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MACHINE GREATNESS™

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Doosan is Set to Introduce 31 Types of Machine Tools including High-Performance 5-axis and Multitasking Machine Tools at SIMTOS 2018

Doosan Machine Tools is planning to participate in the SIMTOS 2018 exhibition slated for April 3-7 (5 days) at KINTEX, Ilsan, Korea, where it will introduce some 31 types of machine tools under the theme of 'Complexity, Automation, and Future Technologies' with the aim of boosting the company's prestige as a leading solutions provider in the industry. At SIMTOS 2018, Doosan Machine Tools will introduce its full product lineup of global bestselling machine tools, high-end machine tools, 5-axis multitasking machine tools, and large-sized machine tools. It will exhibit 11 turning centers, 15 machining centers, 4 Swiss turns, and a double-column MC.

In addition to its wide range of highly sophisticated machine tools, Doosan Machine Tools will present its innovative machining technologies, automation solutions, customized industrial solutions, and future-oriented technologies at SIMTOS 2018. Furthermore, the company's promotional booth will offer visitors a variety of hands-on experience demonstrations to help them grasp "how to apply the most advanced multi-tasking machining technologies and automation solutions in the industry to their particular applications," and experience "the operational convenience afforded by Doosan Machine Tools' cutting-edge ICT-based machine tools."

Doosan Machine Tools' Various High-end Models Will Further Enhance the Company's Brand Reputation

Doosan Machine Tools is planning to participate in the CCMT 2018 programmed for April 9-13 at the Shanghai New International Expo Center (SNIEC), China. During the trade fair, Doosan Machine Tools will introduce a number of its bestselling models including the Lynx 235 II, Lynx 2205G and DNM 5005HS, along with its latest tapping center, the T-4005. Most notably, the company will also feature various high-end machine tools such as the PUMA TW2600M-GL and the DNM 350/5AX to proactively respond to the latest rapidly expanding market trends for 'automation' and 'complexity' in the Chinese market.

In addition, given that there is a rising demand in the Chinese market for high-performance machine tools capable of machining hard-to-cut materials, plus making improvements in productivity and quality, Doosan Machine Tools will actively promote its brand at the fair with the focus on presenting its breakthrough advances in both machine tools and automation solutions. Doosan will install its cutting-edge production manufacturing system based on 'DNM 605W+PUMA VAW7500+Robot system' in its promotional booth and give a great 'automotive aluminum wheel' machining and automation demonstration. At the CCMT 2018, Doosan Machine Tools expects to raise awareness of its high-performance multitasking cutting tools and automation solutions, and to shine a light on 'the values of the company's machine tools in general and the competitiveness of its multitasking 5-axis multitasking machine tools in particular.'

Doosan Machine Tools Presents Enhanced Lineup of Multitasking Machine Tools and Steady Bestseller Machine Tools

In partnership with its German dealer GLM, Doosan Machine Tools participated in the METAV 2018 held in Dusseldorf, Germany for five days from February 20 to 24. The company introduced its flagship high-end machine tools, the PUMA SMX3100ST and the DVF 5000, along with its automation solutions based on a combination of the PUMA 2600SY II and robot system, and the Lynx 2100M with gantry loader. By exhibiting six cutting-edge machine tools including the DNM 5700 and the Lynx 2100LSY, Doosan Machine Tools highlighted the competitiveness of its enhanced lineup of multitasking machine tools as well as its steady bestselling machine tools.

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Industrial Trends

Machine Tools Can Accelerate Smart Manufacturing based on Flexible Production and Multi-tasking Machining

In response to increasingly diverse customer needs, the metal processing industry has consistently incorporated ICT and IoT into its production processes, having already opened up a new era of not only multi-product-large-scale-production, but also small-product-customized-production. Behind the evolution of manufacturing systems is the accelerated development of machine tools, solutions, cutting technologies and software, which in turn has made flexible production and multi-tasking machining possible.

Production Information Management System and Unmanned Machining

The recent lackluster global growth has caused the volume of new contracts to drop and the potential for inconsistent quality to rise in Korea, and the situation has worsened due to the extreme difficulties in hiring skilled workers.

