to operate at their absolute maximum.

DYNAMIC MEASUREMENTS

Machine alignment has to be accomplished when the machine is offline. Alignment has to be made considering the running conditions, such as thermal growth. Manufacturer specifications often consider vertical growth to be due to rising temperature in the machine housing. Unfortunately, that is not enough to ensure an aligned machine in running mode, as two identical machines in identical installations do not behave identically from offline to running conditions.

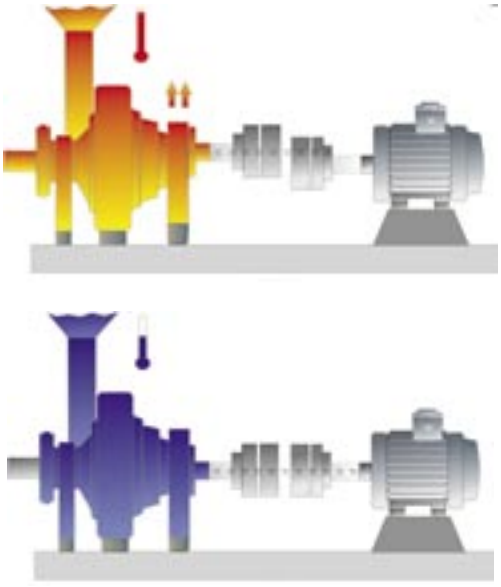
By measuring the machine positions, vertically and horizontally, in offline mode and in running mode, the correct compensation values are achieved.

Benefits

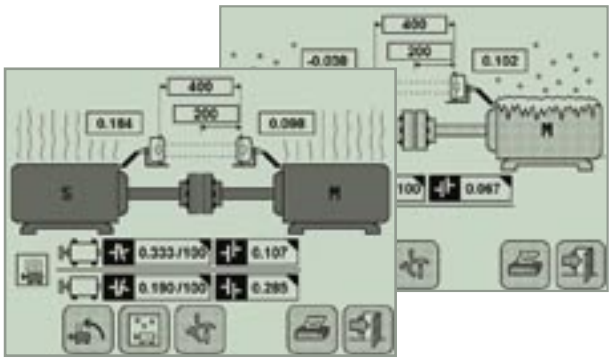
- Correct compensation values
- Evaluation of all affecting forces, such as thermal growth, pipe strain, surrounding cooling effects, load forces

Measurements:

- Measurement of the difference between the shaft positions from offline to running condition by using the Fixturlaser OL2R fixtures



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



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

FANS AND PLASTISOL MIXERS

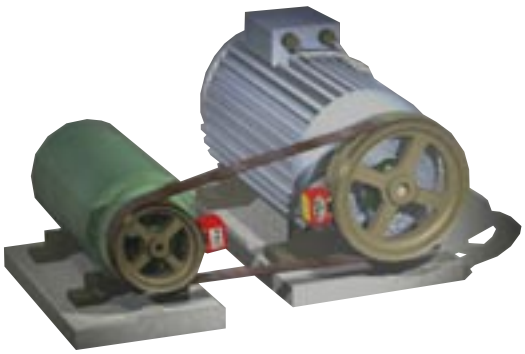
Fans and plastisol mixers are driven by coupled shafts or belts. They all need to be aligned for cost effective and troublefree operations.

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

Measurements

- Vertical and horizontal shaft alignment
- Pulley alignment



The Fixturlaser PAT fixtures are used for aligning belt drives.

Easy to learn and use

Fixturlaser alignment systems are all equipped with a large touch screen 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.

FLAT EXTRUSION

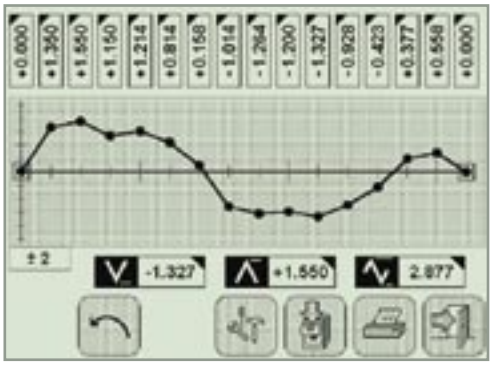
In the case of producing plastic, where the material is pushed through a straight die, you need to make sure that the die knives/lips are aligned.

