SHAPE IT

OSG Global Tooling Magazine | SUMMER 2022

Plastic Model of 'Tap-Kun' Debuts

AE-BD-H and AE-LNBD-H carbide ball end mills shape OSG popular mascot into 3D format by injection molding

Technical Insight

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Meet OSG

Employee Interview in USA

Becoming an Essential Player of the Global Manufacturing Industry

A Message from the President

Earlier this year, OSG announced its new medium-term management plan "Beyond the Limit 2024." The phrase "Beyond the Limit" signifies OSG's determination to evolve by challenging the status quo, setting no limit, and to break through conventional wisdom. A "Beyond the Limit" logo has been created to enhance recognition and to further promote OSG's goals. As depicted on the upper right corner, the logo is made up of two key elements – a black frame that symbolizes our current limit, and a blue box that rises beyond the boundary.

Looking ahead to the carbon-neutral era, which will accelerate further in the future, OSG will strive to achieve its long-term vision of becoming an "essential player" (an indispensable manufacturer) that contributes to the global manufacturing industry.

OSG's new medium-term management plan is aimed at the year 2030, which is regarded as a key milestone globally for carbon neutrality. OSG will achieve its long-term vision through actions by stages, where 2022 to 2024 is accounted as stage one, 2025 to 2027 as stage two, and 2028 to 2030 as stage three.

In the fiscal year ended November 2021, the global economy exhibited a recovery trend. However, the impact of the coronavirus pandemic continues to disrupt the supply chain of the manufacturing industry. Despite challenging circumstances, OSG is able to recover its business performance to the same level as in the fiscal year ended November 2019 with its globally expanded supply system. To navigate through the current ambiguous VUCA* era, OSG will focus on ESG (environmental, social and corporate governance) management to realize a sustainable society under the corporate philosophy of "global presence" to pursue long-term growth with the aim of increasing corporate values.

In order to respond to major industrial reforms that are expected to take place in the future, OSG will integrate its strengths such as product development, manufacturing, sales, regrinding and coating, to focus on fast growing industries including precision manufacturing, semiconductor, 5G, electric vehicle, green energy and medical. The company will also work to strengthen governance and to promote diversity and inclusion in the workplace. OSG will strive to achieve goals of the new medium-term management plan "Beyond the Limit 2024" to continue to support the manufacturing industry worldwide.

*VUCA is an acronym for volatility, uncertainty, complexity and ambiguity.

Nobuaki Osawa
President & COO of OSG Corporation

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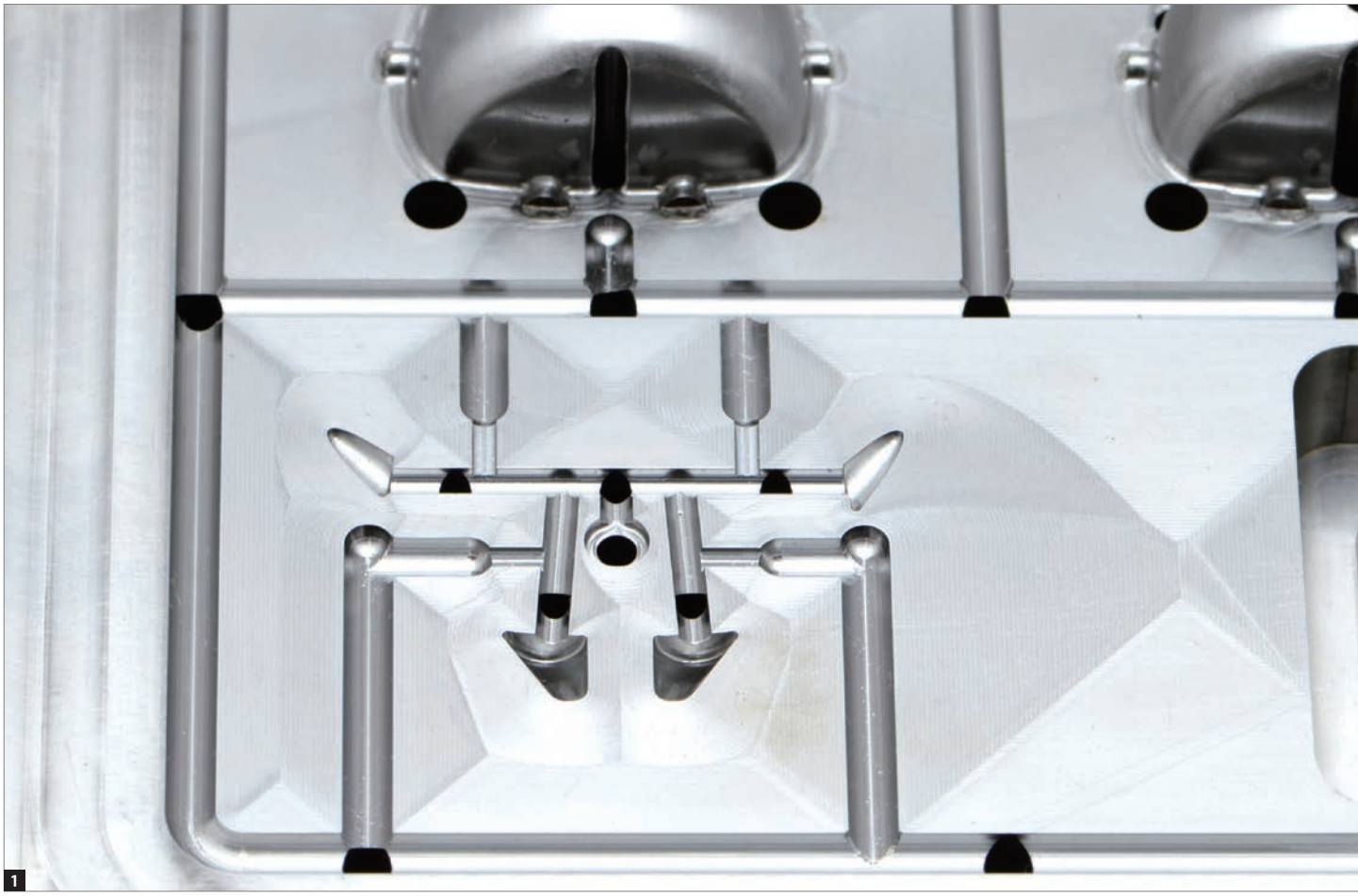

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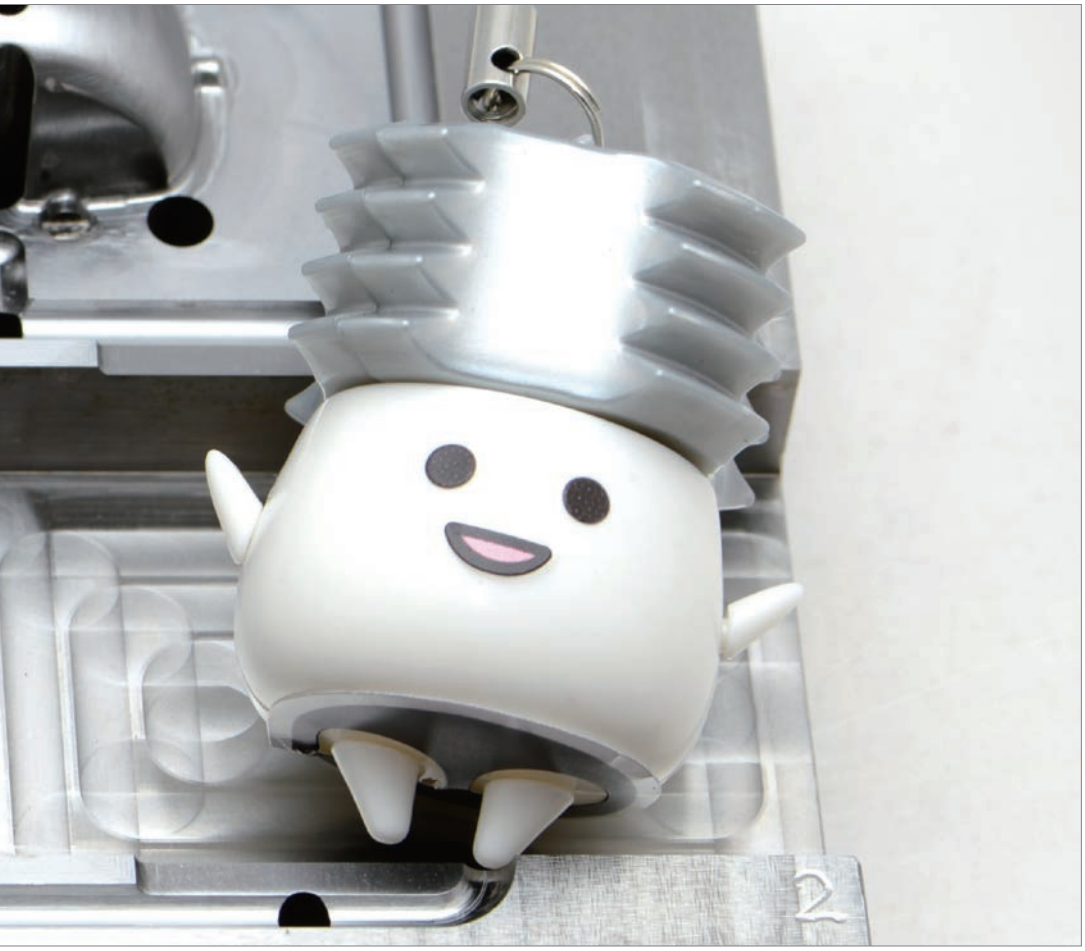
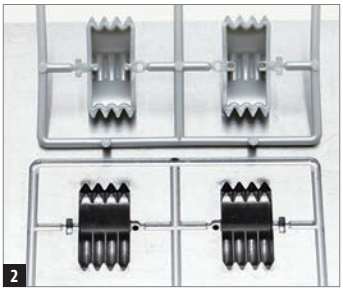
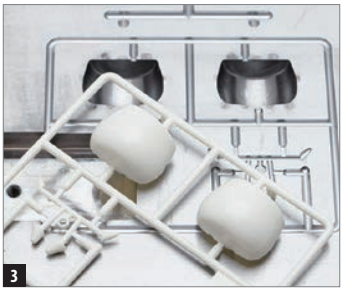
Plastic Model of ‘Tap-Kun’ Debuts