To overcome such a crisis and further improve their manufacturing competitiveness, SMEs in the metal processing industry have begun to focus on improving their working environment and manufacturing processes. They are making every effort to meet the ongoing market trend for lightweight materials, modular processes, and complex processes, whilst minimizing defect rates, and improving both quality and productivity by securing the latest information on various machining operations through the establishment of an intelligent production information management system that enables them to realize 'flexible production and multi-tasking machining' with their machine tools.

SMEs that have set up such a system can maximize the efficiency of their machine tools and realize optimal make-to-order production while taking measures to optimize the reliability and performance of their cutting tools. They no longer have to stick to the traditional approach of one operator for one machine tool, and can now not only reduce their manpower considerably but also make the switch to unmanned machining operations.

Multi-tasking Machining and Flexible Production System

These industry demands strongly affect machine tool manufacturers, too. In their efforts to develop new products, manufacturers have risen to the challenge of making further progress in terms of 'high-speed, high-precision processing' in a bid to enable customers to improve their machining quality and productivity. In addition, they have developed technologies customized for multitasking machining, flexible production and intelligent machining in line with the latest trends of customized multi-product-small-quantity-production and multi-product-large-quantity-production. That is why the demand for 5-axis machine tools and multi-axis multitasking machine tools is on the rise in the market.

While in the past, machine tool manufacturers concentrated on the development of technologies for 'machine tools, they are now endeavoring to improve the technological competitiveness of their machine tools in terms of software and all the key parts and modules of their machine tools - such as spindles, servo motors, and precision bearings. Most notably, to accelerate the creation of a smart manufacturing environment for machine tools, manufacturers are also concentrating on the development of software and platforms that will enable them to equip themselves with the capabilities required to design customized processes and systems for intelligent machining systems and increase the flexibility of their production and process management practices. A good example in Korea is 'AI doo control' of Doosan Machine Tools, which has taken the lead in creating a smart manufacturing environment for its customers by enabling them to perfectly connect their machine tools in real time and provide a high level of monitoring and control.

Space Optimization and One-Chuck Cutting

To improve productivity, it is essential to reduce the lead time and minimize the number of processes while increasing the machining performance. Most notably, the demand for producing ever more complex shapes and modules is on the rise, so machine tools capable of cutting a variety of parts will contribute to reducing the setup time and improving the machining processes. For this reason, demand for multitasking machine tools is rising continuously, particularly among small and medium-sized parts manufacturers. For instance, they can now cut workpieces that previously required a multiple standard machine tools with a single multitasking machine tool, as the great advantage of multitasking machine tools is that they enable customers to produce workpieces of diverse shapes in the most flexible manner with minimum setups.

Moreover, as a single multitasking machine tool can carry out tasks that previously required multiple machine tools, parts manufacturers can install "one-chucking" machining methods on their production lines. Furthermore, customers who used to buy only machine tools are now demanding automation systems with integrated machine tools, robots and measurement systems, as well as monitoring software for the machining process. The result is that an increasing number of machine tool manufacturers are now providing customized manufacturing services.

Doosan Machine Tools has developed and launched a range of customized solutions to cope with the rapidly changing trends in metal processing and meet the increasingly exacting customer needs. The unique solutions offered by Doosan Machine Tools will be elaborated upon in the following pages.

FOCUS

Doosan Machine Tools
Multitasking Solutions

SIMTOS 2018: Reading Industrial Trends!

Doosan Machine Tools, a Provider of Multitasking Technical Solutions

Global markets have repeatedly called for machine tool manufacturers to develop high-precision, high-performance multitasking machine tools. This demand is particularly acute in the machining of aircraft parts, where not only high productivity and outstanding quality is required, but also the machining and finishing of complex, difficult-to-cut-workpieces. As such, Doosan Machine Tools has launched a range of multitasking machine tools equipped with one-chucking technology to 'enhance productivity and maintain a high level of precision,' along with smart-manufacturing solutions designed to support the machining of complex shapes and workpieces that are difficult to machine, thus responding to the needs of the Aerospace industry – the top-priority customer in the metal machining sector.

