At the forefront of factory automation

"The APC-type CNC control device will be applied in production plants around the world, contributing to labor reduction, energy efficiency and cost reduction"

Teruaki Yogo, President, Opton

Some of OPTON's innovations have included the world's first robotic pipe bender series for high-precision bending and a non-contact 3D profiler to measure pipes. Can you tell us more about your latest technology, the APC-type CNC control device?

Based on the know-how gained through 50 years of development of production machinery with automatic control systems, OPTON has developed and patented the world's first APC-type CNC control device that automatically generates control programs for production systems. In the future, we believe that new pipe benders and FA systems applying this control device will greatly contribute to the development of our customers. Furthermore, we will adapt the APC-type CNC control device to our pipe benders, and at the same time, we plan to sell the product as a single unit to machine manufacturers and the FA system production industry. Through these, we would like to contribute to the improvement of world productivity as much as possible.

CNC Pipe bender Eco-Cross Type Series

What advantages does the APC-type have over conventional control devices?

The conventional method is to draw the machine operations with a flowchart based on the IEC standard, convert it to an intermediate language, then convert it to machine language, which is the control language of the program. Not only does this method require advanced skills for IT programmers, it also demands a lot of time to develop programs, which is leading to a shortage of IT engineers. This is a worldwide phenomenon. In order to overcome the weaknesses of the conventional system, we decided to develop the APC-type CNC control system.

Features of the newly developed APC-type controller:

1) In order to break away from the IEC flow chart, we developed the YOGO chart which can auto-generate machine control programs. We have patented this chart.

2) Compared to the conventional flow chart, the YOGO chart takes about 1/10th of the time to draw the machine operation.

3) The YOGO chart was designed so that a machine designer, who knows the operation of the machine well, can easily draw it. The control program can be auto-generated without a conventional IT engineer. The program can be customized by just editing the chart.

Non-touch 3D Pipe scaner

Dual Robot Bender for long pipe, single Robot Bender for short type

4) If you click the 'Generate' button, in about three seconds the YOGO chart will be converted to machine language by translation script software, and then saved in to the control memory.

5) The control script software sends the machine language in the memory to the appropriate drive source to execute the control. The above tells us that the APC CNC control unit can be used for both PLC and CNC control; a machine designer can draw a YOGO chart using the same method. If you click the 'Generate' button when the chart is completed, the control program automatically generates the chart. This device will be applied in production plants around the world, and contribute to labor reduction, energy efficiency, and cost reduction.

OPTON has been pioneering innovation for six decades. What is your business model for the future?

Since OPTON was established 60 years ago, we aimed to unify through our motto, "no imitation, no subcontracting, and transparent management." We have a group of approximately 200 engineers including outside forces, who specialize in developing creative production equipment with IT applications. We have experienced many hardships over the past 60 years, but we have never had a large deficit, and our business has been running stably. The reason for this is: the passion of our employees in developing products; developing production machines for IT application that we provided to the pipe processing industry that matched the needs of that time; having a wide range of machines that are necessary for factory automation; and having the most recent success with the development of the APC CNC control system.

Our business model for the future is to apply the APC CNC control device to our pipe processing FA production system.

APC-type CNC control monitor

We also want to develop a series of non-contact 3D profilers, and sell them internally and externally. External forces like forming partnerships with large companies (with capital and patented technology) will greatly contribute to our company growth and employee unity.

MIC OPTON

Meeting the ever-changing needs of industry

Defined by high performance, precision and reliability, Kyoei Print Giken's machinery is used in a wide range of industries, from automotives and electronics to the medical field, supporting its clients in the production of high-quality products.

"Our company has diversified into numerous products that meet the needs of many fields"

Akihiro Kobayashi, President, Kyoei Print Giken

For more than 50 years, Kyoei Print Giken (KPG) has been an innovative leader in the metal-working machinery manufacturing industry, supplying press dies, molds, engraving machines and small metal components to industrial clients across the globe.

As industry progresses at an ever-faster pace, so too has technology that embodies it. KPG has stayed ahead of the curve, drawing on its long-standing innovation and R&D capabilities to manufacture state-of-the-art technology at the core of the next generation of automobiles and electronics. The company also recently began producing ultra-fine parts for watches, which can be found in the high-end time pieces developed by Naoya Hida & Co.