Benefits

- Uniform structure and thickness of the material produced
- Reduced amount of scrapped products
- Possibility to increase production speed

Measurements

- Straightness measurement
- Parallelism between the rolls



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.

FOUNDATIONS

Foundations, base and sole plate conditions have a great impact on alignment of machines. If the foundation is skew, warped or affected by ground settling, it is very hard, if not impossible, to align machines to a satisfactory precision.

By using the flatness measurement software in the Fixturlaser Shaft system, you can very quickly find out if the base fulfills the requirements.

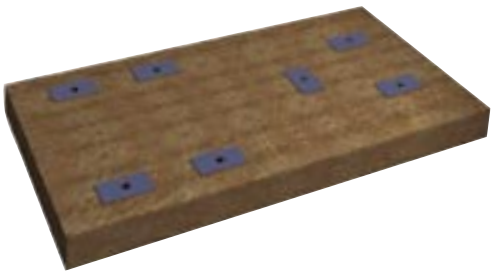
Benefits

- Prolonged machine lifetime
- Save costs for breaks in foundations
- Minimizes downtime and the number of unplanned stops

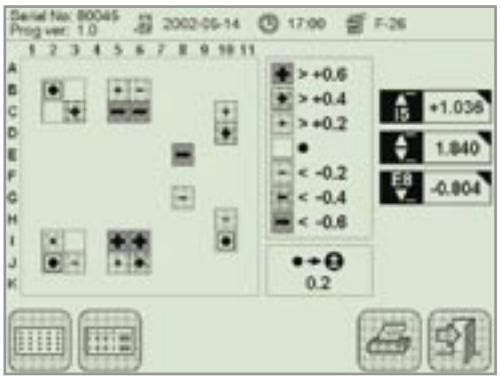
Measurements

- Flatness measurement

A flat extrusion machine.



The flatness of a foundation is crucial for the machines. They will, otherwise, suffer from strains in their casing.



Above the documentation of how the flatness alignment process is displayed on the result screen and print out. As you can see, the distance between measurement points does not have to be equal, the choice is yours.

Creating customer value

Fixturlaser alignment systems are designed for providing a long-lasting value to our customers. Wherever our systems are used, frequently or occasionally, they prove their value in the preventive maintenance programmes.

All of the Fixturlaser alignment systems are based on the same technical platform providing full flexibility for future alignment requirements. Starting off with a basic shaft alignment system, it can easily grow into a full featured geometric measurement tool as your needs alter or grow.

Two lasers - Twice the value

The Fixturlaser Shaft series utilizes two lasers, one in each TD-unit. Except for the obvious technical advantages with this design, there is another major benefit for the user: ***rough alignment***. When measuring over large distances, it is often required to make a rough alignment before proceeding with precision alignment. With such conditions the two lasers are unbeatable. You begin by just visually registering where the laser beam from each unit hits. Then continue by rotating the units a half turn and measuring the distances between the two hitpoints. Half this value and you are home free! No matter how much misaligned the machines are, you can always make a rough alignment and then follow up with a precision alignment.

Long lasting investment

The Fixturlaser Shaft series have components in common with other Fixturlaser products. This makes it easy to expand your system to include functions for applications such as roll parallelism measurement and advanced geometric measurement, without risking earlier investments in Fixturlaser products. The display unit with its touch screen interface and standardized hardware components makes it easy to upgrade.

Multi-lingual or non-lingual

Fixturlaser products utilize a battery driven display unit with a touch screen interface. Together with our own software design, totally based upon symbols and graphic presentation, we provide easy to use equipment that requires a minimum of training. The absence of language specific terminology, totally free from text, makes it easy to use and minimizes the risk for errors.

Measure - Align - Document

Fixturlaser develops products as well as measurement methods. By learning our customers' processes, we know how to develop products that fulfill customer requirements not only on accuracy, but also on usability. An investment on the shelf is a bad investment.

Fixturlaser systems are as easy to use for measuring as for aligning machines. Realtime values are displayed during the alignment process guiding the operator towards a perfect precision alignment. The final measurement values can be documented by the supplied printer or transferred to PC software, the Fixturlaser Documenter.