Aircraft Housing Machining Solution: Multitasking Turning Center PUMA SMX 2600ST

Right/left spindles supported by bottom turret ensure simultaneous machining and high productivity

The PUMA SMX2600ST features turning/milling functions that utilizes a high-rigidity servo-type bottom turret and is capable of simultaneous machining on both the right and left spindles, thus enabling high-productivity, high-precision machining of complex shapes, and making it the optimal solution for the machining of aircraft housings.

Skiving technology designed for high-speed, high-precision machining and enhanced productivity

Equipped with skiving technology for high-speed, high-precision involute gear machining, this machine also boasts diverse tooling functions - such as turning, end milling, face milling, drilling, and tapping – for machining any conceivable shape desired by the user, thus enhancing flexibility and productivity.

B-axis contour-turning function enhances precision by eliminating interface surface roughness

The machine has a maximum machining length of 1540mm and a maximum machining diameter of 660mm, enabling the machining of diverse, large and long workpieces. Also, unlike the existing machining method where multiple tools have been used causing tool interference problems, a B-axis contour turning function is now adopted to enable the machining of various profiles with a single tool, thus enhancing the precision of the workpiece by eliminating the surface roughness blend marks made by multiple tools.

Software designed for worker convenience

The machine is also equipped with a user-friendly work guide function, a high-speed cooling function for spindles and feed axes, and a smart thermal displacement correction function, thus ensuring stable machining precision and boosting operational and maintenance convenience.

Column Moving Machining Center: Aircraft Booster Machining Solution

VCF 850LSR II

Optional rotary table and tilting head designed for multitask machining

The VCF 850LSR II is a multipurpose column moving-type machining center designed to perform 3-, 4-, and 5-axis machining according to user requirements. In particular, the separate-type and embedded-type rotary tables and the tilting head enable the 3-, 4- and 5-axis machining of diverse workpieces with one setup, thus enabling excellent machine performance in the production of aircraft boosters.

Column-moving type and pickup magazine offer wider range of choices for enhanced productivity

The VCF 850LSR II is a highly compact column-moving-type machine with a length of 3.795m and a width of 5.440m, and a maximum X-axis machining capacity of 3m, enabling it to machine small to large workpieces in a limited space. In addition, it is available as a standard drum-type with a capacity of 30 tools or the chain-type with a capacity of 60 tools, and has a pickup magazine capable of holding up to five large tools measuring up to 80 mm in length and 130 mm in diameter – this is not correct please check dimensions of long tools, enabling it to machine workpieces of various shapes and conditions.

Built-in type spindles designed for high-precision

The VCF 850LSR II is equipped with built-in-type spindles with a maximum speed of 12000 r/min and a maximum torque of 204 N•m, guaranteeing a high level of reliability for high-precision machining.

Simultaneous 5-Axis Machining Center: Aircraft Engine Part (Blisk) Machining Solution

DVF 8000

Two-surface-restraining tool system designed to ensure excellent surface finish

The DVF 8000 features a 2-face contact tool system designed to minimise cutting vibration, enhance the tool life cycle, and improve machining surface finish, ensuring high precision and high productivity, as well optimizing tool life.

Turning and milling in one setup for multiple machining operations on complex-shape workpieces

The DVF8000 is a 5-axis vertical machining center capable of both turning and milling in one setup, thus enabling the complete machining of complex-shaped workpieces in one setting which would otherwise require various machines. The DVF8000 boasts a high-rigidity structure for high-precision machining over long periods, and is designed to respond to the burgeoning 5-axis machining center market and high-demand industries. The machine features Doosan's acclaimed high-rigidity new 5-axis frame, thus ensuring high-quality precision machining.

Adoption of the trochoidal machining method for improved machining of hard-to-cut materials

The DVF 8000 has adopted the trochoidal machining method for the efficient, high-speed machining of slots, thereby improving the roughing capability for hard-to-cut materials, and delivering outstanding machining of new and complex aircraft parts.