AE-BD-H and AE-LNBD-H carbide ball end mills shape OSG popular mascot into 3D format by injection molding

Kaori Sato
OSG Corporation







1. An assembled Tap-kun plastic model, measuring approximately 35 mm wide, 40 mm tall and 25 mm long.

2. The mold of Tap-kun's head.

3. The mold of Tap-kun's body.

Plastic Model Kit

Plastic models are scale models that are generally manufactured as kits that can be assembled straight from the box and are intended for static display. Japanese plastic model kits are especially popular among hobbyists due to their superior quality and high accuracy in replication.

Manufacturing Process

Injection molding is the predominant manufacturing process for plastic models produced in large volume. Polystyrene (PS), a hard solid plastic, is commonly used in injection molding of plastic models due to its lightweight and outstanding dimensional stability characteristic. Polypropylene (PP), one of the most frequently produced thermoplastics in the world, is also used due to its unique properties and ability to adapt to various fabrication techniques. Both polystyrene and polypropylene are ideal materials as they can be liquified, easily injection molded and subsequently recycled. Because of the high costs of injection molding equipment, however, small-scale plastic model productions are often manufactured using alternative methods such as resin-casting.

AnjoHeartsProject

Anjo is a city located adjacent to Toyota city in central Aichi Prefecture. It is one of Japan's leading manufacturing cities, where automobile-related supporting industries thrive. Although many small and medium-sized manufacturers with high technological capabilities are concentrated in the region, they are easily affected by overseas production trends and the business condition of major automobile manufacturers. Feeling the need to foster an industry that does not rely solely on automobiles, the Anjo Chamber of Commerce launched a regional brand called "AnjoHeartsProject" in 2010. Comprising more than 10 companies, the AnjoHeartsProject strives to bring together collective strengths of local manufacturers to deliver new industrial products full of dreams and love while taking close consideration of the global environment.

1. From left, Yuichi Ishikawa, Yoshikatsu Koshitori, Takehiro Hayakawa, President Masahide Takaki, Nobuo Negita, Kentaro Norose and Manufacturing Engineer Hideki Takaki pose for a group photo at the production facility of Takaki Kanagata in Anjo, Aichi Prefecture.

2. From left, Fujii Kakou President Kiyomitsu Fujii and Fujii Kakou CEO Tatsuo Fujii pose for a photograph in Anjo, Aichi Prefecture.

3. Ichitake Kougyousyo President Tatsuya Takeguchi poses for a photograph at the company's manufacturing facility in Nishio, Aichi Prefecture. Ichitake Kougyousyo is a manufacturer with over 40 years of experiences in injection molding of thermoplastic resin for a wide variety of products including automotive parts, appliances and other common goods.

YUME 'Dream' Plastics & Custom Model Kits

One of AnjoHeartsProject's most famously known initiatives is the regeneration of plastic bottle caps into custom plastic model kits that companies would purchase as novelties. Materials used for the plastic models are made from used plastic bottle caps, which are made of polypropylene. The Anjo city collects more than 6 million plastic bottle caps per month and ranks as one of Japan's top environmentally friendly cities. Once collected, the caps are sorted by color and are brought to the recycling site at Fujii Kakou Co., Ltd. to be crushed and regenerated. The recycled material is cut into small pellets, and a new type of eco material is born. The AnjoHeartsProject named the regenerated material as YUME 'dream' plastics, which is certified by the Japanese government as a regional industrial resource. The YUME plastics are melted and poured into a designated mold, where custom plastic models are transformed into shape.

The AnjoHeartsProject is composed of industrial professions who are specialists in raw materials, die and mold design and manufacturing, and injection molding. Raw material is handled by Fujii Kakou Co., Ltd., a professional of recycled plastic raw materials. The design and manufacturing of the die and mold for the plastic model is assigned to Takaki Kanagata Co., Ltd., a company that specializes in the manufacturing of die and mold for automotive parts. Last but not least, the prototype and plastic molding process is administrated by Ichitake Kougyousyo Co., Ltd., a manufacturer with over 40 years of experiences in injection molding of thermoplastic resin for a wide variety of products including automotive parts, appliances and other common goods.

4. Materials used for the plastic models are made from used plastic bottle caps, which are made of polypropylene. The Anjo city collects more than 6 million plastic bottle caps per month and ranks as one of Japan's top environmentally friendly cities.

5. Once collected, the caps are sorted by color and are brought to the recycling site to be crushed and regenerated.

6. A worker at Fujii Kakou pushes the used bottle caps into a machine to be crushed.

7. The recycled material is cut into small pellets, and a new type of eco material is born. The AnjoHeartsProject named the regenerated material as YUME 'dream' plastics, which is certified by the Japanese government as a regional industrial resource.

8. The regenerated pellets are sorted by color and are designated for specific usage.

Project Partners

Fujii Kakou Co., Ltd.

Location: Anjo, Aichi Prefecture
Year established: 1979
Main product / services: recycling of plastic raw materials
Representatives: Tatsuo Fujii, CEO and Kiyomitsu Fujii, President
Company website: http://www.fujii-kakou.co.jp/

Takaki Kanagata Co., Ltd.

Location: Anjo, Aichi Prefecture
Year established: 1991
Main product / services: die and mold design and manufacturing
Representative: Hideki Takaki, Manufacturing Engineer
Company website: http://www.takaki-kanagata.jp/

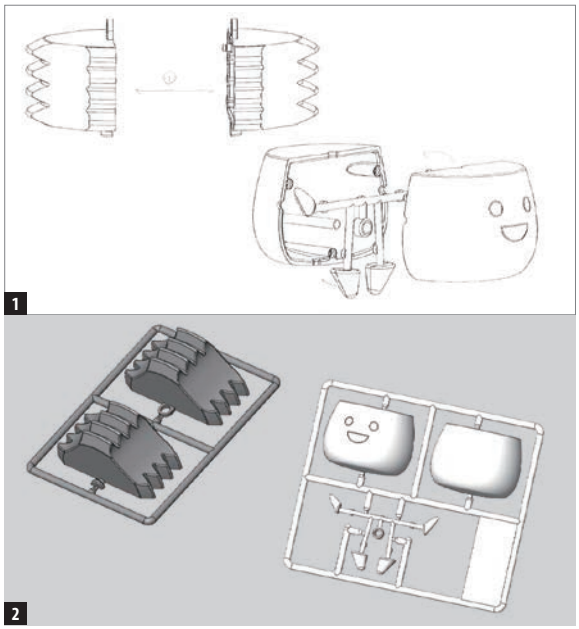
Ichitake Kougyousyo Co., Ltd.

Location: Nishio, Aichi Prefecture
Year established: 1976
Main product / services: injection molding of thermoplastic resin
Representative: Tatsuya Takeguchi, President
Company website: https://ichitake.co.jp

Shaping OSG's Brand Mascot 'Tap-Kun' into 3D Format

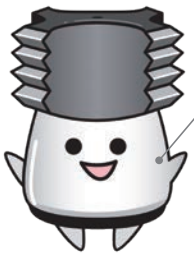
OSG Corporation's headquarters is located in the city of Toyokawa, Aichi Prefecture, which is only about an hour away from Anjo by car. In early 2019, OSG learned of the AnjoHeartsProject through a business acquaintance and decided to collaborate to create an original plastic model kit of its popular mascot Tap-kun as a novelty. Tap-kun is OSG Corporation's official brand mascot. It is a fictional cutting tool character based on the imagery of a hand tap, which is the first product of OSG since its founding in 1938. The friendly hand tap character Tap-kun serves as OSG's brand ambassador in the promotion of the company, the manufacturing industry and local communities. In the past couple of years, Tap-kun has gained substantial recognition and popularity in the manufacturing industry in Japan and around the globe.

