NEWSLETTER FOR VIP MACHINE TOOL CUSTOMERS

OPTIMAL SOLUTION

ONGOING EXPANSION INTO VARIOUS DEMANDING INDUSTRIES

2021 issue no 16.

MACHINE GREATNESS™


WELCOME TO
THE NEW ERA OF
MACHINE
GREATNESS

Multi-tasking machining

Multi-tasking machine for complex parts machining including milling, turning, and gear machining

5-Axis machining

Providing solutions suitable for medium and large workpieces with complex shapes, as the machine is equipped with a table turning function

Large part machining

From mold to large size 5-axis machining

Automation solution

Presenting automation solutions that are best combined with Doosan Machine Tools

Quartz, ceramic processing

Presenting solutions for the semiconductor industry and ceramic processing field

Hybrid additive manufacturing

Additive manufacturing/cutting machining solution based on the high-precision simultaneous 5-axis machining center

CONTENTS

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Doosan Machine Tools continuously improves and expands its machine tool and technology line-ups.

New models introduced and launched at online and offline exhibitions.

Doosan Machine Tools continuously improves and expands its products and technology/solution lineups to respond to changing market and customer needs and requirements. The results of the company's improvement programs can be seen when it exhibits and showcases its new technologies as was the case at the recent DIMF 21 (virtual exhibition) and at EMO Milano 21.

A complete view of Doosan Machine Tools' stand at EMO Milano 2021 Exhibition

You can experience Doosan Machine Tools stand at EMO Milano 2021 Exhibition by watching the video.
https://youtu.be/vuYJ3feQVtE

DIMF 2021 virtual exhibition

Doosan Machine Tools held its 13th DIMF (Doosan International Machine Tool Fair, hereafter referred to as DIMF 2021) for five days from September 13th to 17th with the theme of "a new world created by convergence". DIMF 2021 was prepared to commemorate the 45th anniversary of the company's foundation. At DIMF 2021, the company exhibited many new models based on the latest technology developments, 5-axis and multi-tasking machines that expanded the product lineup, and machines and automation solutions to achieve higher productivity and higher precision.

DIMF 2021 comprised six virtual exhibition zones – each focusing on specific technology i.e., achining centers, general lathes, complex/multi-axis lathes, 5-axis machining centers, vertical machines, mold machining centers, horizontal machining centers / large machining centers, and four virtual exhibition zones including automation solutions, electric vehicle solutions, IT & semiconductor solutions, and brand &/ technology solutions.

The six virtual exhibition zones showcased 40 different machine models organised by size and shape of workpiece, different materials they could machine. In these zones the new multi-tasking mill-turn SMX series (SMX 2100 to SMX 5100) were on show, and 24 new products including the including DVF 6500T, DVF 8000T/50, DVF 8000-AML, VCF 1100LSR could be seen. DIMF 2021 demonstrated that Doosan Machine Tools is able to address the needs of global dealers and customers by developing new models and expanding product lineups continually. In particular, Doosan Machine Tools received favorable responses from viewers by applying an e-catalog solution to all DIMF 2021 exhibition models.Viewers were able to find more detailed product information and machining specifications rather than visiting the exhibition hall in person.

In the four virtual exhibition zones designed to showcase smart manufacturing trends and address key challenges and issues facing many industries - a range of automation solutions (bar feeders, workpiece changers, pallet systems, and cobots) were displayed.

In addition, those zones also exhibited models and machining solutions designed for specific industries such as the electric vehicle and IT/semiconductor industry. Doosan Machine Tools also introduced its smart manufacturing technology and concept machines in the "brand & technology" zone. Visitors could also view Doosan Machine Tools' brand story and experience a virtual tour of its plant in this zone. The virtual tour video produced with 360-degree view technology content showed the production facility infrastructure of Namsan and Seongju factories, the R&D center that implements customer-oriented development processes, and the service center that quickly responds to customers' needs.