Simultaneous 5-Axis Horizontal Machining Center: Aircraft Engine Machining Solution

DHF 8000

Nodding head capable of multiple-surface machining to boost production efficiency

Equipped with a nodding head spindle, the DHF 8000 is an 800mm pallet simultaneous 5-axis horizontal machining center that is capable of machining complex parts in one setting. It is equipped with a rotary table and a nodding head spindle to enhance production efficiency on multi surfaces and profiles. The 1600 rotational nodding head offers up to 6000 r/min and up to 603 N•m torque for the rapid machining and production of diverse products including tough materials.

Glass scales, spindle, and ball screw shaft cooling adopted as standards for enhanced precision

The machine's Y and Z axes are fitted with dual ball screws, as well as a high static/dynamic stiffness column, to deliver high precision and volumetric accuracy. In particular, linear axis glass scales, spindle and ball screw shaft cooling functions are adopted as standard, making it the optimal solution for the high-precision machining of diverse aircraft parts and difficult-to-machine materials.

Center-through chip treatment solution

The DHF 8000 offers the center-through-type chip removal solution suitable for machining where a large quantity of chips are produced. With a bed structure suitable for containing high volume coolant flows, a highly durable ATC, and a minimized machine installation area, user convenience and operational efficiency have also been increased.

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Customer Story
SWP Corporation

CEO Hwang Woo-yeon of SWP Corporation

As a Cutting Tool Application Engineer, SWP Corp. Finds Solutions to Any Technical Problem with Its Advanced Cutting Know-how

SWP is an SME that designs and develops cutting technologies in order to help its customers raise their competitiveness, while taking on various challenges to improve their manufacturing processes and fulfill its customers' most demanding requirements. Serving as an application engineer provider, SWP Corporation provides optimal cutting solutions to its customers based on the advanced cutting technologies and know-how that it has accumulated over the last twenty-eight years. Equipped with more than twenty machine tools supplied by Doosan Machine Tools, including the VCF 850LSR, SWP Corporation proactively responds to rapidly changing manufacturing environments with its outstanding competitiveness based on its 'spirit of challenge' and 'ability to optimize its machine tools.'

SWP

CEO Hwang Woo-yeon operating Doosan Machine Tools' VCF 850LSR

A vacuum 6-axis robot

Vacuum gate valve spare parts

The Challenge Facing SWP

An Enterprise Equipped with Cutting Know-how Beyond the Bounds of Imagination

Launched in 1990, SWP Corporation possesses numerous original technologies for a wide range of areas in the machine industry, including the cutting of parts for semiconductor manufacturing machines and the design, production and assembly of semiconductor equipment based on the cutting technologies that it has built up over the past twenty-eight years. "We have built up our competitiveness by attempting what others have never even imagined trying," declared Hwang Woo-yeon, the CEO of SWP. "When a company wants to try new cutting methods or make improvements to its cutting processes with the aim of significantly upgrading operational convenience or production efficiency, it must possess high-performance machine tools along with the know-how that enables it to maximize the operational efficiency of those machine tools."

"Most firms that machine parts depend on a couple of general-purpose machine tools including machine centers and turning centers. They struggle to survive in today's extremely competitive market with low wages," said CEO Hwang. "We have invested in multitasking machine tools, including 5-axis machine tools, in order to open up a high value-added market and, consequently, we have been able to equip ourselves with competitiveness boasting an operational efficiency ten times higher than that of our competitors."

CEO Hwang Woo-yeon wanted to achieve improvements in his company's production efficiency, quality and precision by using multitasking machine tools. As such, he purchased Doosan Machine Tools' multipurpose vertical machine center, the VCF 850LSR, as soon as it was launched.

CEO Hwang said, "Right after we procured the VCF 850LSR, we were asked by one of our customers to cut some high-precision workpieces with a 5/1000 machining tolerance. If we had not purchased the VCF 850LSR, we would not have been able to meet the customer's needs." Though actively involved in the development of processes and cutting know-how to help its customers make further savings in costs and improvements in quality, SWP Corporation has even gone so far as to offer its customers application engineering, thus becoming a more reliable partner for its customers.