As a manufacturing company located in the same region, OSG greatly empathizes with the AnjoHeartsProject's mission and wanted to support the initiative by supplying work materials and cutting tools for manufacturing the die and mold of its plastic model.



1. A sketch of OSG's custom Tap-kun plastic model by Takaki Kanagata.

2. 3D modeling of OSG's mascot Tap-kun by Takaki Kanagata.



Tap-kun

Tap-kun is OSG Corporation's official brand mascot. It is a fictional cutting tool character based on the imagery of a hand tap, which is the first product of OSG since its founding in 1938.

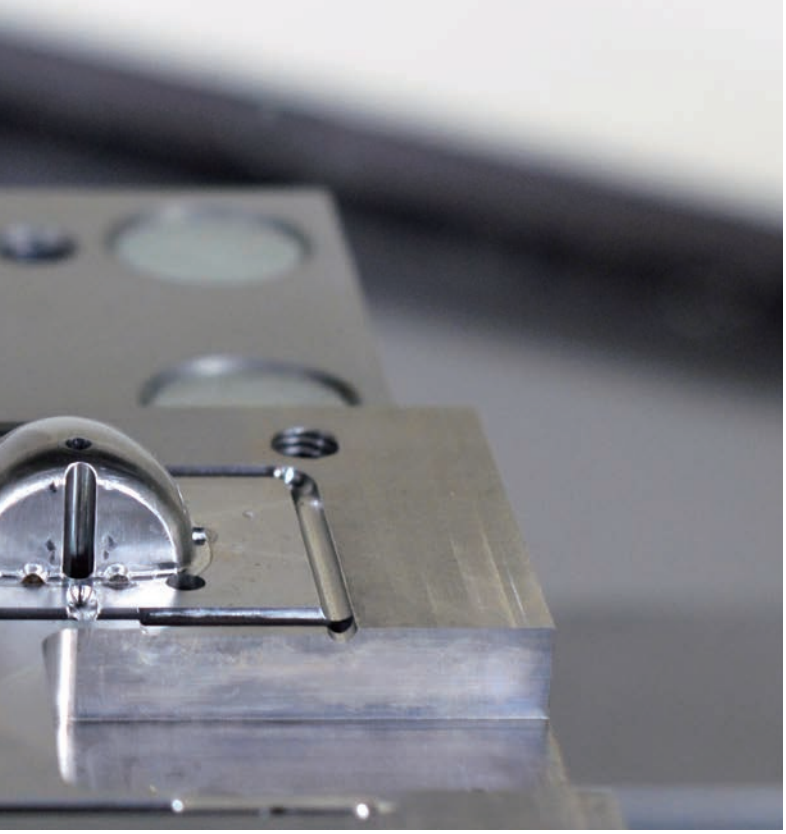
Tap-kun face convex surface finish (contour milling)

Tool used: AE-LNBD-H (R1.5 x 25 x 6)

Material: STAVAX (53 HRC)

Cutting parameters: n 10,000 rpm (Vc 94 m/min), Vf 800 mm/min (fz 0.04 mm/t), ap 0.1 mm ae 0.1 mm

Machine: OKUMA MB-56VA



Manufacturing Process

OSG placed an order of 5,000 model kits from the AnjoHeartsProject. In order to create an original plastic model kit, a number of steps are required, such as 3D modeling of the designated character, die and mold creation, and injection molding.

The 3D modeling, die and mold design and manufacturing are handled by Takaki Kanagata. OSG recently released a new carbide ball end mill series dedicated for high-hardness steel applications. In hopes to share the company's latest milling innovation, OSG supplied its premium tooling and STAVAX stainless mold steel for the project.

AE-BD-H and AE-LNBD-H Carbide Ball End Mills for High-hardness Steel Applications

OSG's AE-BD-H is a 2-flute carbide ball end mill designed for high-precision finishing. It features a variable negative spiral gash for better chipping control. The AE-BD-H's superior ball R precision ensures a stable radius accuracy across 180 degrees. The AE-LNBD-H is a 2-flute long neck carbide ball end mill designed for high-precision finishing. Similar to the AE-BD-H, it also features a thick center core to help prevent deformation of the ball tip to improve chipping control. Its teardrop-shaped outer periphery strong back taper geometry enables milling by point, which prevents chattering and chipping, resulting in improvement of surface accuracy. Both carbide ball end mills are coated with OSG's original DUROREY coating with superior heat resistance and high toughness optimized for high-hardness steels.

AE-BD-H and AE-LNBD-H

The AE-BD-H and AE-LNBD-H are OSG's latest carbide ball end mills engineered for high-hardness steel applications with capabilities to contribute to faster mold production and higher precision.

Takaki Kanagata machine operator Yuichi Ishikawa prepares for the milling of OSG's custom Tap-kun plastic model mold made of STAVAX.

Application Details

Takaki Kanagata is accustomed to using S50C carbon steel for the die and mold production of plastic models. Although the company has used STAVAX for other part production in the past, it was the first time for the company to utilize STAVAX in plastic model production.

"It was a rare application with a number of uncertainties in terms of material, processing and tooling," said Hideki Takaki, Manufacturing Engineer at Takaki Kanagata. "We felt excited and uneasy at the same time," Takaki adds.

Takaki Kanagata was not familiar with OSG milling tools and was initially concerned about the processing of Tap-kun's head, which requires the milling of multiple narrow paths. To their surprise, the AE-BD-H and AE-LNBD-H performed as advertised.

"These end mills are really made to excel in high-hardness steels," said Takaki. "The surface quality was excellent."

Takaki adds that it was a nice project for the company, and he was glad to be able to collaborate with OSG.

1. The completed Tap-kun plastic model mold made of STAVAX by Takaki Kanagata is transferred to Ichitake Kougyousyo to be injection molded utilizing the regenerated material YUME 'dream' plastics.

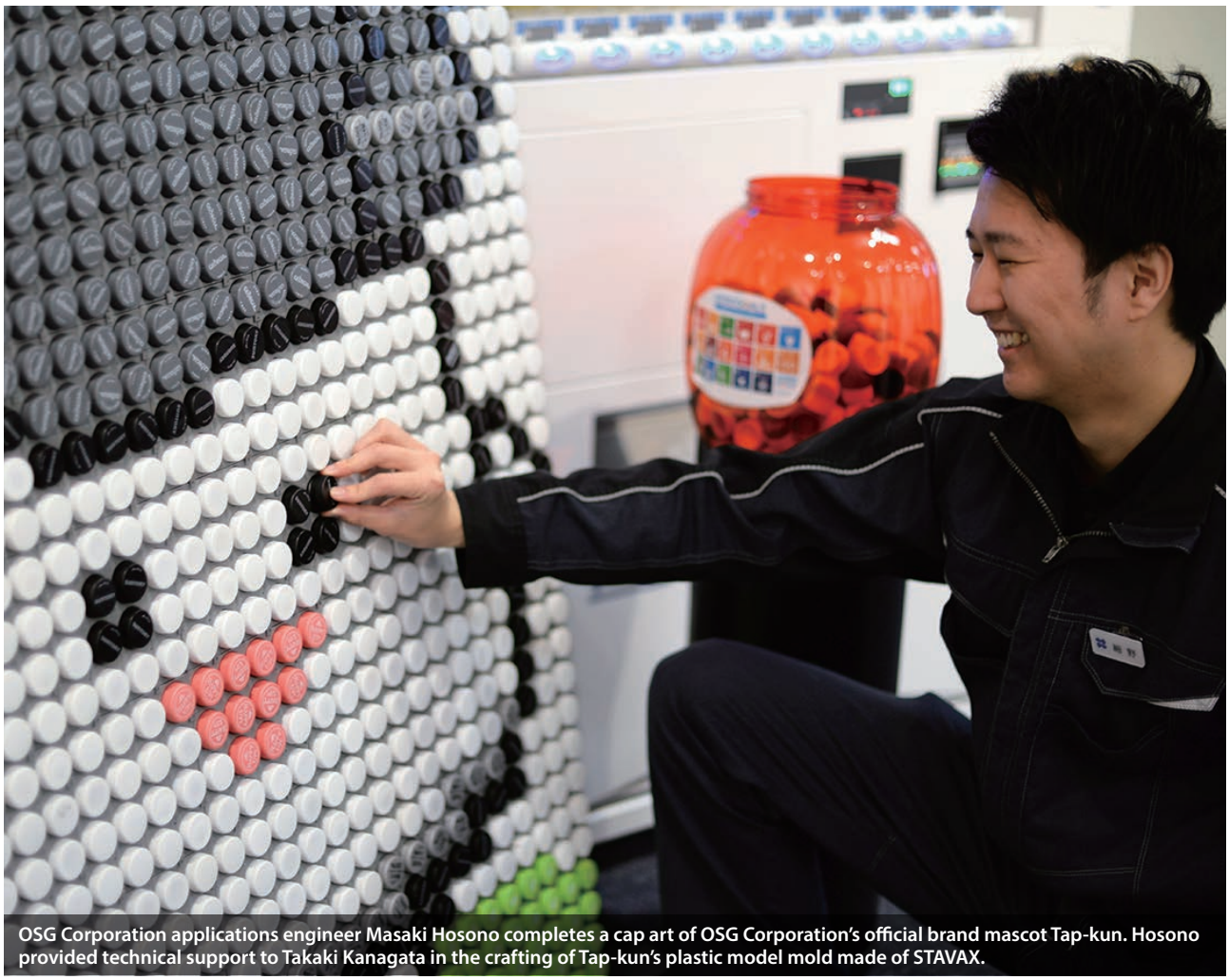
2. A fleet of Tap-kun custom plastic models are transformed into shape at Ichitake Kougyousyo.