"Our company has diversified into numerous products that meet the needs of many fields. Right now in the automotive industry, we are focusing on molds and parts used to manufacture electronic vehicles and fuel cells," says president, Akihiro Kobayashi. "For example, KPG's latest ultrasonic processing machinery is used to develop highly purified carbon fiber-reinforced plastic (CFRP)."

Due to the coronavirus pandemic, KPG's sister company in Mexico, AOITECHNO, has moved into the field of personal protection equipment with its Table Splash Guard (pictured above right), which has three folding panels that protect users from fluid splash in three directions. The super-clear transparent film is made from medical-quality anti-fog PET, while Velcro is used to make the device easy to fold and carry. The Splash Guard is a fine example of how KPG is responding to the latest needs of society and business.

Contact for table splash guard: hassan_arabi@aoitechno.com

Contact for microfabrication: isamuddin@kpg.jp

KYOEI PRINT GIKEN

All great things start with a mechanical pencil

"The value of the products we offer is something that cannot be matched"

KOTOBUKI

The samurai sword has long been an iconic symbol of Japan's reputed craftsmanship and manufacturing excellence. But for many the pen is mightier than the sword. And that is certainly the case for Kotobuki, a company that, throughout its 50-year history, has strived for the highest standards of *monozukuri* (Japanese craftsmanship) and R&D to manufacture the highest quality and technologically advanced writing instruments on the market.

All great things – from buildings and machines to a finely designed dress – often start with a simple pencil sketch. As such, the humble pencil's impact on technology, engineering, architecture and culture throughout history cannot be understated. And even in our highly digitalized world, writing instruments will continue to have their place long into the future.

With that in mind, Kotobuki will continue to pioneer the advancement of the writing instrument industry market with its innovative technology and superior quality products, which include mechanical pencils, ballpoint and felt pens, among others.

"Everywhere, quality is revered and valued. We pride ourselves on always being able to emphasize our quality, and our products are shipped only after passing Kotobuki's 100% quality control process. Our mechanical pencils last over 10 years," says Kotobuki chairman, Hidehei Kageyama. "While there are cheaper products emerging from countries such as China, the value of the products we offer is something that cannot be matched."

Engineers at Kotobuki's R&D centre work tirelessly to develop new writing technologies and have been responsible for the development of functions such as the cushion point and the sliding sleeve. The company's latest product is a high-quality pencil that has a mechanism that improves the writing process by delivering a comfortable amount of lead automatically, while at the same time enhancing shock absorption and lead breakage protection functions.

Leveraging on its long-cultivated mechanical writing instrument technology, Kotobuki has recently begun a new venture into the cosmetics industry, developing and supplying high-performing containers for both liquid- and solid-based cosmetic products.

Kotobuki's first model (1973)

"By deploying technical knowhow accumulated from decades of experience with writing instruments, we are looking to provide functions to cosmetic containers so that they can be easily stored and conveniently transported," adds Mr. Kageyama.

"Traditionally, mechanical functions were rarely seen in cosmetic products, except for certain products such as lipsticks. Kotobuki's technology for writing instruments can be applied directly to cosmetic containers and dispensers. To facilitate maximum comfort while introducing innovation to the market is one of our goals."

High quality begins with highly sophisticated inspection technology

With its latest 3D-AOI and X-ray technologies, Saki Corporation is the global leader in automated inspection equipment for PCB and semiconductor manufacturing.

"Delivering detailed and accurate data is the primary driver behind our decision to create both 3D and X-ray technologies"

Norihiro Koike, President & CEO, Saki Corporation

The world-renowned superiority of Japanese manufacturing is underpinned by the concept of *monozukuri*. Made famous by the likes of Sony and Toyota, *monozukuri* encompasses craftsmanship, an ardent focus on high-quality production and the constant pursuit of innovation. While household names like Sony, Toyota, Nissan and Honda may be the visible face of Japanese manufacturing on the global stage, the true strength of Japanese *monozukuri* lies with the nation's smaller and lesser known manufacturers – many of which, like Saki Corporation, work behind the scenes, supplying parts and equipment to these larger firms.