The Solution Is Doosan Machine Tools' Multitasking Machine Tools!

Providing the Best Cutting Solutions with the Most Outstanding Machine Tools

To survive an economic crisis, machine tool manufacturers have no choice but to reduce their costs. However, any attempts to reduce costs by making changes to designs or materials without fully understanding the relevant parts' characteristics or metal cutting technologies could compromise the quality of the finished products. "Many designers stick to expensive materials because they don't fully understand cutting technologies or are worried about the consequences of design changes," said CEO Hwang Woo-yeon. "Our customer companies' executives and design engineers come and visit us in order to find solutions to such a phenomenon." They come to us because we are fully aware of the uses of various workpieces and the quality requirements for such workpieces, and we also know how to achieve cost reductions through changes of materials without compromising quality, and how to help our customers improve their productivity through improvements in various processes.

SWP Corporation gladly accepts the challenge of giving new processes a try in an attempt to meet its customers' needs, which also enables the company to develop innovative products and further develop its cutting technologies.
A good example is the vacuum 6-axis robot that is employed for semiconductor stripping tools (Asher), a product that requires precision cutting technology and know-how as well as an outstanding level of assembly technology. "Even if the design drawings of our company's vacuum 6-axis robot are disclosed to the public, I don't think other companies will be able to build it because they don't have the required cutting technologies," said CEO Hwang. He added that in 2008 he supplied a semiconductor stripping tool equipped with the product to company 'S', which still uses the tool without any problems at all.

Meanwhile, CEO Hwang heard that one of his company's customers had a semiconductor part that generates particle/impurity during the wafer cleaning process and wanted to change the material of the spare part from stainless steel to titanium. Through a new processing mechanism, CEO Hwang ended up supplying the customer company with a titanium-based spare part at a 60% lower price than the initial price. "The usage of all materials must be based upon a full understanding of a machine tool's features and tool characteristics," said CEO Hwang. "Even hard-to-cut materials are easy to work on when the appropriate tools are chosen and metalworking is done at the optimal speed." He stressed that a company's technological competence can optimize the performance of machine tools.

It is multitasking machine tools that have enabled SWP Corporation to offer its customers optimized cutting solutions, process diverse-shaped workpieces in one chucking, improve productivity, and realize high-precision high value-added processing. Most notably, Doosan Machine Tools' VCF 850LSR is said to have greatly contributed to cutting costs and improving quality in the processing of the vacuum gate valve, one of the company's flagship products. CEO Hwang says, "Without the VCF 850LSR, we could not have made improvements in the cutting processes of the vacuum gate valve and thus would never have found a solution to the need to reduce costs." He went on to say, "Each piece of semiconductor equipment had four parts to work on, and thus multi-tasking machining was absolutely necessary to reduce machining costs. The VCF 850KSR made a critical contribution to helping us make incredible achievements by realizing the 2/1000 machining tolerance required by our customer and reducing our existing costs by as much as 75%."

SWP Corporation, which currently possesses more than twenty machine tools supplied by Doosan Machine Tools including the VCF 850LSR, PUMA 2600Y, and DNM series, is said to be planning to purchase Doosan Machine Tools' PUMA SMX3100L. "Our annual sales jumped from KRW 4.1 billion in 2016 to KRW 5.9 billion in 2017, which is largely attributable to our purchase of Doosan Machine Tools' multitasking machine tools," said CEO Hwang Woo-yeon. "We expect to easily increase our annual sales to KRW 80 billion in 2018." He went on to say, "In 2018, we will concentrate on making inroads into the increasingly expanding collaborative robot market" as part of the company's efforts to continue diversifying its markets.

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Overseas Customer Story
Aerotech Precision Manufacturing, Great Britain

Aerotech's director Allan Redfern and manager Aaron Houston

Aerotech's First Choice to Prepare for All Eventualities: Meeting Customer Needs and Coping with Future Changes with 5-axis Machine Tools

Aerotech Precision Manufacturing

The manufacturing sector in the United Kingdom is facing uncertain and challenging times ahead. Yet many UK manufacturing firms are taking matters into their own hands by investing in their manufacturing plants, equipment, processes, systems and people in a bid to enhance their global competitiveness and better position themselves to capitalize on opportunities in the post-Brexit world. One such company is leading precision subcontracting specialist Aerotech Precision Manufacturing, which has recently invested in state-of-the-art high-performance cutting machine tools to better prepare itself for the post-Brexit future. The company is fully committed to making great strides in its quality competitiveness in high-precision cutting operations with reduced costs, accelerated delivery, and improved productivity.