OSG creates a number of promotional merchandises annually to give to customers during special occasions and events. The collaboration with the AnjoHeartsProject, however, is especially meaningful as the parts are made of 100 percent recycled materials.

"Plastic model kits stimulate the motivation to create. They are highly engaging, fun and advocate communication through the assembly of the model," said OSG Corporation Marketing Supervisor Daiki Nakamura.

"More importantly, through meaningful collaborations, we hope to share technical expertise, spread awareness about the environment and to share knowledge about how to become a more sustainable society to create a better tomorrow for future generations," Nakamura adds.

From left, cap arts of OSG Corporation's A Brand logo and official brand mascot Tap-kun. Instead of simply recycling used bottle caps, AnjoHeartsProject created an initiative to create art with them to encourage communication regarding the environment.



OSG Corporation applications engineer Masaki Hosono completes a cap art of OSG Corporation's official brand mascot Tap-kun. Hosono provided technical support to Takaki Kanagata in the crafting of Tap-kun's plastic model mold made of STAVAX.

AE-TS-N, AE-TL-N and AE-VTS-N

OSG's latest DLC coated carbide end mills for non-ferrous metal applications

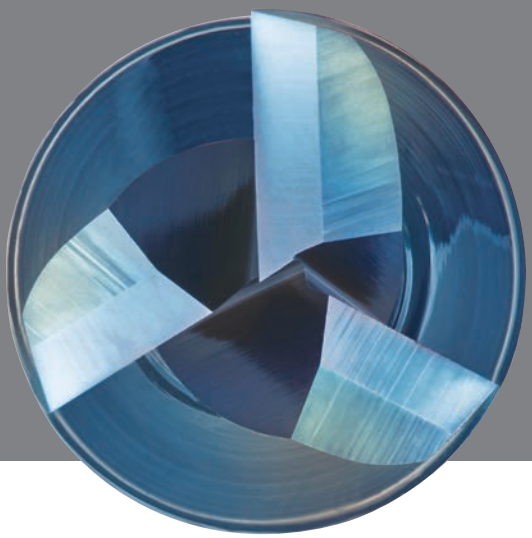
Akira Harada
OSG Corporation Applications Engineer
(End Mill Development Division)

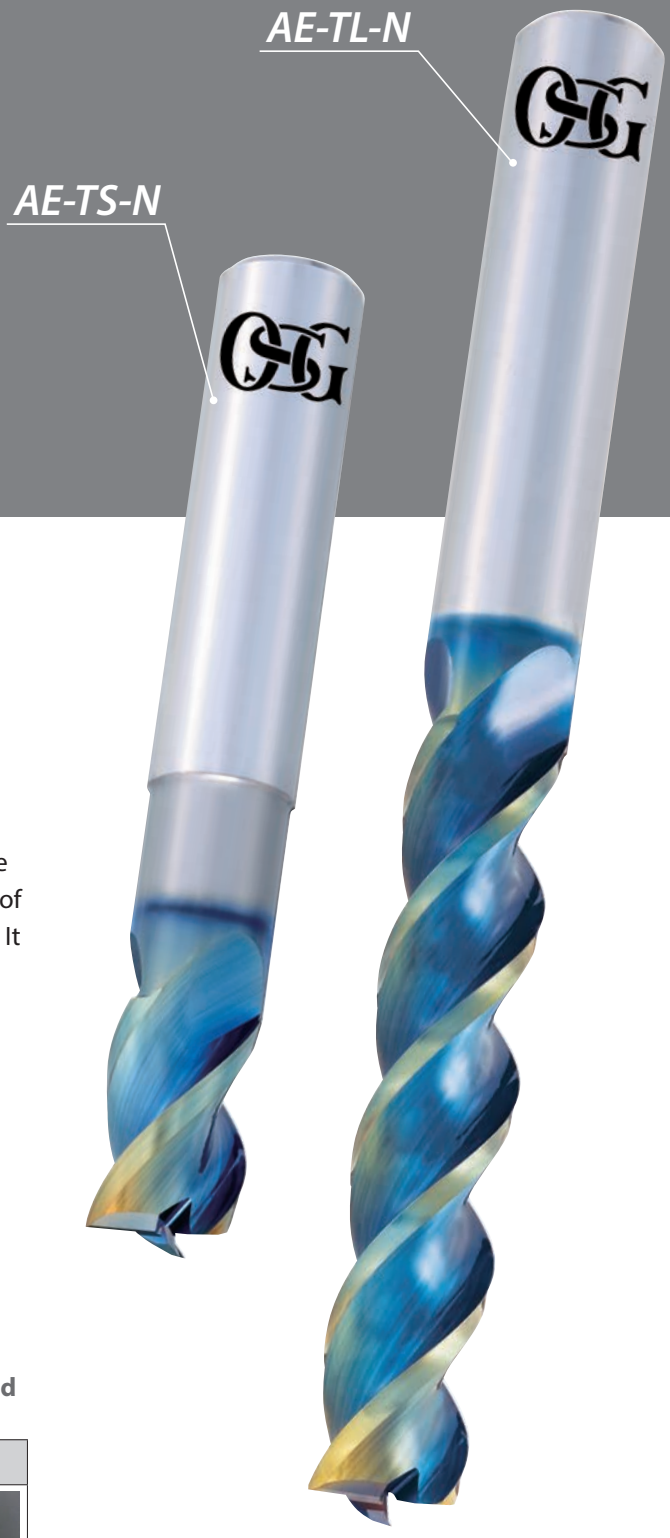
In recent years, markets that make heavy use of aluminum alloys, such as electric vehicles, industrial robots and semiconductor, have expanded tremendously. The surge in aluminum alloy applications has also driven higher demand for effective cutting tools to process these materials. Aluminum workpieces often come in various sizes and forms. Thus, the specification required of the cutting tools would vary depending on the individual application. In order to meet the rising industry trend, OSG has recently developed three new types of milling innovations to fulfill these needs.

AE-TS-N & AE-TL-N: Standard Type End Mills

Until now, end mills used for processing non-ferrous metals such as aluminum alloys have generally been non-coated 2-flute or 3-flute. It was the industry standard for 3-flute DLC coated end mills to be high-spec but expensive. OSG's latest AE-TS-N and AE-TL-N are developed to disrupt the established status quo. Categorized as standard items, these end mills are 3-flute, DLC coated, and are equipped with the most suitable tooling specifications for non-ferrous metal processing. Furthermore, the pricing of these tools is overwhelmingly reasonable compared to conventional DLC coated carbide end mills for non-ferrous metals, and even more competitive versus conventional non-coated products.

Despite being equipped with advanced tooling specifications, OSG is able to achieve competitive pricing by being strongly aware of manufacturing costs from the development stage, establishing highly productive product configurations, and thoroughly improving the efficiency of the manufacturing process. Figure 1 illustrates a comparison of the flute shape of the AE-TS-N versus a conventional product. Production costs have been reduced by using a formed grinding wheel to shorten the flute grinding time. In addition, the AE-TS-N is engineered with the latest flute shape that can secure smooth chip

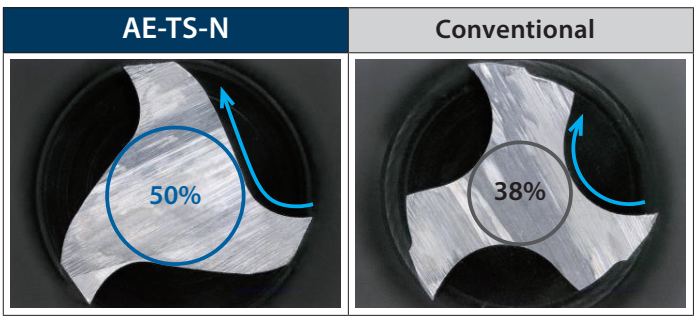




evacuation while improving rigidity by making the core thickness larger than the conventional product.