In addition, web seminars were also held during DIMF 2021 to introduce 9 new trends and technology solutions, including collaborative robot (automation) solutions, ram-type vertical turning centers, vibration and thermal displacement reduction technologies, power skiving, and an introduction to electric vehicle component machining. Through these activities, Doosan Machine Tools ensured that DIMF 2021 was a more comprehensive event that covered, not just machine tools, but also current and future trends and issues facing the machine tool industry.

Review of EMO Milano 2021

Doosan Machine Tools exhibited at EMO (Exposition Mondiale de la Machine Outil) MILANO 2021, which was held at the Fiera Milano exhibition hall in Italy for six days from October 4th to 9th. Doosan was out in force at the exhibition with a large and impressive stand as one would expect from a global, top tier machine tool giant and a major player in the European market. Doosan Machine Tools, with its "future-proofing solutions" concept exhibited11 advanced technology machines at the show including 6 new models, as well as 5-axis technology and automation solutions.

In particular, Doosan Machine Tools attracted the attention of visitors by promoting its 5-axis machining center lineup (DVF 5000, DVF 6500, and DVF 8000T), together with various 5-axis machining solutions, and by showcasing its multi-tasking and multi-purpose VCF 5500L and VCF 850LSR machines. In addition, SMX 2100ST and SMX 5100L were displayed in the offline exhibition area of the Doosan Machine Tools exhibition booth. These "multi-tasking and multi-axes" machining centers demonstrate the significant productivity and efficiency gains that can be achieved from such machines and by adopting 'one-hit' machining techniques. Doosan Machine Tools demonstrated its know-how of 24-hour unmanned machining and automation, through its NHP 5000 horizontal with an integrated RPS (Round Pallet System) and a DVF 5000 with a integrated AWC (Auto Workpiece Changer).

Other products introduced at EMO MILANO 2021 for the first time also and that drew in visitors included the new BVM 5700 (Y-axis 570 mm door-type) vertical machining center), the SVM 4100 (high productivity) vertical machining center for the light machining of aluminum workpieces, such as electric vehicle components), and CUFOS (Customized User-friendly Flexible Operating System), the open CNC platform that has been recently upgraded.

ZOOM IN

DIMF 2021
Ceramic, quartz machining solutions

Machine tools with an increased role in the field of semiconductor processing and equipment manufacture

Doosan Machine Tools expands product line-up for semiconductor and ceramic processing.

It is expected that investment in semiconductor equipment will be at an all-time high this year. Semiconductor manufacturers are making aggressive investment in plant and equipment to attempt to address the global semiconductor supply shortage., and the machine tool industry is designing and developing specialized products to increase their market share in the semiconductor market. The machine tool industry is also focusing on securing solutions for the ultra-fine and ultra-precision processing of advanced ceramic materials, which are widely used across many industries (from electrical and electronic to biotechnology). The machine tool industry needs to offer more diverse products, technologies, and solutions to survive and prosper in this innovative, rapidly changing, and growing market. This is the reason why Doosan Machine Tools is expanding its high-performance machine line-ups that are specialized for the semiconductor industry and ceramic processing field.

XG 600

XG 800-ATC

Increased facility investment due to semiconductor supply shortages is likely to continue for some time

The semiconductor industry has not escaped from a "supply shortage" this year. The shortage crisis was triggered by a failure by the global automobile industry to accurately forecast and predict its future semiconductor requirements. This was aggravated by sudden increases in demand for IT and electronic devices in the same period. Semiconductor manufacturers are in a dilemma because, despite investing in the plant, equipment, and operations, they are unable to meet demand. The same is true in the foundry industry. With so much growth (real and anticipated) occurring now and in the future, it is hardly surprising that investment in semiconductor equipment is also growing.

According to SEMI (Semiconductor Equipment and Materials International), global semiconductor equipment sales amounted to USD 26.8 billion (about KRW 32 trillion) in the third quarter of 2021, 8% up from the previous quarter, and 38% up from the same period in the previous year. By country, Taiwan and China invested more than USD 7 billion in the third quarter, mainly because semiconductor foundry companies such as TSMC and UMC in Taiwan, and SMIC in China expanded their production capabilities. As Samsung Electronics and SK Hynix continued to invest in their facilities, Korea ranked third by investing USD 5.9 billion. In particular, the Korean government also announced plans to improve national competitiveness by building an infrastructure for the entire semiconductor manufacturing process. Korea is emerging as an attractive market for global semiconductor equipment manufacturers, and is expected to invest more than KRW 510 trillion over the next 10 years.