"We are using the VCF 850LSR to machine complex, high-precision components for customers in the aerospace, defense and nuclear sectors.

Aerotech component machined on Doosan's VCF 850LSR

The Challenge Facing Aerotech Precision Manufacturing

Reduce Cycle Times and Raise Process Reliability

In the wake of the Brexit decision, UK manufacturing is faced with uncertain and challenging times. Aerotech Precision Manufacturing (hereinafter Aerotech) has continued to make investments in its equipment and facilities to further enhance its corporate competitiveness and capitalize on opportunities in the post-Brexit world.

Founded in 1990, Aerotech manufactures and supplies high-precision complex components and assemblies for the aerospace, defense, medical device, nuclear, and oil & gas sectors, as well as parts for the 'special purpose' processing industry and packaging equipment and machines. The components machined by Aerotech vary considerably and include prototypes and one-offs. A significant proportion of Aerotech's work is in highly-regulated markets requiring a very high level of cutting technologies. For that reason, the company has invested heavily in ensuring it has the correct accreditations and certifications to operate and grow within the aerospace, defense, medical device, and nuclear sectors, including AS 9100 (Rev C); ISO 9001; ISO 14001 and Fit4Nuclear. The emphasis on quality, lead-time fulfillment and cost competitiveness explains, to a large extent, the company's investment in Doosan's VCF 850LSR machine in October 2016.

Aaron Houston, Aerotech's Business Development Manager, said "We operate in highly-competitive global markets, which means we simply cannot afford to stand still if we are to cope with the rapidly changing manufacturing environments while keeping our customers highly satisfied with our performance." He went on to say, "As a consequence, we regularly audit and review our engineering and technical capacity and capabilities - benchmarking where we are against where we need to be. If there's a disconnect between the two, we make strategic investments in the latest technology to bridge the gap in our production operations."

The Solution Is the VCF 850LSR!

Get Ready for the Era of Multi-tasking Machining and Flexible Production with 5-axis Machine Tools

As part of the company's continuous improvement program, Aerotech made the decision to replace one of its existing large-capacity 3-axis machines with a new, high-specification 5-axis machining center in order to solve the problems caused by the accumulation of machining tolerances in the processes of clamping and non-clamping, which makes high-precision processing difficult, and the decline in productivity due to non-machining time. The investment in the 5-axis machining center was intended to help the company reduce job set-up times and part-cycle times (by adopting a one-hit machining strategy) and, in doing so, improve its productivity and process reliability.

Aerotech Director Allan Redfern explained: "Although we decided on the 5-axis machine tool route, there are so many different types and models available that we made sure we gave ourselves sufficient time to investigate the market thoroughly to ensure we selected the right machine for our requirements." Most notably, Aerotech has to meet the exacting requirements of numerous customers in different industries such as the aerospace, defense, medical device and nuclear industries. Given the characteristics of the materials and cutting parts used in those industries, Aerotech opted for large-sized multitasking 5-axis machine tools that could be used for multiple purposes with a variety of applications. Since Aerotech produces diverse types of spare parts, ranging from long complex-shaped parts to relatively small parts, in large quantities, the company focused its market research on a multi-purpose machine tool with a wide X-axis that could deliver excellent cutting performance and outstanding work precision while enabling the company to produce parts using 3-axis, 4+1, and full 5-axis simultaneous machining.

"As a result of our investigation of various brands of 5-axis machine tools, Doosan Machine Tools' multi-purpose vertical machine center, the VCF 850LSR, emerged as a strong candidate," said Director Allan Redfern. "In 2013, our company bought a PUMA 480L lathe of Doosan Machine Tools, and we were - and still are - very impressed with its reliability and performance as well as the after-sales service and technical support. Thus, with a high degree of interest in the VCF 850LSR, we had opportunities to check the machine tool in action firsthand."