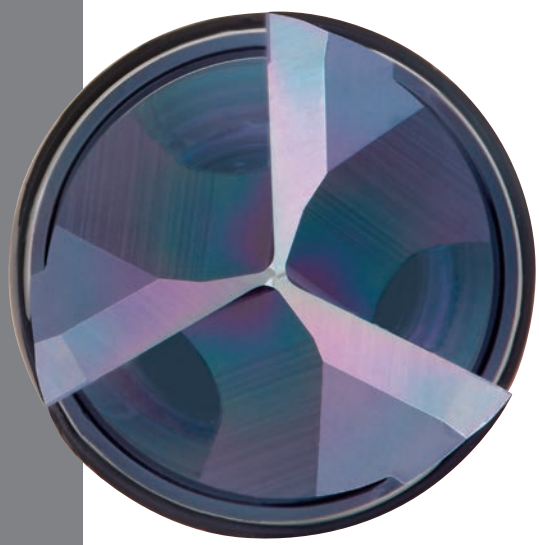
The AE-TS-N has a 1.5xD length of cut and a neck length of 3xD. It is designed to excel in deep milling applications while ensuring rigidity. The AE-TL-N is a long length of cut version of the AE-TS-N that is engineered for side milling and finishing. It is available in length of cut of 3xD and 5xD. With these three types of specifications, manufacturers are able to select the most appropriate product based on application needs.

Figure 1. Comparison of flute shape between AE-TS-N and a conventional product



Arrow: indicates chip discharge direction

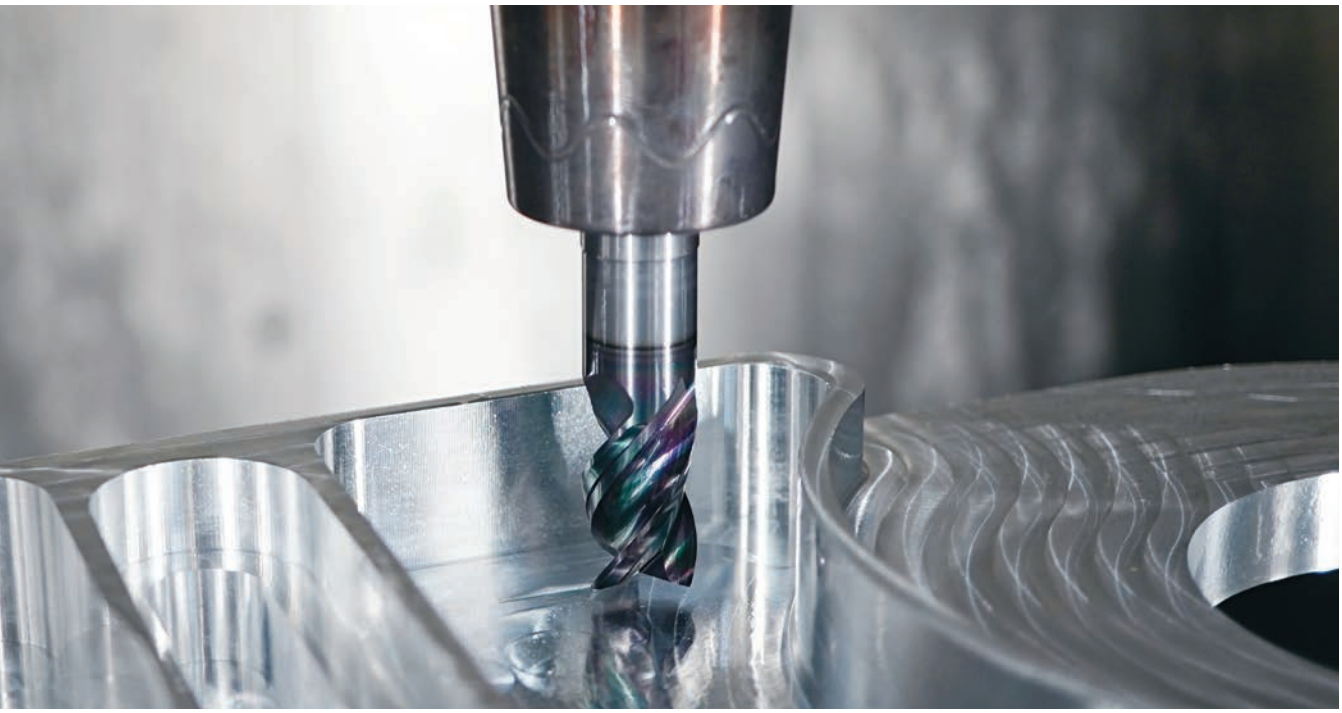
AE-VTS-N



AE-VTS-N: High Performance Type End Mill

The AE-VTS-N is a product developed for manufacturers who desire high efficiency milling performance. With the variable lead and unequal spacing teeth tool geometry, chatter is less likely to occur even under aggressive cutting conditions. The AE-VTS-N is also effective for plunging and ramping in the z-axis direction. Furthermore, by adopting a wiper flat cutting edge and micro primary relief specifications, higher precision machined surface quality can be achieved in addition to efficiency.

For the tool coating, the AE-TS-N and AE-TL-N use the DLC-SUPER HARD coating that emphasizes on sharpness; while the AE-VTS-N uses the DLC-IGUSS, which is one of OSG's latest coatings that is thicker and has better wear resistance than the DLC-SUPER HARD coating, making it an ideal coating for the AE-VTS-N, as it is an end mill engineered to excel under aggressive milling conditions.



The AE-TS-N, AE-TL-N and AE-VTS-N can be applied not only to aluminum alloys but also to non-ferrous metals such as copper and magnesium and have a proven track record of excellence in processing non-metals such as acrylic resin. This DLC coated end mill series is developed with the concept of being able to accommodate all of the above materials with a single tool.

With superior performance and an abundant product lineup, OSG's latest DLC coated end mill series strive to overturn conventional wisdom of non-ferrous metal end mills by providing new solutions based on budget and individual application needs.

Scan for details

From left, OSG Italia Sales Engineering and Marketing Manager Andrea Severi, MPC owner Stefano Soldati and MPC machine operator Luca pose for a photograph at the MPC facility in San Giorgio di Cesena, Emilia- Romagna, (FC), Italy.

The Winning Choice

ADO-TRS 3-flute coolant-through carbide drill and VPO-DC-MT synchro tap enable stable drilling and tapping in the production of planetary bearing hubs for gearmotors in spheroidal cast iron

Andrea Severi
OSG Italia

Time savings in the production of large-size components can often make a significant difference to a manufacturer's bottom line. Achieving a 50 percent reduction in tapping time was one of the recent key objectives of MPC Srl of Cesena (FC), Italy, a precision machining company that is always attentive to new technologies and process optimizations.

Founded in 1973, MPC is a leading solution provider of precision mechanical machining. MPC's core business focuses on the production of gearbox components and corresponding parts. With over 40 years of experience, MPC has established a name for itself within the earthmoving and wind energy sectors. In addition to precision machining, the company is also versed in processes such as milling, turning, drilling and assembly, as well as custom manufacturing requests that fall within the metalworking and precision engineering sectors.

Today with 36 full-time employees, MPC's manufacturing facility is located in San Giorgio di Cesena, Emilia- Romagna, (FC), Italy, with an estimate 3,000-square-meter production space. MPC is a specialist in large-scale machining and has a production facility that is capable of turning parts up to 1,300 mm in diameter. Its factory is equipped with 23 numerical control machines including lathes and machining centers, with capabilities to optimize work cycles of large components in small to medium size batches.

