**Press Facts**

Dimension measurement of metal tubes

**Dango & Dienenthal Umformtechnik:  
High-precision laser-based measurement of internal tube contours**

**SIegen, Germany, 11 February 2019 The new laser-based gauge developed by Dango & Dienenthal Umformtechnik measures the internal contour of tubes and pipes contact-free and with highest precision. The system is capable of measuring the shape, e.g. ovality, over the complete internal circumference or specific surface features, such as weld seams.**

The recently patented system measures the internal contour of seamless metal tubes and longitudinally welded pipes in a non-contact process based on the circular laser triangulation technique. It captures the contour along the complete tube length and generates a complete 3D image of the internal tube wall from the measured data.

In longitudinally welded pipe making, the system can be employed - before welding - to capture the dimension of the weld gap, and - after welding - to measure the weld seam.

The system comes with different measuring ranges for tube diameters between 100 and 1,000 mm. It measures the internal contour at 2,048 points gaplessly distributed around the complete internal circumference of the tube. This corresponds to an angular resolution of 0.2 degrees. The distance measurement takes place with a resolution of one per mille of the measuring range.

The new gauge works on the principle of laser triangulation: A laser, accommodated in the measuring head, projects a line onto the complete internal circumference of the tube wall. The camera, which is also installed in the measuring head, captures the line at 2,048 points distributed around the internal circumference. The software derives the internal tube contour by calculating and aggregating the individual distances from the axis.

Mounted on a carrying arm, during the measurement the measuring head moves through the tube along the central axis, capturing up to 90 profiles per second. Based on these profiles, the complete internal contour can be represented in 3D.

Denis Albayrak, Sales Manager at Dango & Dienenthal Umformtechnik, describes the benefits for producers and processors of tubes and pipes: “For the first time ever, the internal contour of tubes and pipes can be measured with a system designed for use in the rugged environment of industrial tube manufacturing. Made for a measuring range of up to 500 mm radius and highest measuring precision, the gauge is the perfect choice for the exacting requirements of the tube and pipe industry.”

**380 words including introduction**

### About Dango & Dienenthal Umformtechnik GmbH

Dango & Dienenthal Umformtechnik GmbH designs and manufactures machines for plate cold and hot bending and for hot forming of pipe by induction bending.

The product range includes heavy-duty plate roll-bending machines, three and four-roll round bending machines and induction pipe-bending machines.

The company offers a full line of services, from the design and planning through to the manufacturing, installation and commissioning of complete machines and plants, and after-sales service.

Added to this are upgrades and the service of hydraulic and hydroforming presses, as well as the relocation of presses, including dismantling and reassembly work.

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Figures and captions:

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| Fig. 1: The new laser triangulation system for non-contact measurement of the internal contours of tubes.  File name: DDU Innenrohrmessung.jpg |  |
| Fig. 2a: A camera captures the line projected by a circular laser onto the internal tube wall.  File name: DDU Schnitt 2.png |  |
| Fig. 2b: A camera captures the line projected by a circular laser onto the internal tube wall.  File name: DDU Schnitt 1.png |  |

Photos provided by Dango & Dienenthal Umformtechnik GmbH