"The VCF 850LSR is being used to machine complex, high-precision components for the customers in the aerospace, defense and nuclear sectors," said director Redfern. "One of the components being machined with the Doosan machine tool is used in advanced, remotely operated underwater vehicles (ROVs), which are used in the detection, assessment and destruction of sea mines." "The component is made from aerospace grade aluminum alloy and is solid-machined on our lathes (first operation) before being 4-/5-axis machined on the VCF 850LSR. The components are rough-machined in the first instance, which requires significant high accuracy stock removal, and are then finish-machined to realize a Ra 0.4µm surface finish.

"Since we began machining these parts on the new Doosan machine, our cycle times have been reduced dramatically," said director Redfern. "Our investment in the machine tools of Doosan Machine Tools has proved very successful so far." Now, the VCF 850LSR is taking on more and more work. The machine has also become a focal point for customers visiting Aerotech's production facility. Aaron Houston, the Business Development Manager, concludes, "When visitors see the VCF 850LSR up close and in action, they are impressed. The machine provides them with confidence and the certainty that Aerotech can achieve the part quality and lead times they demand. He went on to say, "With advanced machining technologies like the VCF 850LSR on our side, we are prepared for most, if not all, eventualities in these challenging times and are ready to actively seize any opportunities the future might hold for us."

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Overseas Customer Story (the USA)

High-speed Machining, Maintenance of Highly Stable Machining, and Accurate Surface Roughness: IMAC's Selection of the PUMA 2600SY Was the Right Decision!

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Most spare parts used for measurement and control systems require a high level of machining accuracy. For that reason, the relevant parts manufacturers demand machine tools that can deliver heavy and interrupted cutting, long-term precision accuracy, and superior surface finishes. IMAC Systems Inc. located in Pennsylvania, USA, researched various multitasking machine tools supplied by world-renowned machine tool manufacturers to find the most suitable machine tool. It was Doosan's PUMA 2600SY that found its way to IMAC's shop floor for its 'strength, speed and accuracy' as a multitasking turning center.

IMAC SYSTEM Inc

The PUMA 2600SY is suitable for heavy and interrupted cutting and also performs superbly in precise cutting as it is capable of producing the required optimum surface finish, high cutting speeds, and highly accurate roundness.

machining parts

The Challenge Facing IMAC Systems Inc.

Meeting the Needs of High Speed, Tight Tolerance, High Accuracy, and Optimum Surface Finish

IMAC Systems Inc. (hereinafter IMAC) specializes in gas measurement and control systems. The company's precision machine shop turns out tight-tolerance components for domestic and overseas customers. To answer the increasing demand for quality improvements and tighter tolerance. IMAC planned to meet these needs by purchasing a new high-performance turning center.

After researching various Japanese and European turning centers, it was the PUMA 2600SY of Doosan Machine Tools that found its way to the shop floor.

IMAC's executive vice president Nicholas Kohart said, "We chose the PUMA 2600SY because IMAC's need for heavy and interrupted cutting, long-term precision accuracy and superior surface finishes match just a few of the advantages offered by Doosan's horizontal turning center." He went on to say, "Our needs matched up with the solutions provided by Doosan Machine Tools."

The Solution Is the PUMA 2600SY!

Chosen for its High Level of Rigidity suitable for Heavy Duty Cutting, Optimum Surface Finish, and High Cutting Speeds

"We saw found a lot of good machines but Doosan Machine Tools outperformed them all," said executive vice president Nicholas Kohart. "We also wanted the most robust horizontal turning center we could find to fit our tolerances, and the PUMA was totally solid."

The PUMA 2600SY features a powerful integral spindle motor and a wide, rigid bed and large slideway span that reduces the effects of vibration and provides optimum conditions for unsurpassed workpiece quality.