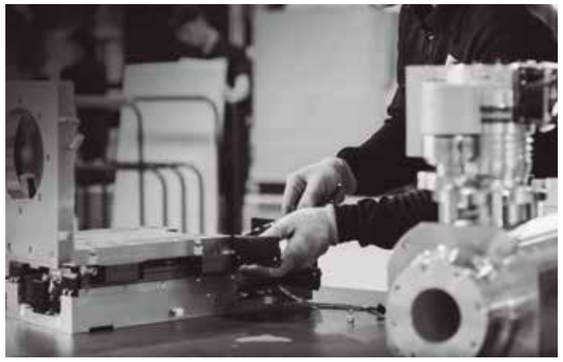
In 1994, Saki Corporation started supplying inspection devices to Sony. Today, the company is a global innovation leader in automated inspection equipment for printed circuit board (PCB) and semiconductor manufacturing.

As the PCB and semiconductor industries have developed and become more ubiquitous with the advent of smart phones, smart devices, advanced robotics and the latest computerized automobiles and home appliances; Saki Corporation has adapted to constantly changing demands to build the most sophisticated state-of-the-art inspection systems, trusted by clients in Japan and across the world.

"Thanks to *monozukuri*, technology has evolved, and the components used in products have become more precise and intricate with a much higher level of detail and complexity. Our inspection systems have therefore also evolved to suit contemporary trends, first from 2D to 3D and then on to X-ray," explains Saki president and CEO, Norihiro Koike.

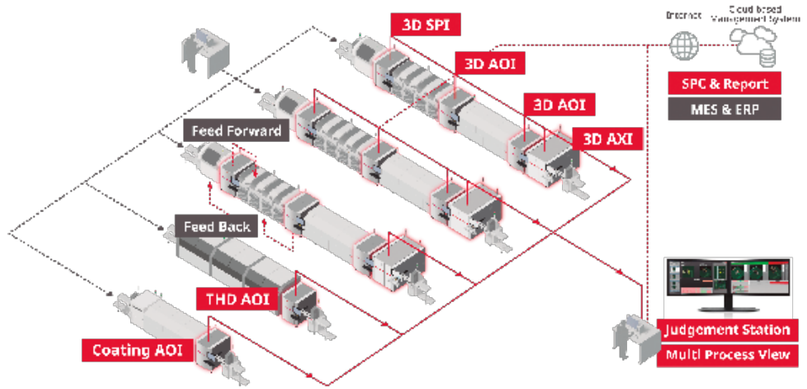
Initially Saki focused on 2D devices, with its global expansion driven by the adoption of the *monozukuri* philosophy overseas. With the rise of cheaper competitors on the global market, Saki Corporation moved to distinguish itself with 3D and X-ray technologies for clients manufacturing high value-added products.

In today's highly sophisticated manufacturing landscape, characterized by automation, IoT and Big Data, Saki's systems compare, evaluate, collect and deliver critical feedback to the manufacturing process, and thus ensure the highest levels of control through the provision of high-accuracy inspection and measurement.



"Delivering this detailed and accurate data is the primary driver behind our decision to create both 3D and X-ray technologies," adds Mr. Koike.

Today, Saki's best-selling equipment is its 3D-AOI (Automated Optical Inspection) system that meets the stringent standards demanded by surface mount devices. Saki's technology enables precise inspection of PCBs and the detection of the most difficult defects.



As a leader in 3D-AOI development, Saki has introduced its 3rd generation AOI systems: flexible, adaptable, high-quality and cost-effective systems that can be used across a range of inspection applications, from simple verifications to full algorithm-based measurements.

Driven by increasingly sophisticated technical advancements in markets including autonomous vehicles, aerospace, medical and 5G applications, Saki is also introducing its 2nd generation AXI (Automated X-ray Inspection) systems that ensure the highest quality and reliability of end products through the provision of integrous measurement and feedback data. Saki's AI-based technology is essential to achieve true automation in the electronics manufacturing industry of the future.

In an ever-changing world, *monozukuri* efficiency is central to Saki's corporate DNA as the company continues to focus on cutting edge R&D, expanding its technologies to provide added value and meet the expectations of its global client base.

saki
The Future in Focus