

Pinpoint

Laser Systems

Straight to the Point!

STOP THE PRESSES!



When an Editor yells, “Stop the Presses”, it’s usually because breaking news needs to get into print before the morning edition. However, if the plant manager or operations manager yells stop the press, well they’ve got trouble.

Most likely your machine is out of alignment or defective product is coming off the line. Maybe the words on your paper are running off the page as the paper is wrinkling. Needless to say, production has just shut down costing you time and money.

Many manufacturing facilities operate equipment that contains rollers, idlers, press drums, and web handling systems. The alignment of roll and web systems is important to the efficient operation of these systems to improve productivity and reduce production downtime.

In this Article you will learn about:

- What happens when rolls are not properly aligned
- Preventative Maintenance is quick and precise
- Decrease downtime, increase productivity

One very common industrial application is verifying the position and alignment of rolls and web handling equipment. In these applications, there may be many rollers over which material passes as it proceeds through a specific manufacturing process. An example is a laminating operation in which a substrate such as pliable plastic or metallic foil is treated and coated as it passes through a process line. If the feed rolls, take up rolls, print rolls, nip rolls, and other rolls that transport this material through the process are not well-aligned, the material will not track properly and may wander off the machine resulting in downtime and wasted material.

Misalignment of the rolls through the machine may not be enough to cause tracking problems, but may still stretch the material more on one side than the other, so when

Performance through Precision

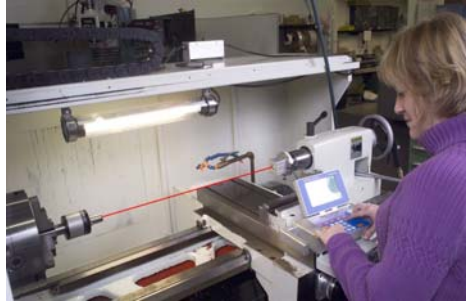
Pinpoint
Laser Systems
Industry Aligned



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Does Machining Runout Have You Going in Circles?

Wear is a fact of life with moving machinery and as the precision slides, rails, guides, and bearings inside this equipment become worn, the accuracy and performance of the machine is degraded. This wear or runout leads to poorly made parts, machinery downtime, and lost profits. Keeping your machinery well aligned and running smoothly will improve your product quality, production efficiency, and boost your profits.



With a computer attached to your Microgauge you can capture hundreds of data points quickly and locate runout errors very precisely. You start by setting your machine table or slide to move at a specific rate, for example 10 inches per minute. With Pinpoint's Capture software, you set

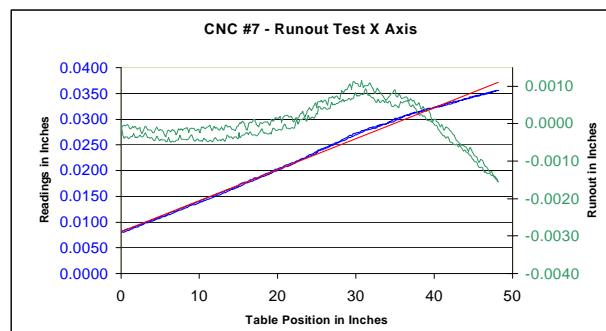
the computer to record 5 readings per second so that combined with the speed of the moving slide you get 30 runout readings per inch of stage travel (5 readings/sec. x 6 seconds / inch of travel = 30 readings / inch). Start your slide or stage in motion, start the computer and record your runout readings.

Runout describes the errors when a slide or rail is worn and will not run straight and true. Often on machine tools and production equipment a moving table will run straight for a portion of its travel and then shift or move off its correct linear path because the supporting bearings, slides, or ways underneath the table are worn causing misalignment.

The Pinpoint Microgauge can measure runout in machine travel to a precision of 0.0001 inch (0.003 mm) and can be configured to measure any axis of travel. Furthermore, connecting your Microgauge to a laptop or PC gives you an option for storing measurement points, analyzing your results, creating reports, and plotting runout. Over time you can check your machine and then re-check it to look for the rate of wear and develop a predictive maintenance schedule.

Here is how it works: The Microgauge laser is placed at the end of the moving slide, table, or axis that you want to check and the laser beam adjusted until it runs parallel to the axis of travel on your machine. The Microgauge receiver is then attached to the moving table or slide and the display value zeroed. The table or slide is then run through its full range of travel and the laser is adjusted until it reads zero at the far end of the slide travel. Now, moving the slide again, you can watch the value of the Microgauge display for readings that vary from your zero setting.

