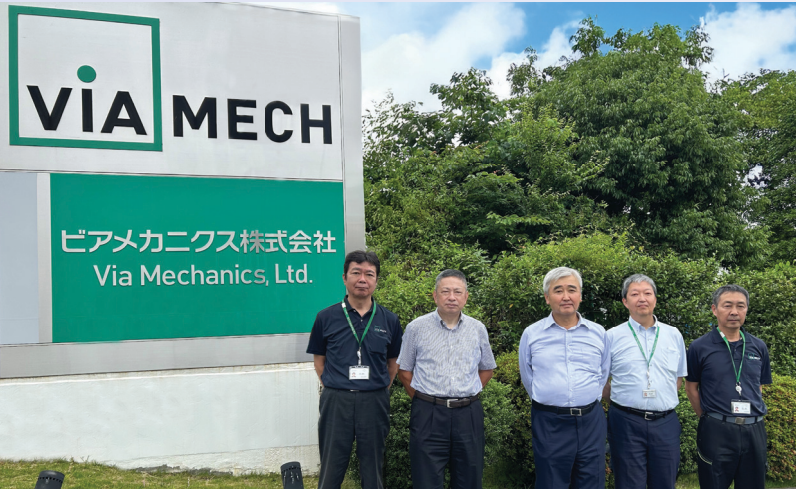


## Perfect Pitch Performance

As circuits grow smaller, drilling pioneer Via Mechanics is consistently meeting the industry’s most cutting-edge demands.



President Hideaki Shimizu (center) and his team are prepared to take on the most cutting-edge challenges in the semiconductor industry.

In the semiconductor world, the race to commercialize glass is certainly on. As chips shrink and device performance requirements rise, high-end substrates used in semiconductor packaging now demand much greater accuracy than standard PCBs, integrating CPUs, GPUs, memory and HBM chips into a single package. High-performance AI data centers are increasingly demanding chips that can perform at their best in the smallest package size possible, with densely packed microscopic “vias” allowing current to flow. That is where Japan’s Via Mechanics comes in. A pioneer in the precision drilling field, Via Mechanics is bringing new techniques to circuit processing and design. “As circuits grow more complex, high-density vias are critical,” said company President Hideaki Shimizu. “Meeting these demands requires

both mechanical drilling and laser processing, forming through-holes and microvias, respectively. Our machines handle both processes, allowing high-performance packaging for data centers and other applications.” Recently, delicate glass chip substrates have drawn attention for their faster signal transmission and better thermal stability. However, their fragility makes processing challenging. Many companies rely on chemical treatment to create via holes, raising costs and generating hazardous waste. Working with Nippon Electric Glass, Via Mechanics is developing laser-based drilling methods to avoid cracking and chipping. The implications are substantial. “Laser drilling reduces environmental risks and processing costs,” said Shimizu. “We expect glass substrates to reach commercial use in certain applications by 2028 or 2029, while advanced organic substrates will continue to evolve. There is an increasing need for next-generation substrate materials that can meet the industry’s major challenges, including miniaturization, power saving and mechanical strength.” From an operations standpoint, in July, Via Mechanics became a wholly owned subsidiary of Amada Co., Ltd., a global leader in metal processing machinery. Amada’s expertise in laser oscillator technology and its worldwide procurement network bring major synergies. “Joining Amada enhances our ability to innovate and to deliver solutions globally,” Shimizu explained. With strong operations in Japan, Taiwan, China and Korea, regions central to semiconductor and memory chip production, Via Mechanics is well-positioned to support the fast-growing demand for high-density PCB manufacturing worldwide. “Our overseas network has ample capacity to serve these regions,” said Shimizu.



High precision 12-axis drilling machine ND-12MA2126, from Via Mechanics.