"The PUMA 2600SY is excellent for precision cutting processes with a high level of rigidity for heavy duty cutting, optimum surface finish, high cutting speeds, and highly accurate roundness," said Nicholas Kohart, who went on to express his full satisfaction with the machine, saying, "Doosan Machine Tools' competent engineers also enhance accuracy by using their expertise to eliminate heat as much as possible."

"Service and tech support were big factors of purchase decision," said Nocholas Kohart. "Doosan Machine Tools' personnel were always willing to help. They promptly answered their phones and were prepared do anything to find a solution to any problem we night have, which further increased our trust in the company." IMAC was so pleased with the performance of the PUMA 2600SY that it adopted a sister unit from the series, namely a PUMA 2100SY, shortly thereafter. Then, in 2016, the company purchased a HP 5100, its first horizontal machine.

"All three Doosan machines are performing beyond our expectations," remarked Kohart. "And when the time comes for the next round of machines, we will definitely be talking to Doosan Machine Tools."

PUMA 2600SY

NEW PRODUCT

Doosan Machine Tools New Products

New Products Equipped with Key Doosan Technologies

TURNING CENTER

10”, 12” Multitasking Mill/Turn Centers with Bottom Turrets for Enhanced Productivity

PUMA *SMX ST series*

The PUMA SMX2600ST and PUMA SMX3100ST are equipped with 10” and 12” chucks (15” as an option), a maximum machining length of 1540mm, and a maximum machining diameter of 660mm, thus enabling the machining of long and large workpieces. The maximum axis feed distance is 695mm, 1585mm and 300mm for the X, Z1 and Y axes respectively, while the rapid feed speed is 48, 48, and 36m/min for X1, Z1, and Y axes, respectively, offering a longer axis distance and higher rapid feedrate for greater productivity. By adding a turning/milling function supported by a 12-angle high-rigidity servo-type bottom turret to the LH and RH spindles and B axis milling spindle, the machine's multitasking function has been even more enhanced and production cycle times for a high variety / small volume parts has decreased by up to 75%.

6/8” Global Compact Turning Center

LYNX *2100LY series*

The Lynx 2100LY series is a 6”/8” CNC turning center capable of precision machining parts of diverse shapes including valves, shafts, gears, flanges and fittings, each with a maximum diameter of up to 300mm and a length of up to 510mm. The powerful motor with an output of 15kW provides the capability for heavy duty turning operations. The high-stability BMT structure, capable of using 6000 r/min milling tools, and the addition of a Y axis function, enables the high-precision machining of diverse complex shapes, including spiral milling, multi-surface machining, and circular interpolation.

Fundamentally, Doosan machine tools are able to improve its customers' productivity as its new products have incorporated the company's core technologies such as high speed spindles, high rigidity guideways, thermal stability, easy operation and smart monitoring.

MACHINING CENTER

Simultaneous 5-Axis Compact Machining Center Capable of High-speed Multitasking

DVF 5000

Designed for automation and maximum versatility, the DVF 5000 is a next-generation 5-axis compact machining center capable of unmanned machining. The table is designed for optimal accessibility for the operator, and the drive system for B and C axes rotation offers enhanced wear resistance and durability. The machine's entire structure is made of spheroidal graphite cast iron for enhanced rigidity and stability, while the addition of a table trunnion support enables powerful, precision machining of diverse workpieces weighing up to 500kg. The direct-connect, with a maximum speed of 12000 r/min is adopted as standard, with an optional 18000 r/min built in spindle available to machine diverse complex shapes.

High-speed High-productivity Tapping Center

T 4000HP

The T4000HP, DMT's representative tapping center, boasts spindles and feed axes with enhanced acceleration and deceleration, and a shorter tool exchange time, making it the optimal center for the high-productivity machining of automotive aluminum parts. The machine's stable structural design and extensive quality testing program has raised its reliability, and an all-axis automatic lubrication function reduces maintenance by 60%. Its compact footprint minimizes floorspace requirements and enhances customer convenience.


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You Machine Greatness
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Doosan Machine Tools will cheer you on in your efforts to overcome human limitations and create a better life for all!
SIMTOS 2018 April 3(Tue)-7(Sat) KINTEX
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