

Eco, yet for the highest standards

KADIA presents compact high-end honing machines for prototype and series manufacturers

Manufacturing companies that produce highly precise bores in small to medium batch sizes often hesitate to invest in their own precision honing machine. The rate of utilisation is simply too low. Such manufacturers might use a simpler machine that is less costly but often does not work precisely enough. With a new single-spindle "Eco Honing Machine", KADIA now seeks to meet the needs of exactly these and similar user groups. The E line is the ideal solution for entry into high-precision honing. In the event that production quantities rise, the machine concept offers options for series production.

In view of rising quality requirements, every μm matters when honing is used for finishing of precision bores. The edge of what is technically possible is becoming the norm. High-end machining equipment and highly developed technology are the prerequisites to even be considered as a supplier. Working productively and precisely to the last μm is KADIA's speciality.

To put the technical possibilities into a machine that also carries the "eco" name is quite a new approach from the developers at KADIA, a balancing act that has nevertheless been achieved with the new E line.

"The new single-spindle E line is a cost-effective, productive honing solution for the highest precision. With this machine, we are rounding off our spectrum in the smaller range," emphasises executive director Henning Klein.

The machine is also "ultra-compact" and requires just 2.5 m² of floor space. The control cabinet is integrated into the side and all the components that require regular



The E line is a compact honing machine that takes up just 2.5 m² of space

maintenance are easily accessible. Potential users who also have the area of their production space in mind will be glad to learn that installation close to the wall is possible.

Up to now, KADIA has developed mostly multi-spindle machines for use in large series production, especially by automotive manufacturers and large suppliers.

"The E line is aimed on one hand at these current customers, especially at prototype developers", continues Henning Klein. "We see the second user group as manufacturing companies that want to either produce small volumes especially flexibly or produce in series economically, all in the high-precision range.

Such companies then have two options: they either handle the honing themselves or they hand off the demanding precision work to external service providers. The latter lends itself well when the company does not view honing as one of its own core competencies but would still like to accept orders from customers with highly precise requirements for boring quality. Professional honing providers can carry out such tasks quickly and reliably.

The new E line is the ideal alternative, especially when honing is a central part of the company's manufacturing competence and highly economical and precise work is important. In this case, the special entry-level features and the quality of output are not mutually exclusive, since the same

components that KADIA uses in other types of machines ensure that the end quality is correct down to the μ : a highly dynamic lean high-speed honing spindle and intuitive high-performance control. "Therefore, the E line is on the same level as our larger machines when it comes to quality", Henning Klein reiterates.

"Smart Dynamic Honing Technology"

KADIA recently presented its second-generation LH spindles with the LH2 and LH3. The update includes a range of further developments that take into account current technology. The somewhat smaller LH2, with a material removal rate of up to 18 mm³/s, performs its work in the eco machine. It stands out due to its "ultra-precise run-out" and its highly dynamic nature. Inside, modern direct drives provide the rotation and strokes.

The company surprised the honing scene a few years ago with the HMC100, a machine control system of its own development. At that time, there was no comparable solution on the market specifically tailored to honing. The control system features the newest technologies and measuring techniques and visually presents all processes on a large 19" panel. The design engineers in Nürtingen now integrate the HMC100 into all of their honing machines.

The two key components, the honing spindle and the honing control system, are



Typical parts for the E line: Injection pumps, gear wheels, hydraulic components, turbochargers, small precision parts, aviation components

also important parts of the "Smart Dynamic honing technology".

Henning Klein says: "This is a concept that connects with Smart Manufacturing and follows the motto Less complexity. More efficiency."

Like all KADIA honing machines, the E line is also available in a variety of configurations. The "ultra-compact" and "eco" characteristics do not preclude this option. In its basic configuration, the machine contains a fixed table for prototype parts and small batches and this is often sufficient. The option of installing a rotary table with multiple stations, usually honing, measuring and loading stations, is also possible. "Users have the option of integrating a handling system for automatic placement", explains Henning Klein. "This provides a productive honing solution for medium to large batches."

Depending on the number of units being produced, the provision of coolant may come into play. As a compact solution, an integrated coolant and extraction system is available to E line operators. This will almost always be sufficient for prototype or small batch production. For larger production volumes and fully automatic operation, an



The E line can be equipped with a fixed table (left) or a rotary table with up to three work stations



external coolant system may be advisable. The highly precise LH honing spindles and the high-performance control system HMC100 are the key components of the Smart Dynamic honing technology from KADIA. The goal of this concept is "Less complexity. More efficiency." This allows honing processes to be achieved with the highest quality and maximum output. The spindles have direct drives for the rotation and the strokes. KADIA provide a five-year warranty on the linear drive for the strokes. The HMC100 features the newest honing processes and measuring techniques. A 19" panel clearly and understandably displays the complex operations of precision honing.

This allows the machine to be operated intuitively. The statistical analysis is an especially convenient feature. Both components also work with the E line and make it an eco-honing solution for the highest standards.

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