Machine tools used for processing SiC (Silicon Carbide), ceramic, and quartz material components and for machining general semiconductor equipment.

Although machine tools do not make semiconductors in their entirety they are used to machine components made from SiC, ceramics, and quartz which are used in the manufacture of semiconductor wafers. Machine tools, which are referred to as "mother machines" have a vital role in manufacturing semiconductor equipment. The semiconductor market brings together a range of technologies - electronics, electricity, chemistry, and optics. In most cases, a custom-made manufacturing method is used to manufacture specific products according to the user's requirements. Regarding the machining of semiconductor components, machine tool quality and reliability are of paramount importance. Proven machine tool technology and high-performance machine tools are the preferred route for many semiconductor manufacturers.

Ceramic processing is another niche market for the machine tool industry.

"Ceramic processing" has recently emerged as a specialism for the semiconductor and machine tool industries. In recent years, ceramic materials have been increasingly used in and across a range of different industries - semiconductors, dielectrics, solar energy generation, secondary batteries, solid fuel cells, aerospace engine components, artificial joints and artificial teeth, etc. To meet the demand for the machining of specialised ceramic components new machine tools with ultra-high speed and high precision capabilities have been developed.

Doosan Machine Tools has invested in and has developed specialised machine tools that meet the demands of the semiconductor market and for the high precision machining of ceramics. Doosan Machine Tool's latest semiconductor/ceramic processing machine tool line-up was introduced at the 12th Doosan International Machine Tool Fair (DIMF 2021) – a five-day virtual exhibition that ran from 13th to 17th of September. The XG 600 and XG 800 quartz ring grinding machines are excellent examples of Doosan Machine Tools' prowess and expertise in the machining of ceramics. The XG 600 model is a rigid and stable machine (essential to main accuracies and finishes) and can handle large spindle loads. The machine features a grinding spindle (5,000r/min) ideal for high speed and high precision machining of quartz and ceramic parts required in the production of semiconductor wafers, and an efficient swarf/sludge (quartz dust) evacuation and disposal system. To ensure process reliability and clean machining, the XG 600 has been designed to prevent quartz dust (created during machining operations) from penetrating into mechanical and electrical areas of the machine. In addition, the XG800 model with its maximum machining diameter of 800mm, has been optimized for machining 'hard' SiC, ceramic, and quartz workpieces and features a built-in 6000r/min grinding spindle. This model also reduces vibration and improves grinding precision through the incorporation of a rigid and stiff bed, and X/Z-axis box guideways.

In addition to designing and developing machine tools for ceramic and quartz processing for the semiconductor market, Doosan Machine Tools has also increased its product line-up by introducing machines aimed at the IT, medical device and equipment and electric vehicle markets. These developments go hand in hand with the design and 'bringing to market' of a range of high performance and high productivity automation systems and solutions and the refinement and upgrade of bar feeders, workpiece changers and pallet systems. Through its efforts and commitment to continuous improvement, Doosan Machine Tools has reinforced its position as a global metal working leader.

Watch the XG series in this video.
https://youtu.be/l-kFzGRv4iE

ZOOM IN

DIMF 2021
Hybrid additive manufacturing

The machining industry responds to new manufacturing trends with “hybrid” machining

Doosan Machine Tools has created an Additive Manufacturing (AM) machine tool line-up to meet new industry and customer demands.

We are now living in the age of the “big blur,” where boundaries between industries are disappearing. As traditional manufacturing and industry demarcation lines merge or disappear altogether it isn’t easy to see, or know, where one’s immediate competitors might be. To cope with this level of disruption, it is important that product line-ups and service provision keep pace to ensure survival in such ultra-competitive environments where competitors appear unexpectedly and continuously. With 400 products and technologies in its machine tool line-up Doosan Machine Tools has recently expanded its additive manufacturing (AM) systems and solutions to provide customers with improved flexibility and performance, beyond process optimization, machine monitoring, and smart manufacturing.