Alignment and measurement service

Fixturlaser has over the years earned a tremendous experience of alignment and measurements. Our alignment experts have been all over the world serving all kinds of industrial customers, using our alignment and measurement skills. This experience is the base for development of new products, but also a valuable resource for you as a customer to utilize.

AFTER SALES SERVICE AROUND THE WORLD

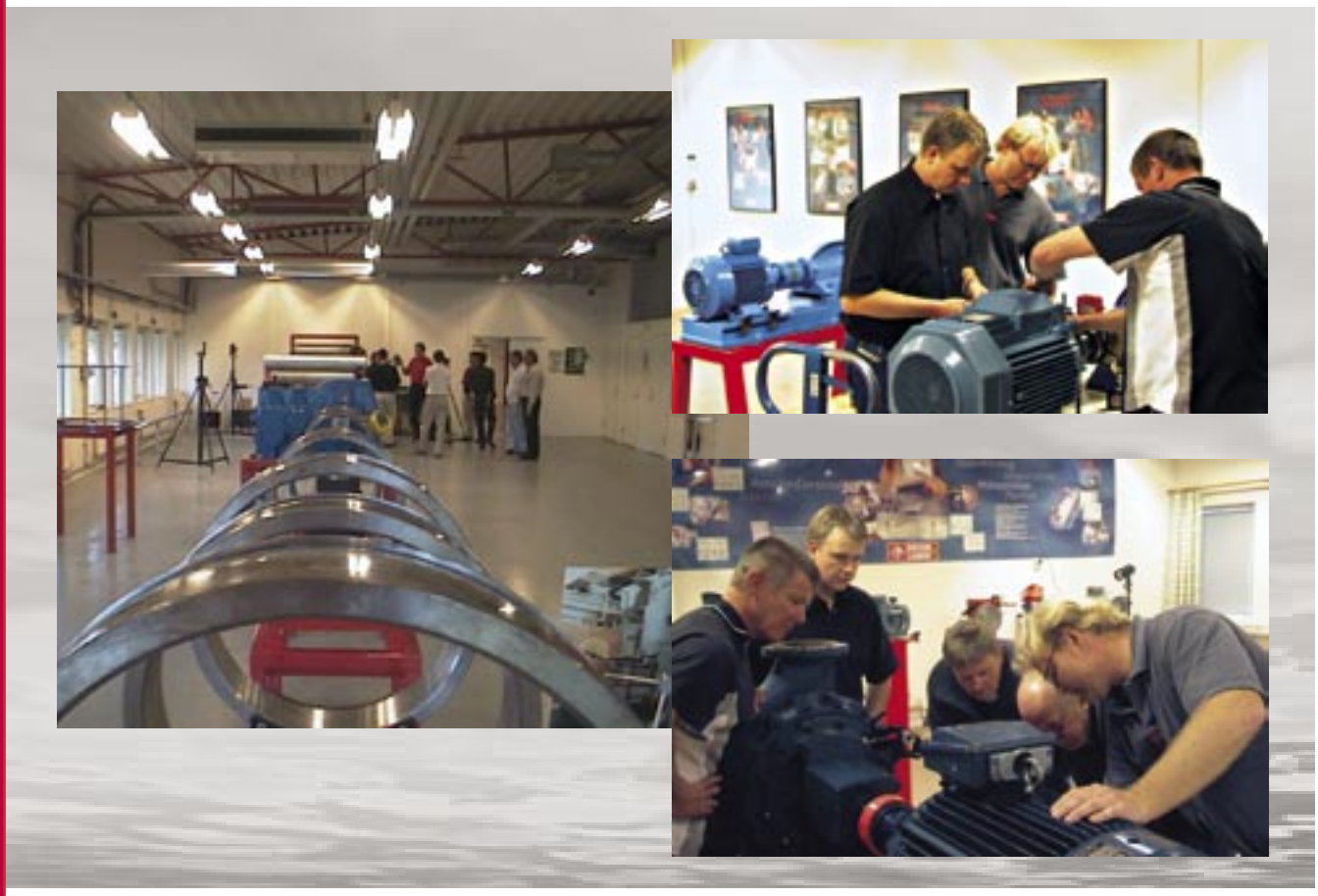
DISTRIBUTION NETWORK AND AFTER SALES SERVICE

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.

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



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