The plot on the below shows the measured runout for a 48" table travel on a heavily used CNC milling machine. The Microgauge readings are on the left axis and the runout is shown on the right axis. Note the measured runout of 0.0015 inch on the right end of the travel on this X axis caused by continuous milling of very heavy finished parts. Over time this operator has used the Microgauge to check the wear on this and other axes for further degradation and runout. The Microgauge can also be used when adjusting the linearity of travel and repairing bent or worn ways, slides, tracks and guides.



For further information on this simple technique and the product needed, please visit our website or contact our engineering team.

Tech Tip: Checking Straightness Using The Laser Microgauge

This brief technical tip describes a simple method of checking bar, rod or shaft straightness using a Laser Microgauge system.

In the illustration below, the Microgauge Laser is shown on the left side supported by the Lateral Pitch Plate. This mount allows the operator to adjust the position of the laser beam to the bar or shaft being measured. The bar is supported by several mounts (5 shown here) and the Microgauge Receiver is moved across the top of the bar to take readings relative to the centerline of the laser beam. If the bar is measured in one position and then turned 90 degrees, you can measure for bends or twists.

Here are a few suggested list of operational steps:

Quick Bend Evaluation:

- Turn on the laser and position the Microgauge receiver at Location A & note reading.
- Move the receiver to Position B and take reading.
- Adjust the Laser by turning the micrometer on the mount until A = B.
- Slide the receiver down the length of the bar and see if any Microgauge readings vary from the A & B value indicating a bend.

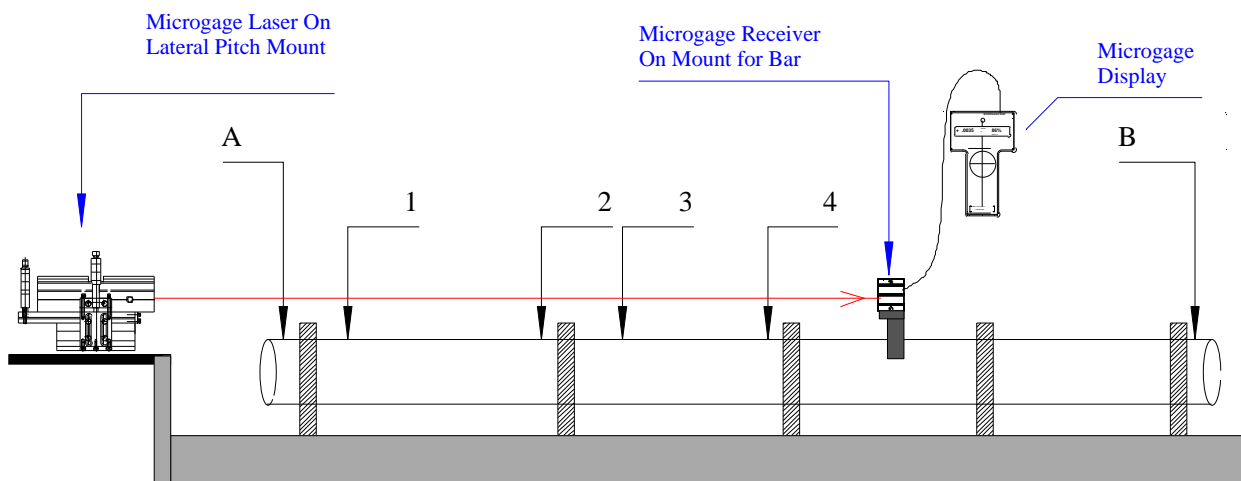
Bar or Shaft Profile:

- Follow the first 3 steps of the Quick Bend Evaluation.
- Take measurements between Points 1 and 2 to profile this section.
- Repeat measurements between points 3 and 4 to profile this section.
- Continue procedure until bar has been profiled over its length.

In the steps listed above, it is possible to make many measurements between Points 1 and 2, and Points 3, and 4, etc to really gather some profile information on your bar or shaft sections. The resolution of the Laser Microgauge is 0.0001 inch.

Pinpoint has available a computer interface that can download Microgauge readings into a laptop or PC and allow them to be viewed in a spreadsheet or other programs. Using this interface will allow you to gather many readings, avoid transcription errors, calculate shaft or bar bend, and generate data plots.

Pinpoint can supply any mounts and fixtures that you might need .



Continued from page 1

even and likely to be rejected for poor product quality.

For a continuous sheet of material moving through a system of rollers, it is critical that the left edge, center, and right edge follow similar path lengths – a misaligned roll anywhere in the system may cause stretching of the material at that location. Some plastic materials are highly compliant and will spring back, so roll alignment is less critical here. Other materials such as copper foil, Kevlar films, and metalized substrates are less forgiving and if stretched across misaligned rollers may be permanently deformed and will not regain their original dimension. For these reasons, the alignment of roll systems is very important and a laser alignment system is an ideal tool for this task.