Additive manufacturing and cutting machining are not in conflict with each other!

“Cutting machining”, which is often characterised by milling and turning, occupies only 33% of all metal working operations. As boundaries between industries and technologies are collapsing, we must create different responses and have different answers for the remaining two thirds – and have solutions available for these customers. Only then can we say we are a total solutions supplier to the entire metal working industry. “And the beginning is additive manufacturing,” said Lee Gangjae, general manager of preceding technology team that supervises R&D of Doosan Machine Tools. When metal 3D printing technology was first introduced it was expected that it would compete head-on with traditional ‘cutting’ machining. But that hasn’t necessarily been the case. Instead, there has been a blurring of lines and the emergence of hybrid machining (bringing together additive and conventional machining). “Cutting and additive manufacturing have different pros and cons depending on the shape or property of the workpiece in question. The advantages and disadvantages of each process/technology means that they do not ‘compete’ with each other but instead can ‘complement’ each other, said Lee Gangjae, general manager.

Cutting machining is a proven process that has a body of knowledge behind it and an understanding that low machining performance and high tool wear are often by-products when machining difficult-to-cut materials. In particular, the machining of expensive workpiece materials, where significant cost is incurred through high stock removal (i.e., machining and removing over 50 – 60% of workpiece material to produce the component’s net shape), is often highlighted as being expensive and an inefficient use of resources. The hybrid solution – i.e., integrating additive manufacturing and cutting machining is a solution to this problem because component near net shape can be created, without all the cost and waste involved.

The cutting/additive manufacturing process for creating shapes and features, for repairing components, and for enhancing parts.

The additive hybrid market is currently receiving increased attention from those in more traditional metal working industries and can be divided into three areas, such as the “shape creation” process, the “repair” process for damaged parts and features, and the “functional enhancement” of parts (i.e., giving them additional/extra functionality like corrosion and heat resistance etc. “If the cost involved in replacing damaged components is excessively high, or if no drawings are available and the components cannot be re-engineered using traditional technologies, additive manufacturing can be used to partially repair the components in question. In our experience, if car/electronic mould tools or expensive energy and defence components are damaged – they are frequently repaired using additive manufacturing, ” said Lee Gangjae, general manager. He also added that “We can save costs by improving

DVF 8000T-AML

DVF 5000-AML

Experience the DVF 8000T-AML series in this video.
https://youtu.be/4qjH-HSmvpM

functions and extending the lifespan of components without the need for post-treatment and secondary processes such as plating or surface treatment.

Doosan Machine Tools has been preparing for the growth in demand for additive manufacturing for eight years

Doosan Machine Tools began to take an interest in additive manufacturing solutions when a 5-axis machining center equipped with an additive manufacturing function was promoted at EMO 2013. In addition, former US President, Barack Obama, emphasized the importance of the 3D printing industry in the U.S. back in 2014. As a consequence, Doosan began to conduct company-wide analysis on whether additive manufacturing technology would become a competitor to conventional machining technologies, and if there was convergence between the two technologies (i.e., Hybrid Machining) would that be and what would it look like. Since then, Doosan Machine Tools has gradually invested in and developed additive manufacturing and has strategically prepared for its commercialization. Significant achievements were made in this area in 2019 by participating in the "Large additive manufacturing infrastructure establishment project" implemented by the Korea Automotive Technology Institute's Premium Automobile Research Center.

"There is a car racing stadium in Yeongam, Jeollanamdo, where the Premium Automobile Research Center is located. Our company conducted specialized research into and on specific high bearing load components and, along with engineers from the Research Center, were looking at manufacturing customized components that included premium car wheels using additive manufacturing." said Lee Gangjae, general manager. By implementing this project, Doosan Machine Tools successfully developed its DED (Direct Energy Deposition) based hybrid machines.