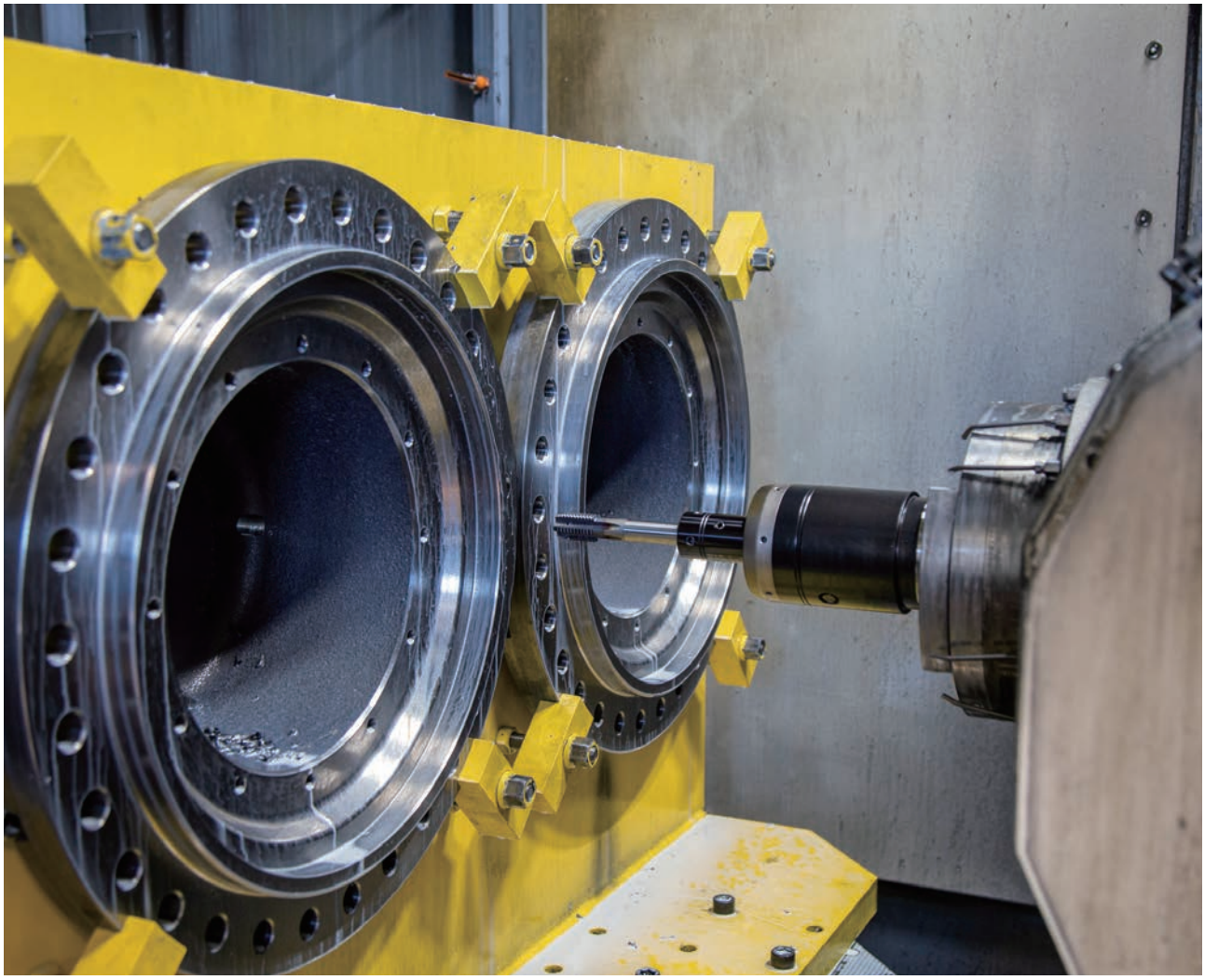
Recently, MPC was looking to improve tool performance on a component made of GS-600 cast iron for a world-renowned client of gearmotors, drive systems and planetary gearboxes. Each part requires the threading of 30 holes in the size of M24 x 3, tolerance 6HX and at an axial depth of cut of 40 mm (through hole). The production is a 4-year contract with an estimated annual volume of 2,000 pieces.

MPC was originally using a competitor tap for the part, but encountered problems of sticking, bad surface finish and poor tool life. After consulting with its local tooling distributor Utensilmec, MPC invited OSG Italia's technician to optimize the application with an aim to improve cycle time, tool life and the quality of threads.

Founded in 1973, MPC is a leading solution provider of precision mechanical machining. MPC's core business focuses on the production of gearbox components and corresponding parts. With over 40 years of experience, MPC has established a name for itself within the earthmoving and wind energy sectors.

Upon a detail evaluation of the application, OSG recommended the VPO-DC-MT (EDP#: T0809234) M24 x 3 synchro tap with radial lubrication. The VPO-DC-MT is a powder metal straight fluted tap engineered to excel in cast iron and aluminum die cast applications. The high rigidity geometry of this tool combined with OSG's V coating and the highly wear resistant powder metal substrate guarantee high-performance process stability.

MPC's MCM Tank horizontal machining center with HSK-A100 holder that is used for processing planetary bearing hubs for gearmotors.



OSG's M24 x 3 VPO-DC-MT synchro tap is mounted in the spindle for the production of a GS-600 cast iron component.

The VPO-DC-MT is mounted on a Big Kaiser micro-compensated tap holder with a total presetting of 415 mm. The tool is programmed in an MCM Tank horizontal machining center and an ESSEX AR35 coolant is used. By switching to the VPO-DC-MT, the processing efficiency in cutting speed has doubled from the competitor's 15 m/min to 30 m/min. The VPO-DC-MT is able to complete 5,000 threads for a total of 200 linear meters versus the original tool's 1,660 threads for a total 67 linear meters. Comparing the cutting parameters of the previous tap, three minutes of cycle time can be saved per piece by simply switching to the VPO-DC-MT, which is equivalent to an annual cost savings of approximately 9,000 euros. Moreover, the VPO-DC-MT is able to triple tool life, which is an additional reduction in tooling cost. Last but not least, the surface quality of the thread crests has significantly improved, and chip sticking has been completed eliminated.

MPC couldn't be more satisfied with the result, and OSG was given with another opportunity to analyze tooling performance of an eccentric hub. The second component is made of GS-500-7 cast iron. Each part

Components for gearboxes made of GS-600 cast iron. Each part requires the threading of 30 holes in the size of M24 x 3, tolerance 6HX and at an axial depth of cut of 40 mm (through hole).

requires the threading of 24 holes in the size of M20 x 2.5, tolerance 6HX and at an axial depth of cut of 40 mm (through hole). The production is a 5-year contract with an estimated annual volume of 1,000 pieces. Similar to the first GS-600 cast iron component, MPC was originally using a competitor tap for the production, and encountered problems such as chip sticking, bad surface finish and poor tool life. To further improve cycle time, OSG recommended the 17.5 mm diameter ADO-TRS-3D 3-flute carbide drill (EDP#: 8721750) and the VPO-DC-MT M20 x 2.5 tap with central lubrication (EDP#: 48300228).

The ADO-TRS is one of OSG's latest drilling innovations for ultra-machining efficiency in a wide range of materials. The ADO-TRS' 3-flute specification offers greater balance than 2-flute drills, which are more prone to chattering. Moreover, the ADO-TRS enables superior roundness and improved positioning in terms of hole precision. With capability to excel under high-feed condition, the ADO-TRS is able to minimize contact time with the workpiece material, which reduces the probability of work hardening.

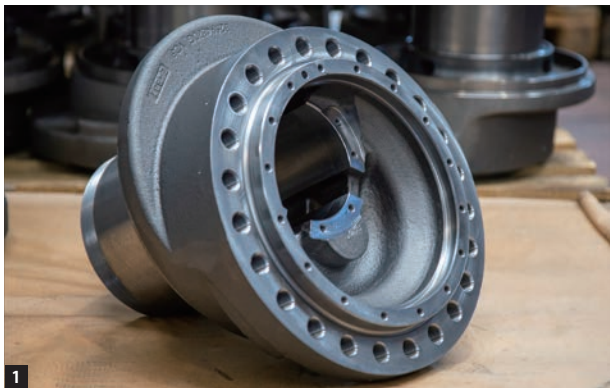
The ADO-TRS is highly recommended to be used in combination with the VPO-DC-MT synchro tap to achieve flawless holes for perfect threading. This combination of tools makes it possible to significantly reduce cycle time while maintaining superior quality.

The ADO-TRS 3-flute carbide drill is mounted on a shrink-fit chuck from Big Kaiser with a total presetting of 305 mm. The VPO-DC-MT M20 x 2.5 synchro tap is mounted on a Big Kaiser micro-compensated tap holder with a total presetting of 370 mm. The tools are programmed in MPC's MCM Tank horizontal machining center and an ESSEX AR35 coolant is used.

MPC was originally using a competitor 2-flute drill for the drilling process. The parameters of the competitor drill are 70 m/min in cutting speed, 0.3 mm/rev in feed per revolution, 1,274 rpm in spindle speed and 382 mm/min in table feed. By switching to the ADO-TRS, the cutting parameters are boosted to 90 m/min in cutting speed, 0.65 mm/rev in feed per revolution, 1,637 rpm in spindle speed and 1,074 mm/min in table feed, which is equivalent to a 181.2 percent increase in feed. The overall cycle time is reduced by 65 percent.

The VPO-DC-MT also exhibits similar increases in performance, where processing efficiency has doubled from the competitor tap's 15 m/min to 30 m/min in cutting speed. The VPO-DC-MT is able to complete 5,300 threads for a total of 212 linear meters versus the original tool's 1,700 threads for a total 68 linear meters. Two minutes of cycle time can be saved per piece by switching to the VPO-DC-MT, which is equivalent to an annual savings of approximately 3,000 euros. Similar to the first component, the VPO-DC-MT is able to triple tool life in the processing of the cast iron eccentric hub, which enables additional reduction in tooling cost.