Preventative Maintenance. You've heard that phrase often enough. The Laser Microgage is an ideal way to make quick, precise and quantitative measurements over a large machine with many rollers. With minimal practice, the laser measuring and alignment process becomes very quick, allowing plant personnel to optimize their roll and web systems on a regular basis and ultimately reduce machine wear, breakdowns, and lost production time.

For over a decade, Pinpoint has been working with customers to solve roll and web alignment problems.

Out of this effort we have developed and refined a line of laser alignment products that provide a precise and efficient means of checking machinery. These products are easy to set up and use by plant or production personnel right on the factory floor. Much of the guess work and subjectivity of tradition alignment techniques are eliminated because the Laser Microgage delivers precise, quantitative data to correct machinery flaws.

Roll alignment has two basic components: roll straightness and parallelism in both the vertical and horizontal directions. Straightness is simply a measure of each individual roll in a system to see if it is worn, damaged, sagging, or deflecting under its own weight.

Checking roll parallelism in the vertical orientation can be accomplished with Pinpoint's Vertical Roll Adjuster. This roll alignment tool is simply placed on top of a roller and an adjustment made by turning a small knurled knob to zero the device. A digital micrometer displays the leveling error to a precision of 0.001 inch and this tool can be used for comparing or repositioning rolls in the vertical orientation. The Pinpoint Roll Adjuster (as seen below) is easy and precise to use in all roll alignment projects.



Cont. on next page

Technical Questions? Call our experts at 800-757-5383

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Roll position in the horizontal plane is equally important and the Laser Microgage is combined with the 90-Line right angle (as seen below).



The 90-Line forms a precise right angle laser beam and this new reference beam can be swung through a full circle to locate and measure the position of rollers in a production system. Measurements at each roller's end are taken and the difference between these readings is calculated to map the position of every roller in the horizontal plane. If rollers need adjustment, the Microgage system can be used in place to monitor the adjustment and verify that the new roll position is correct.

For more information on roll and web alignment, please contact our engineering group.



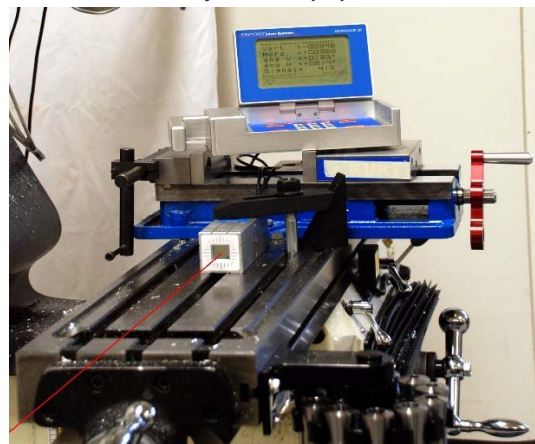
"Hold on, man. We don't go anywhere with "scary," "spooky," "haunted," or "forbidden" in the title." ~From *Scooby-Doo*

HAPPY HALLOWEEN!

Pinpoint Introduces the Microgage 4D Receiver

The new 4D Microgage Receiver measures two linear axes X and Y and their two angular components yaw and pitch. The two linear axes show how well machinery is aligned along a common centerline and the angular readouts show if parallelism problems are present. The new 4D Microgage Receiver is ideal for aligning lathes, turning centers, spindles, as well as moving linear slides, rams and pistons, injection molding machinery, moving mechanical sub-assemblies and more. A compact, digital display provides precise linear and angular readings and is easy and intuitive to use.

The method of operation is simple - a narrow laser beam provides a measuring reference line and the 4D Microgage Receiver measures where this laser line lands on an internal detector and determines the position of a machine or sub-assembly relative to this laser reference beam. This receiver can operate over distances of 100 feet or more and deliver a measuring precision of 0.0005 inch and 0.005 degrees; ideal for demanding industrial alignment applications. The Laser Microgage system along with this new 4D Microgage Receiver puts precise measuring and alignment capability right into the hands of plant engineers and manufacturing personnel, so that they can monitor and optimize their own production machinery and equipment.



Versatile Alignment Tool Improves Manufacturing Efficiency

Pinpoint Laser Systems' unique 2-dimensional Microgage is designed for precision measuring, machine alignment, calibration, and other demanding industrial applications.



Roll and web lines, CNC cutting and milling equipment, lathes, stamping presses, injection molding machines, extrusion systems and other production equipment are easily checked and aligned for improved operating efficiency and reduced downtime. The Microgage 2D is compact, easy to set-up and use right on the factory floor. The photograph shows the Microgage 2D checking roll parallelism on a long multi-color printing press.