Doosan Machine Tools has created an additive manufacturing line-up as a first step in its response to demands for digital transformation and digital twin technology.

He also added that "Additive manufacturing is also associated with digital transformation and digital twin technology because CAM or 3D scanners can be used to create new shapes, repair, or enhance component functionality, using additive manufacturing, and the digital data generated during the process is connected to the equipment that will deliver (machine) the solution." That is another reason why Doosan Machine Tools is concentrating on the development of additive manufacturing machines and solutions by linking these three fields - machine, solution, and process together.

Doosan Machine Tools released "DVF", a premium vertical machining center equipped with the metal additive manufacturing function, at the DIMF 2021 virtual exhibition. The DVF model is an additive manufacturing/cutting hybrid machine based on the high-precision simultaneous 5-axis machine tool and is classified into the following models - DVF 5000-AML/8000-AML/8000TAML. The "DVF 8000T-AML" model was installed in Yeongam. Doosan Machine Tools plans to develop the hybrid machining market, starting with the "DVF" series that has a wide universal potential and then launch the "VCF 850 LSR" model that is aimed at processing large workpieces. Doosan Machine Tools is also preparing an operator's guide for power selection methods, optimising additive manufacturing processes and developing a solution that advances additive manufacturing monitoring techniques.

Doosan Machine Tools has continuously advanced its customer support services to 'get ahead of the curve' and be able to pre-emptively address new production and manufacturing issues and challenges that will be created from the the era of big blur, including "smart machines", "smart manufacturing", and "smart factory" solutions. Doosan Machine Tools has also developed new AM solutions and line-ups to help customers expand and grow their businesses and and plans to deliver more solutions and augment its line up to reinforce its position as a global "metal working" leading company, dominant across all production and manufacturing technology platforms.

Lee Gangjae, general manager of the preceding technology team who supervise the R&D of Doosan Machine Tools
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INSIDE

MNB Precision (U.K.)

CEO of MNB Precision

MNB Precision achieves sustainable growth with high-performance machines

Unrivalled technology, applications support and customer service are the greatest strengths

Mills CNC, the exclusive supplier of Doosan Machine Tools' machines in the U.K. and Ireland has, over the last 10 years, helped MNB Precision Ltd. (hereafter "MNB"), a precision machining company in the U.K., improve its manufacturing performance and competitiveness. By installing Doosan Machine Tools' "SMX 3100" (multi-tasking mill-turn machine) and "DNM 6700" (vertical machining center), MNB has further improved its machining capabilities, capacity, and quality MNB plans to invest in more Doosan machines in the future - some 36% of all its machine tool resource, by the end of the year. As a consequence, it is clear that MNB recognizes Doosan Machine Tools as the best partner to help it achieve its future plans.

MNB Precision

Article source: MILLSCNC [https://www.millscnc.co.uk]

The challenge for MNB

Reliable precision engineering service provider

MNB, a family-owned business, was established 40 years ago and has since expanded its business operations to serve many industries that, in addition to the oil and gas sector, includes power generation, rail, national defense, nuclear, and car manufacturing. Currently, it provides manufacturing and precision engineering services to a number of leading companies in the world.

In particular, its plant at Coventry, 36,000sq ft in size, provides a range of different machining services such as CNC turning, CNC milling, jig boring, and grinding. "We are an innovative and progressive company and regularly make strategic and prudent investment in the latest manufacturing and machining technologies. All of our investments aim to improve quality and productivity, and operational efficiencies," said Elliott Benton, Vice President of Operations, MNB.

DNM 6700

SMX 3100

Multi-tasking machines are the solution

Improving MNB's quality, productivity, and operational efficiencies

MNB holds Doosan Machine Tools in high regard by purchasing two lathes, a vertical machining center, and a mill-turn machine from Doosan over the last 7 months; the investment includes the installation of a "SMX 3100" (multi-tasking mill-turn machine) and a "DNM 6700" (vertical machining center) at its Coventry facility, as a part of an investment package in new technologies.