MPC is always ready to satisfy the requests of its present and future clients by keeping up to date with the very best technologies available on the market. With significant cycle time reduction and quality improvement, OSG's ADO-TRS 3-flute carbide drill and VPO-DC-MT synchro tap have demonstrated to be the winning choices for MPC.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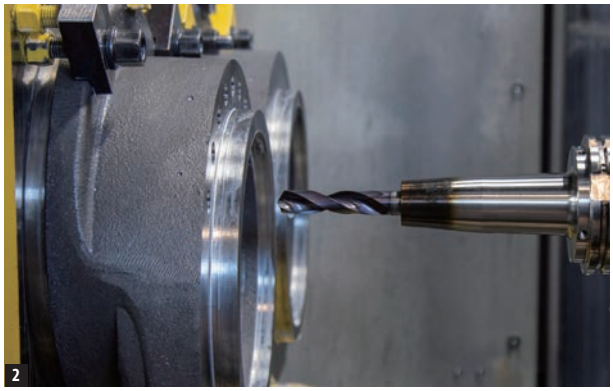
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1. An eccentric hub component made of GS-500-7 cast iron. Each part requires the threading of 24 holes in the size of M20 x 2.5, tolerance 6HX and at an axial depth of cut of 40 mm (through hole).

2. OSG's 17.5 mm diameter ADO-TRS-3D 3-flute carbide drill is mounted in the spindle for the production of the eccentric hub component made of GS-500-7 cast iron.

OSG's custom A-SIGMA-OIL-SFT spiral fluted tap helps improve tool performance in Tecparts' production of welded pins used in tractors for the heavy industry, which the company produces approximately 200 to 220 pieces per month.

Powerful and Economical

Custom A-Tap Sigma spiral fluted tap takes quality and reliability to the next level in tractor component production

Rodrigo Katsuda
OSG Sulamericana

Founded in 2003, Tecparts do Brasil Industria e Comercio Ltda. (Tecparts) is a part supplier for the agricultural, automotive and wind power industries. Employing 294 staff, Tecparts is located in the city of Piracicaba, São Paulo, Brazil, with an estimate plant area of 30,000-square-meter.

Recently, Tecparts was looking to improve tool performance on the production of welded pins used in tractors for the heavy industry. Tecparts manufactures a wide range of components for tractors with more than 400 items, including pins, bushings, joints, covers, housings, shafts, switches, levers, special screws, transmissions, among others. Tecparts has been manufacturing this part since early 2018 with an annual estimate production volume of 2,500 pieces. Made of SAE-4140 steel, each welded pin requires the threading of a M30 x 3.5 single blind hole at a tapping length of 38 mm, a drill hole size of dia. 26.5 mm x 47 mm, and with a tap tolerance of 6GX. The parts are machined using a Doosan DVC-400 vertical machining center, running at a cutting speed of 8 m/min with synthetic soluble oil.

Tecparts was originally using a competitor HSS-E spiral fluted tap with TiN coating for the job but experienced calibration problems, low yield and poor tool life. After a number of visits and product introduction by OSG Sulamericana's sales technician, Tecparts decided to put an OSG custom A-Tap A-SIGMA-OIL-SFT (D376 M30 6GX TiN) to the test.

A-SIGMA
The A-Tap Σ (sigma) is the latest addition to the A-Tap multi-purpose tap series. Developed in line with the core concept of the A-Tap series with superior chip evacuation capability, the A-Tap Σ is the new excellence for cost-effective threading applications.

The A-Tap Σ (sigma) is the latest addition to OSG's well-known A-Tap multi-purpose tap series. Developed in line with the core concept of the A-Tap series with superior chip evacuation capability, the A-Tap Σ is the new excellence for cost-effective threading applications. The A-Tap Σ series include the A-SIGMA-SFT spiral fluted tap for blind holes and the A-SIGMA-POT spiral pointed tap for through holes. The A-Tap Σ features a sharp cutting edge to stabilize chip shape and a variable lead flute geometry to accelerate chip evacuation. Made of HSS-E and coated with TiN, the A-Tap Σ is designed to excel in a wide range of work materials and cutting conditions with excellent durability and wear resistance.

Under identical cutting parameter as the previous tooling choice, the custom A-Tap A-SIGMA-OIL-SFT is able to eliminate the calibration issue that Tecparts was troubled by. Moreover, the custom A-SIGMA-OIL-SFT is able to further increase tool life from 204 holes to 275 holes. Due to the reduction of tool changes, overall processing time can also be minimized. With this success, OSG Sulamericana today supplies 100 percent of the high performance and special taps used at the entire Tecparts production line.

The A-Tap Σ not only excels in mid and high carbon steel and alloy steels, but is also suitable for mild steel, stainless steel and aluminum alloy – materials that conventional general taps often struggle with. With guaranteed reliability and simplified tool management, the A-Tap Σ is the new economical choice for a wide variety of threading applications.

Responsible for Tecparts' tooling, Rodrigo Amaral prepares for the machining of the welded pins. Tecparts manufactures a wide range of components for tractors with more than 400 items, including pins, bushings, joints, covers, housings, shafts, switches, levers, special screws, transmissions, among others.

AE-VMFE

Carbide End Mill for Deep Side Milling

The AE-VMFE carbide end mill is the latest addition to the AE-VM anti-vibration carbide end mill series designed to accommodate a wide range of milling operations.

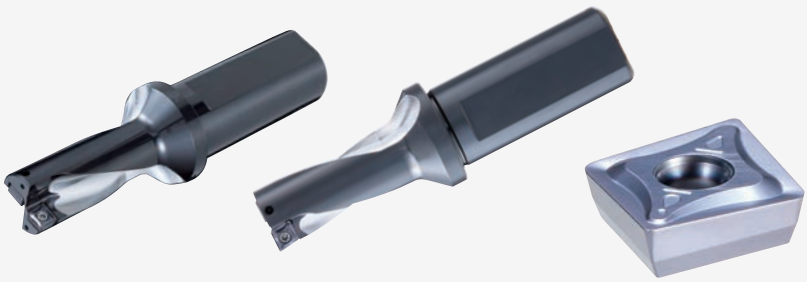
The AE-VMFE carbide end mill is engineered for highly efficient and accurate deep side milling at L/D of five or more by large step milling up to 2 x D with its 2.5 x D length of cut configuration. The AE-VMFE's long length reduced shank configuration supports the machining of mold parts with deep side milling and pocket milling. By changing the overhand length, the AE-VMFE can accommodate various machining depths. Furthermore, with an R shape on the shank side edge, streak generation can be suppressed by side step milling. The combination of variable lead, unequal spacing teeth and microrelief geometry contributes to this end mill series' stable and high efficiency milling performance.

The AE-VMFE is available in square and radius styles, from diameter 6 to 22 mm, with a total of 19 items.

Phoenix PDZ

Indexable Flat Drill

The OSG Phoenix PDZ indexable flat drill is engineered to accommodate a wide range of applications including drilling, counterboring, inclined surface drilling, half-hole drilling, and more. Excellent chip evacuation is achieved by the PDZ's high precision finishing on the flutes, which improves rigidity, chip ejection and reduces cutting forces. Moreover, the PDZ's designated insert features an enhanced muscle breaker with superior chip breaking ability that enables the tool to excel in drilling, counterboring and turning applications.



AE-ML-H

Long Carbide End Mill for High-hardness Steels

The AE-ML-H multi-flute square type long carbide end mill is the latest addition to the AE-H carbide end mill series for high-hardness steels. The AE-ML-H features unequal spacing teeth geometry to suppress chattering during machining. Its unique web taper geometry, where the thickness of core changes from the cutting edge to the shank, greatly improves tool rigidity and enables highly efficient side milling even in materials exceeding 60 HRC. With the addition of OSG's original DUROREY coating, the AE-ML-H is able to achieve high-efficiency and stable milling performance in high-hardness steels due to the coating's excellent toughness, high heat resistance and abrasion resistance characteristics.

AE-VTFE-N

Deep Side Milling Carbide End Mill for Non-ferrous Materials

The high performance AE-VTFE-N DLC coated carbide end mill is designed for highly efficient and highly accurate deep side milling at L/D of 5 or more. Its 2.5 x D length of cut specification allows efficient deep side milling with large step milling of up to 2 x D. The AE-VTFE-N's long length reduced shank design, where its outer diameter is larger than the shank diameter, enables efficient and high quality deep side milling and pocket milling. Furthermore, the AE-VTFE-N's R shape on the shank side edge suppresses the generation of streaks due to step milling, enabling high milling quality. With the addition of OSG's DLC-IGUSS coating, long tool life can be achieved in non-ferrous metals such as aluminum alloys that require welding resistance and lubricity.

OSG Offers COVID-19 Vaccine to Employees, Employee Families and Members of Affiliate Companies

In 2021, OSG Corporation completed administrating the vaccination of approximately 2,300 employees, employee families and members of affiliate companies in response to the Japanese government's workplace vaccination initiative.

Severe acute respiratory syndrome coronavirus 2 is the causative agent of the ongoing coronavirus disease pandemic, which is posing a threat to people of every generation. To prevent the risk of infection, development of severe conditions and to help revive economic activity, several thousand doses of the Moderna COVID-19 vaccine are provided by OSG to workers, family members and individuals from affiliate companies who elect to receive the vaccine.

