Metrology

Hexagon-TESA 'Swiss Army Knife' Height Gauge Brings Industry 4.0 to Machine Shops

James Langford | Dec 06, 2022

Uwe Burkardt has met with his share of smaller metalworking businesses reluctant to invest in state-of-the-art measurement equipment.

Their budgets are limited, they don't expect the purchase to deliver a direct boost to sales and their existing metrology devices have done a good enough job so far to satisfy their customers.

But as marketing director for TESA, a unit of Lausanne, Switzerland-based Hexagon that specializes in sophisticated metrology equipment, Burkardt knows that the machining industry is changing as more sophisticated equipment allows end customers to insist on tighter adherence to specified tolerances.

Such precision is increasingly necessary for U.S. factories making ever more complex products, from semiconductors—thanks to ***reshoring of the industry*** under the CHIPS and Science Act—to medical devices and electric-vehicle components.

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"What I say often to small and midsize customers is that when your first truck comes back to your factory because the product wasn't accepted on the other side due to the tolerances, you'll wake up and say, 'OK, there is a need to invest and upgrade my equipment and to be more accurate,'" Burkardt says.

And delivering accuracy is at the core of the business model for Hexagon, whose ***industrial enterprise solutions business*** includes metrology systems with the latest in sensor technology as well as computer-aided design, manufacturing and engineering software.

Precision Metalworking

Its ***Brown & Sharpe TESA*** brand, for instance, is the global market leader in height gauges and offers metrology tools from calipers to micrometers, dial gauges and lever-type dial test indicators. Customers include firms in the automotive, aerospace and oil and gas industries.

Height gauges in the TESA-Hite portfolio are made to withstand harsh workshop conditions, including projections and variations in temperature while still providing reliable and repeatable measurements,

which are key to consistent delivery of workpieces that meet customer specifications.

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Among the gauges in the lineup are the TESA-Hite Magna, whose magnetic reading system is designed for particularly difficult working conditions, and the TESA-Hite, featuring an optical reader that provides greater accuracy. Both come in sizes from 16- to 28-inch (400 to 700 millimeters) and are delivered with a Swiss Calibration Service certificate.

The multifunctional ***TESA Micro-Hite*** and Micro-Hite+M, which is motorized, come in 14-, 24- and 36-inch (350-, 600- and 900-millimeter) sizes and, like their counterparts, carry a Swiss Calibration Service certificate.


TESA
TECHNOLOGY
Micro-Hite
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Photo courtesy of Hexagon-TESA Technology

Burkardt describes the Micro-Hite as the "Swiss Army knife" of gauges, with software that enables advanced functions beyond one-dimensional results including angle calculation, perpendicularity and squareness-deviation measurement.

Consistent Quality Control

The gauges can be set up in what he describes as "measurement islands" in machine shops, enabling many users to check workpiece specifications at incremental steps during a variety of jobs rather than waiting for an opening at a complex coordinate measuring machine station.

Using the island to "test two or three measurement points" and ensure that settings for the current job are correct provides quality control throughout a workpiece's development rather than "measuring the whole part with 50 different measurement points" upon completion, Burkardt explains.

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That limits the potential for having to scrap a workpiece and start over, with its high costs in terms of lost—and potentially extremely expensive—metals as well as in wasted work hours.

That's a boon to productivity, and ultimately to the bottom line, for an industry fighting to shorten cycle time and amp up feed rates while grappling with a widening workforce shortage, supply-chain disruption and high inflation.

Those kinds of workflow improvements help show more experienced workers—who may be intimidated by higher-tech equipment they've never used—the advantages of devices like the TESA Micro-Hite.

"They may think, 'If I just use the old caliper, I know what it is,' but they'll never reach this level of accuracy using that," Burkardt explains.

Once they see the Micro-Hite at work, potential customers start evaluating its capabilities relative to the needs of their own shops and realize the workplace inconveniences that it can ease.

"They see that they can now measure a part that once gave them headaches in an easy way," he says. "It's an eye-opener for everybody. They realize that this is really, really good, it works quickly and what's more, it gives a result they can repeat."

Bluetooth connectivity enables transmission of measurement data from some height gauges and other Hexagon products directly to computers so that it can be conveyed to shop customers seeking traceability to confirm that their orders are being built within specifications, Burkardt says.

Implementing Industry 4.0

Many of the company's devices that weren't purchased with Bluetooth capability can easily be upgraded with the addition of bottle cap-shaped transmitters, he notes.

Hexagon devices sold without Bluetooth capability can often be upgraded with bottle cap-shaped transmitters, above. | Photo courtesy of Hexagon-TESA Technology.

And even if buyers don't realize it right away, investing in Bluetooth transmitters and gauges like the Micro-Hite introduces ***Industry 4.0 capabilities*** to their business, albeit more subtly—and more realistically—than in the popular conception of a huge, fully automated factory with robot assistants.

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"Nobody will implement Industry 4.0 to the end point in one year," Burkardt says. "There's always evolution. For some customers, Industry 4.0 is sending data directly to an Excel spreadsheet or modifying the data in an Excel spreadsheet into a report for their customers. Starting with the small things like sending data and improving on that is, to me, the right way to develop."

How could your shop use a multifunctional height gauge? Tell us in the comments below.