The SMX 3100 installed at the MNB's Coventry plant is a Multi-tasking mill-turn machine that provides high productivity. It is equipped with the 12" chuck, 30kW/4000r/min spindle, B-axis milling spindle, 40 tool magazine, servo driving type tailstock, linear scales, and the latest FANUC 31iB5 control.

"Although SMX 3100 is the Doosan's first mill-turn machine that we have, the technology itself is not new to us. The mill-turn technology enables us to machine complex and high precision parts in one set up. This technology can make jobs, previously considered unprofitable in the past, a much more attractive proposition, by significantly reducing job set up and part cycle times," said Elliott Benton.

The decisive reason why MNB invested in the SMX 3100 was that MNB needed to machine high-precision oil and gas (low alloy steel) plug-type parts for a customer in Norway. "The SMX 3100 is a powerful, flexible, and accurate mill-turn machine. We were able to make the decision to invest in it relatively easily thanks to its price and performance, the market reputation of the machine, and the after-sales support and service provided by Mills CNC," said Elliott Benton.

The DNM 6700, which was installed at the Coventry plant after the SMX 3100, is a high-capacity vertical machining center. It is equipped with the 12000 r/min directly connected spindle, a 30-position automatic tool changer (ATC), roller LM guideways, a thermal displacement compensation system, and the latest Fanuc control with the advanced touchscreen iHMI. A built-in 4/5-axis rotary table was also supplied as part of the investment to help increase productivity and flexibility.

"We achieved satisfactory results across all areas, including machining accuracy, speed, and production stability, from the "DNM 5700', a vertical machining center purchased from Doosan Machine Tools in 2017.

We decided to purchase the DNM 6700 machine because it has a large worktable (1500mm x 670mm) that enables us to machine workpieces up to 1300mm x 670mm x 625mm in size.

Initially, we purchased DNM 6700 to machine complex components for customers in the water purification industry. However, it currently has provided us with an invaluable and additional machining resource for our new precision engineering subsidiary "i8 Ltd," said Elliott Benton.

We plan to purchase 36% of all our machine tools from Doosan

A decade long partnership to create a bigger and brighter future together

The relationship between MNB and Doosan Machine Tools dates back to 2012. The "PUMA 800XL" CNC lathe was the first Doosan Machine Tools' machine purchased by MNB. Since then, MNB has continuously invested in Doosan Machine Tools' lathes and machining centers. MNB 20 will have 20 Doosan Machine Tools' Machines at its disposal by the end of the year, which amounts to 36% of MNB's total machine tool resource.

"Machines manufactured by Doosan Machine Tools are great performers and are competitively priced. We have confidence in Doosan Machine Tools, and in the after-sales services provided by Mills CNC. We believe that Doosan's technology and application support services are unrivalled in the market. These are amongst the main reasons why we continually invest in Doosan Machine Tool's machines and maintained a good relationship with them," said Elliott Benton.

INSIDE

Ledder Metaaltechniek (Netherlands)

Doosan Machine Tools provides “the future growth engine” for Ledder Metaaltechniek

Ledder Metaaltechniek is preparing for the future with the vertical machining center NHP 5000 equipped with the RPS 5000 pallet system

Ledder Metaaltechniek, located in Harderwijk, Netherlands, was founded in 1973 and has been providing first-class milling and turning machining services to customers for almost five decades. The company also provides welding, sheet metal working, and surface treatment services and has doubled its floorspace by working in close cooperation with other family-owned businesses. Thanks to acquiring the horizontal machining center “NHP 5000” equipped with the RPS (Round Pallet System) 5000 automated pallet changer the company can take advantage of lights-out unmanned operations enabling it to ramp up productivity and production output, respond to shorter delivery time requests, and stabilize production.

Netherlands

Ledder Metal Engineering [www.leddermetaaltechniek.nl] Article source: Dormac CNC Solutions [www.dormac.nl]

"The NHP 5000 machine has enabled us to increase productivity and ensure production quality."