OSG's vaccination program is managed by the company's in-house physicians and nurses in an efficient and safe manner. First and second shots of the vaccine have been administrated on multiple days across two locations at the OSG Guest House in Toyokawa and Shinshiro Factory in Shinshiro in Aichi Prefecture during the summer of 2021. A booster shot (3rd dose) of the vaccine is scheduled to be provided during the first half of 2022.

An OSG employee receives his second shot of the coronavirus vaccine on August 18, 2021.

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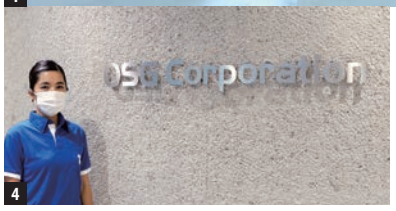

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1. Vials of the Moderna COVID-19 vaccine are kept at a designated freezer with temperature control.

2. The OSG Guest House in Toyokawa, Aichi Prefecture.

3. OSG's Shinshiro Factory in Shinshiro, Aichi Prefecture.

4. OSG Corporation offers COVID-19 vaccine to its workers, family members and individuals from affiliate companies in response to the Japanese government's workplace vaccination initiative.

OSG participates at MECT 2021

OSG staff gathered for a group photograph before the start of MECT 2021 at the Port Messe Nagoya in Aichi, Japan.

Mechatronics Technology Japan (MECT) is the biggest machine tool exhibition in Japan during odd-numbered years. It is held in the autumn every two years in Nagoya. The 2021 show took place from October 20 to 23 at the Port Messe Nagoya in Aichi, Japan, and had approximately 70,000 visitors. At MECT 2021, OSG introduced its latest A Brand flagship products, application and material specific solutions, and more.

OSG staff pose for a photograph at the company booth's reception area.

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1. Displays of some of OSG's latest tooling solutions for non-ferrous metals.

2. OSG's latest A Brand products were displayed at MECT 2021 at Port Messe Nagoya during October 20 to 23, 2021.

OSG Around the World

Employee Interview with

Katie Kitamura

Profile

Location: USA
Position: Account Manager
Joined OSG: 2015
Motto: "Nothing is impossible"

Tell us about your work and experience at OSG.

I joined OSG Corporation's sales division in central Japan after graduating from Aichi University majoring in international communication in 2015. When I started my professional career, it was always a dream of mine to work abroad. My inspiration came from observing my brother leaving Japan to attend college in the United States for a semester. After working at OSG for four years, I wanted to gain experiences outside of Japan – my comfort zone. I consulted with my manager over a period of time regarding my career goals. When a position opened up at OSG USA in June 2019, I didn't hesitate to say "yes" and have been working as an account manager in the United States ever since.

When I reflect back on my professional career, I am happy to say that I have already achieved some of my goals. I wanted to be a positive role model to other women in Japan and show them that women can also be successful in a male dominated profession and that it is even possible to do this job outside of Japan.

Tell us about your daily routine.

My sales territories include Southeast North Carolina, South Carolina, Georgia, and Alabama. As an account manager, I would have frequent onsite customer visits with our applications engineers to further optimize production, tool selection, as well as to provide new production proposals.

What is most challenging about your work?

The most challenging part of my work is having technical discussions with customers and trying to understand southern American accent.

What is unique about OSG USA?

Unlike our headquarters in Japan, OSG USA does not have sales offices. Account managers and sales representatives usually work from their home offices covering an assigned region. However, despite the distance, there is great chemistry among the different departments, and we always have the support needed in order to deliver the best possible results for our clients.

Kitamura poses for a photograph with a client in the United States. After working at OSG Corporation in Japan for four years, Kitamura was assigned to OSG USA to serve as account manager in June, 2019.

What is your favorite OSG tool?

My favorite OSG tool is the ADO coolant-through carbide drill series. Our customers love this series because the ADO offers high performance in a wide range of work materials and applications.

ADO Series

OSG's ADO is a high performance and versatile coolant-through carbide drill series available in sizes from 3xD up to 50xD. This series is recently revamped with a new R Gash geometry, which expands the chip room at the center of the tool where chips are difficult to be discharged. With the optimized R shape to guide the direction of chip flow, chips can be evacuated smoothly. Moreover, with this new feature, the curling of chips is controlled, and the consistency of chip shape has significantly improved to allow superior chip separation versus the conventional design to better meet today's demand of higher stability, efficiency, longer tool life, and greater precision machining.

How do you spend time on your day off?

I recently discovered a new sport – pickleball, which combines many elements of badminton, tennis, and table tennis. I also play volleyball once a week. I enjoy meeting new people and making friends. I currently live close to the mountains and would spend time to explore during time off. I have uncovered several cozy wineries, hiked to a few waterfalls, and enjoyed some incredible meals.


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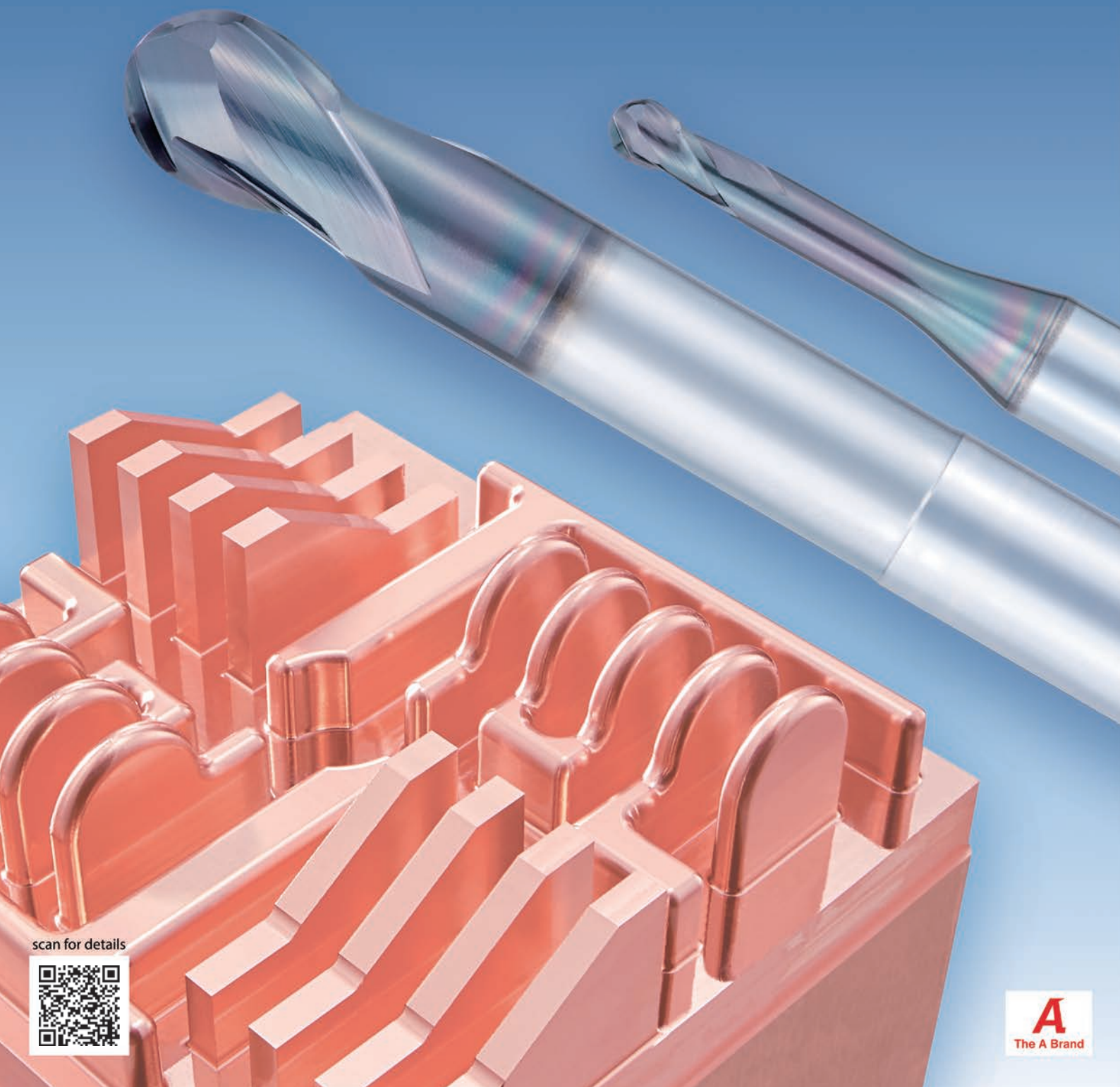
1. On her time off work, Kitamura enjoys playing volleyball.
2. Far right, Kitamura poses for a photograph with friends at a birthday dinner in Greenville, South Carolina, United States.

shaping your dreams

High precision and excellent surface finish in copper electrode applications

AE-LNBD-N

DLC Coated Carbide End Mill



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The A Brand