

Application Note

Measuring ID and OD of Steel Tube Reducing Dies and Mandrels

Steel Tube Reducing Die



Benefits:

- Reduced lost profits due to material waste, increased labor costs, and lost productivity and throughput
- Quick detection of out-of-spec products with high-accuracy laser measurements of multiple part dimensions
- Reliable, automated system requires minimal operator intervention
- Automatic data collection eliminates transcription errors and simplifies reporting

Improve product quality with laser micrometry

What's the best way to control product quality when you're a producer of cold-drawn and welded mechanical tubing? Let Beta LaserMike show you how.

Understanding the Problem

Beta LaserMike recently developed a solution for a major producer of cold-drawn and welded mechanical tubing which might meet your requirements too.

The company produces drawn tubing in a wide range of diameters, wall thicknesses and lengths. Consequently, they had a substantial array of tube drawing dies and mandrels to track and inspect each time a job called for a specific set of reducing dies. The dies' inside diameters were 0.48 inches to 5.0 inches, and each die weighed up to 100 pounds. The mandrels were 5 to 10 inches long and 0.2 to 5 inches in diameter.

The customer required a system that was easy to use. The system also needed to accommodate ID die measurements with such a large variation, as well as determining OD mandrel measurements to an accuracy of 0.0002 in.



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The Z-Mike Solution

The system consists of a PrecisionScan 2190 Laser Micrometer and a PrecisionPro 2000 Data Processor connected to an industrial flat-panel PC. To simplify placement of the dies, the laser micrometer is mounted in a vertical orientation, allowing the dies to lay flat on a sliding table. A significant challenge for this system was developing a fixture that would hold the required range of part sizes and types and weights, yet still be easy and quick to use.

The result is a table with a series of steps and locating dowels that ensure that the dies are properly centered. The table is mounted on slides and uses a pneumatic piston to slide the die center through the laser beam. The table also has a shallow V cut into the center to allow accurate positioning of the mandrels. The system is designed to take three measurements of each part, with the parts manually rotated after each measurement. A handle actuates the movement of the table and initiates the measurement cycle.

The user-interface consists of an industrial flat-panel PC with customized software. To use the system, the operator enters the part serial number and a user ID. The operator then initiates the three measurements, and the system displays all three measurements and an average value. This information is sent to a networked database file and to a label printer that prints summary information as a series of text and barcodes. The label acts as an inventory tracking tag and also allows future users to verify the part is within specification before it is used in a production run.

The Result

What did the customer say? The customer felt that the system has already paid for itself for these reasons:

- Improved productivity as result of the speed and ease of use of the system
- Reduced scrap rate resulting from the accurate measurement of dies and mandrels prior to production runs
- Reduced die refurbishment costs resulting from the die-wear analysis and reporting capabilities of the system.

Contact Beta LaserMike today to find out how we can make this system — or one of our other measurement solutions — save you time and money too.



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by BETA LaserMike

Beta LaserMike USA
8001 Technology Blvd.
Dayton, Ohio 45424
Tel: +1 937 233 9935
Fax: +1 937 233 7284

Z-Mike
Lasermesstechnik GmbH
Steinschönauerstrasse 4c
D-64823 Gross-Umstadt Germany
Tel: +49 (0)6078 9357 0
Fax: +49 (0)6078 9357 49

Visit our web site @ www.z-mike.com