The Challenge for Ledder Metaaltechniek

Achieving production stability using the Doosan Machine Tools' horizontal machining center with integrated multi pallet changer

Ledder Metaaltechniek, with its partners supplies medium and large high precision components to a diverse range of customers operating in many different industries -: machine frames, crane equipment, shipbuilding and marine parts, agricultural machinery parts etc. Ledder Metal Engineering, an affiliated company of Ledder Metaaltechniek, has technological prowess in the manufacture of large workpieces. "We're provide comprehensive solutions to customers by combining our welding and CNC milling expertise. We are also streamlining our services to be able to respond to customers' changing needs and requirements quickly," said Koen Dekker, managing director, Ledder Metaaltechniek.

High production multi-level RPS is the solution

Doosan Machine Tool's horizontal machining center provides 40% more productivity than other machines

Automation plays an important role in facilitating the growth of machining service providers. However, automation is not easy to integrate into established production lines that handle casting or large workpieces (up to 12,000mm) in size. Ledder Metaaltechniek is resolving this problem using the horizontal machining center with the integrated multi-pallet RPS 5000 automation system which it has had at its disposal for 18 months.

"We mill workpieces by material and load them on the pallets during the daytime, and operate machines for mass production during the night-time. The horizontal machining center equipped with Doosan Machine Tool's multi-pallet system is greatly contributing to our productivity and increased output because it can machine workpieces 40% faster than our existing machining center," added Koen Dekker. The RPS 5000 pallet system with its 21-pallet configuration connected to the 4-axis NHP 5000 horizontal machining center supports unmanned operations, even at night. Doosan Machine Tools first introduced this machine at EMO 2019 where it received a great response from visitors.

The "clamping tower" enables unmanned machining during night work

A big advantage of the "NHP 5000" machine, equipped with Doosan Machine Tools' RPS, is that the machine can continue milling operations while the operator sets up other workpieces on the available 'free' pallets. Using this feature, the operator can mill single pieces and new products during normal business hours and can prepare machining jobs for unmanned production at night. "The tool breakage control function provides additional process reliability during unmanned operations. The NHP 5000 machine delivers high-speed production and ensures high quality parts. Using this technology means we can machine a series of parts, without any issues, every night of the week," said Koen Dekker.

The problem of a limited floor area was solved with a compact automation system

Doosan Machine Tools' RPS 5000 model contains twenty-one 500 x 500 mm pallets, stored on three levels and is classed as a "compact automation system." "The RPS system is a better solution for us than the FMS system because of a clamping tower in the pallet. Using our own expertise and Doosan's zero-point clamping system we can change tools faster – thereby increasing efficiency and productivity," said Koen Dekker.

Additionally, Ledder Metaaltechniek can use all four faces of the clamping system thanks to the rotary movement of the NHP 5000's table. The previous horizontal machining center used by Ledder Metaaltechniek was able to tilt the workpiece to make a horizontal hole in a workpiece using its five-axis capability. However, with the NHP 5000, which is a 4-axis machine, angled head tooling is required to make the hole.

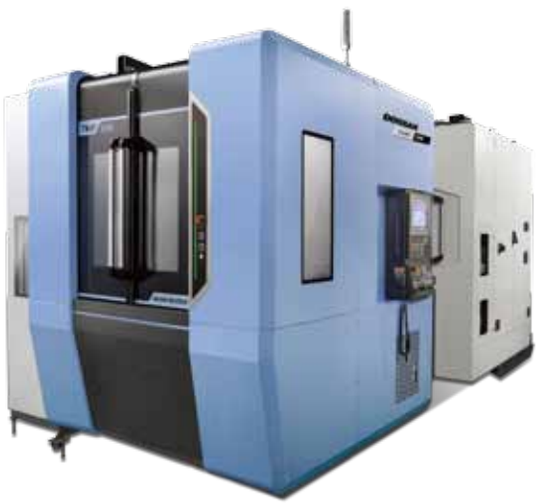
The plan has been to make "a workspace that makes work more efficient."

Moving to a new building provides a new opportunity for growth

Ledder Metaaltechniek built a new facility at the beginning of this year that has doubled its floorspace from the 1,500m2 to 3,600m2. "The new building has enabled us to automate our operations and this in turn has had a positive impact on customer satisfaction and business efficiency. The additional space will help us achieve our next planned growth objectives," said Koen Dekker.