The Microgage 2D is easy to use and can be adapted to many applications. This product combines a compact laser transmitter with a receiver and digital display. As the laser moves across the receiver in a vertical or horizontal direction the display provides a reading of the motion, accurate to 0.0001 inch. This new Microgage will operate over a distance of 100 feet with a bright red beam that is quickly adaptable to many industrial applications. Several simple accessories allow for alignment of straightness, runout, parallelism, squareness, roll & web alignment, shaft & bore alignment, flatness measuring and much more.

The 2-Axis Laser Microgage operates on batteries for added convenience and all components are machined of solid aluminum with a hard anodized coating for wear resistance. A sealed push button keypad and large LCD display make the Microgage 2D easy and convenient to use in demanding industrial environments. A serial and USB interface connect to a laptop or PC and link to popular spreadsheets for plotting and analyzing data for maintenance records, customer compliance and other uses. This Microgage system includes a compact carrying case to store the components and is easily carried right out onto the manufacturing floor.

What Do Pinpoint Customers Have to Say?

"We actually used it (Cylindrical Laser) for aligning the Power Rollers the turbine rotor sits on during inspections and testing. It went extremely well. Didn't suffer the delays we encountered last year when the turbine rotor shouldered up on the power roller (cost us about 20 hours). It has already paid for itself. Thanks for your help."

Edward W. Williams TG/MSR Project Manager
Brunswick Nuclear Plant , Progress Energy Carolinas

"This is just an update for you and a testimony to the great help that your product was in assisting us during our installation and maintenance work and shutdown periods. We installed the wedge blocks with ease and they performed in the very same manner. Great product."

Jeffery W. Evans
Westinghouse Electric Co, LLC

"Thanksgiving dinners takes 18 hours to prepare. They are consumed in 12 minutes. Half time takes 12 minutes. This is not a coincidence. "

Erma Bombeck



STRAIGHT TO THE POINT

Sudoku

								3
				3				
	8							
	5							
					6			
								1
				2				
		8						
								7

PLAY FOUR

1				
2				
3				
4				
	1	2	3	4

Across

- 1—Sip of Beer
- 2—Scarlett O'Hara's Home
- 3—Reality Show—American ?
- 4—Actress Russo

Down

- 1—Mix
- 2—Roe vs. ?
- 3—Press
- 4—Wizard of Oz—Dorothy ?

W P P A R A L L E L I S M K R O
 E L L L U P I N P O I N T E L S
 B A A A B R O L L E R S N V L U
 H S T D B E A M S W E B A L A B
 A T E L E I F O R M I N G A M S
 N I N P R E S S D R U M S R I T
 D C S C O A T I N G G N M F N R
 L S S E N T H G I A R T S I A A
 I D L E R S B O R E E N T L T T
 N I E X T R U D E R S S A M I E
 G S N A L I O F R E P P O C N S
 P R O L L A N D W E B A L I G N

Can you find the hidden message?

Find the words below, circle the letters, and the remaining letters form a message.

- | | | |
|--------------|--------------|----------|
| Rollers | Parallelism | Pinpoint |
| Coating | Press Drums | Platens |
| Roll and web | Straightness | Rubber |
| Forming | Kevlar film | Idlers |
| Substrates | Laminating | Plastic |
| Web handling | Copper foil | Align |
| Extruders | Bore | Beams |

You can find the answers to these puzzles on our website at www.pinlaser.com

I hope you enjoyed *Straight to the Point!* We would love to hear your ideas and suggestions for future issues. Also, if you have a puzzle you would like published, send an email to our editor, Cindy Lord, cjlord@pinlaser.com.

*Ahhhh Autumn that beautiful time of year
when you look out into your yard at all the
colorful leaves and ask yourself,*

“Should I rake or should I move?”

Anonymous



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You have received a complimentary copy of our
newsletter. Please look inside for valuable insights on
factory alignment and improving efficiency!

Please visit us on the web!
www.pinlaser.com

SPECIAL POINTS OF INTEREST:



Pinpoint maintains an **Engineering Help Desk** to assist
people with tough manufacturing problems.

Contact us today and we can help you solve that tough
problem!

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or Helpdesk@pinlaser.com

We also provide free support through on-line confer-
encing. Please call us for more details.

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made in the USA!*
- *Using the Laser Microgage can
improve manufacturing effi-
ciency, reduce downtime and ulti-
mately improves production prof-
itability*
- *Our innovative products are
found in factories throughout the
United States and all over the
world.*