Introduction of new products equipped with Doosan Machine Tools' core technologies

"Second generation NHP 5500", a high-speed and high-productivity horizontal machining center



NHP 5500

RealizeAchieved "high-speed and high-precision cutting machining" using a built-in spindle and sensor -type thermal displacement compensation

Contributinges to "growth of production" with faster feed axis acceleration/deceleration and short tool -change time

The second generation NHP 5500 has significantly improved productivity with faster X/Y/Z feed shaft acceleration/deceleration and short tool change time, and the X/Y/Z ball screw shaft cooling standard and 3-point bed support structure guarantee high precision. The second generation NHP 5500 is equipped with the high-speed tool magazine and quick tool change for reducing non-cutting time, and improved position/repeat accuracy by 50%. It also provides strong spindle power of 10000r/min, which can be increased up to 15000r/min.

Watch the 2nd -generation NHP 5500 video
https://youtu.be/ghviCyNBdfc

Distribution model "BVM 5700", a high-precision door-type vertical machining center

BVM 5700

Developed as a machine optimized for powerful cutting and stable precision

Y-axis, 570mm class, high-precision, door-type, distribution model vertical machining center

With BVM 5700, customers can continue precise cutting machining with an easy mindease, as it has a door-type frame structure, ball screw nut cooling, spindle and frame thermal displacement compensation function (STC-S, STC-F) as standard. BVM 5700 also supports up to 15000r/min spindle speed by applying high-speed built-in motors and contributes to the maximization of productivity by optimizing the acceleration/deceleration performance of the spindle, and improves the working environment by reducing noise and vibration. In addition, BVM 5700 can improve machining accuracy and perform powerful cutting with accurate control.

Watch the BVM 5700 video
https://youtu.be/kv33FMz9H9k

PR video (non-contact production line tour)

Introducing production/facility infrastructure and equipment with a virtual plant tour and a production line tour

360-Degree VR/AR experience of the virtual plant
https://youtu.be/ZFH72USa7fs

DBM production line tour
https://youtu.be/-rSUyW-qufU

PUMA TT production line tour
https://youtu.be/GQsxfKixOeQ

Doosan Machine Tools is increasing advertising to customers at home and abroad by producing video contents using VR/AR technology and conducting non-face-to-face marketing. This strategy was adopted because face-to-face advertising activities cannot be performed offline as before COVID-19, such as participating in exhibitions or visiting customer companies. Two advertising videos were released this time, “VR/AR experience of the Doosan Machine Tool Doosan Machine Tools virtual plant tour” and “TT series/ DBM series production line tour”.

The “VR/AR experience of the Doosan Machine Tool Doosan Machine Tools virtual plant tour”, produced with the differentiated technology content, introduces the representative machining line of the “Namsan Plant” equipped with a flexible production system based on advanced facilities such as aI doo solution. The video also introduced the R&D center, which operates the customer-centered development process, and the service center that realizeachieves quick customer response by operating a nationwide service network.

Seongju Plant was also introduced, which as a wide space and advanced production facilitiesfacility to manufacture large size high-end machines in a concentrated manner.

The manufacturing line tour video produced by Doosan Machine Tools introduced the manufacturing process of PUMA TT Series, a process-intensive turning center that can perform two machining work at the same time using one machine, and DBM Series, a multi-purpose 5-sided door-type machining center. The PUMA TT Series manufacturing line tour introduced various processes, ranging from bed machining to head finishing, “twin spindle” grinding machining (core of TT Series), 3D measurement of the spindle head, and spindle assembly.

In addition, the DBM Series manufacturing line tour video introduced strict quality control systems, such as thea thorough assembly process from the first process to shipping-out based on the cell production method, precision machining process of the ram spindle body (core of high stiffness and high precision machining) and major units, and 3D precision measurement.

Doosan Machine Tools

Innovation of in machine tools is our instinct.

MACHINE GREATNESS™