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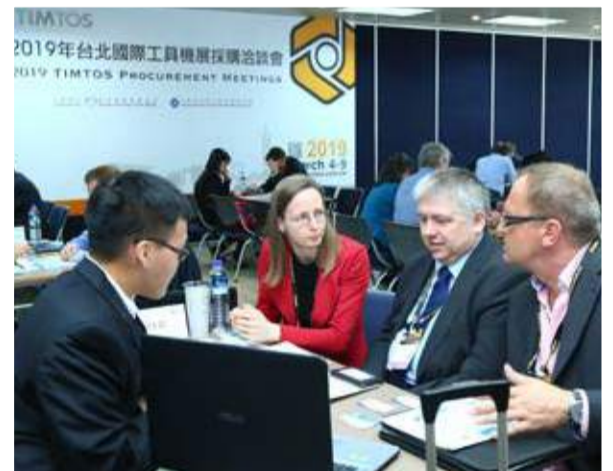
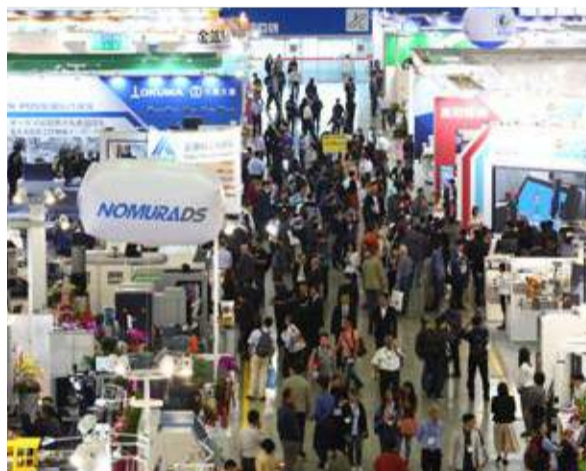
Total Visitor Count: 30,129 International: 6,494 Local: 23,635



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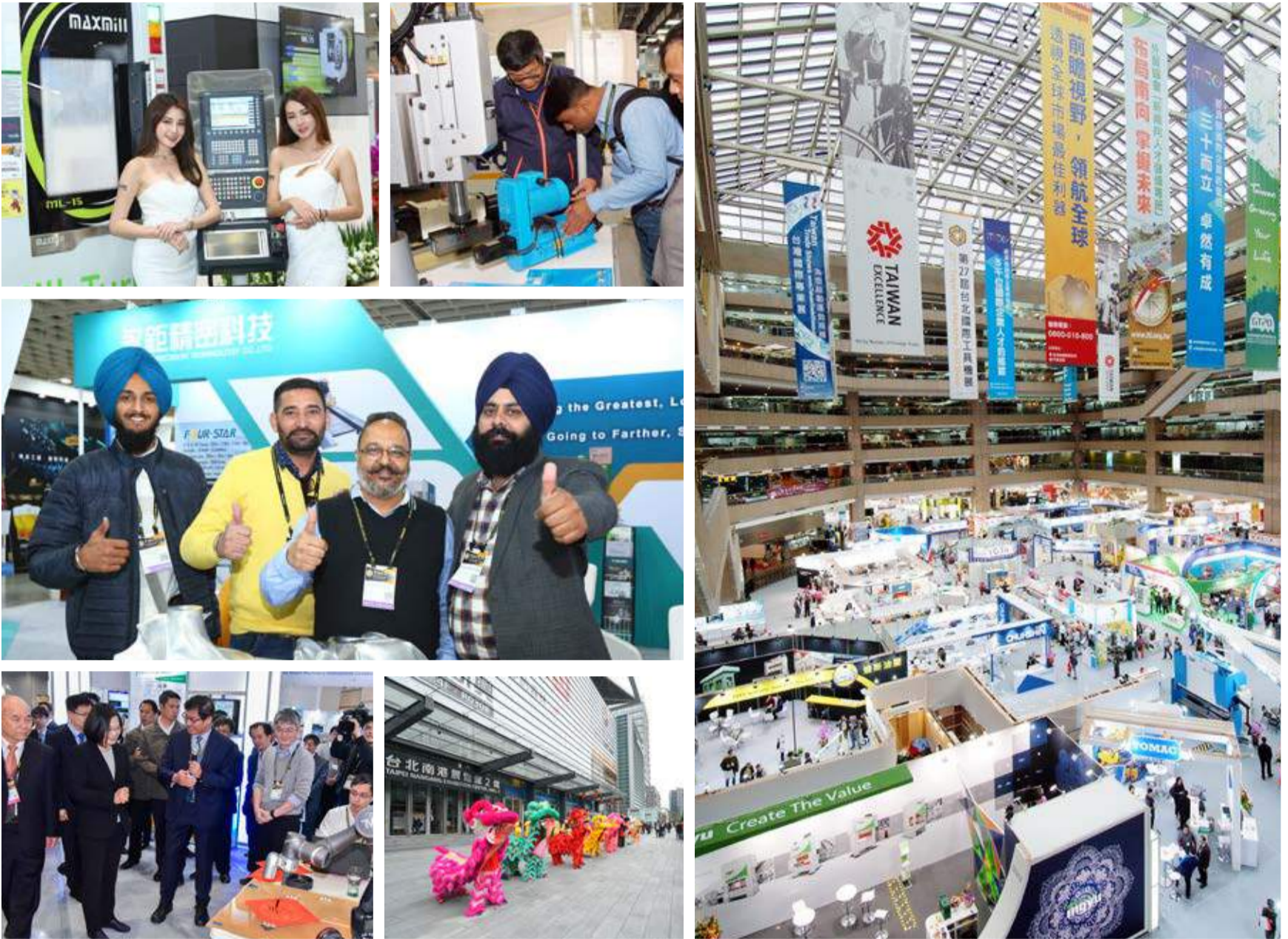
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JIMTOF 2020 to Open its Doors in December

On March 5, organizers of 30th Japan International Machine Tool Fair (JIMTOF 2020) held a press conference during the TIMTOS 2019 exhibition. JIMTOF 2020 will be held at the Tokyo Big Sight on December 7-12, 2019.

According to Kiyotsugu Ishihara, president and CEO of Tokyo Big Sight during the press conference held at TIMTOS 2019, the total number of booths from Japan plus overseas in JIMTOF 2018 was 5,524, which was the highest in the past. Among them, there were 320 overseas manufacturers, in which 81 companies came from Taiwan, up by 25%, making it the largest number of foreign exhibitors.

“It is worth noting that the external demand market grew by 4.8%, exceeding 1 trillion yen for two consecutive years and renewed the highest record. However, there were no big orders since the middle of the year in the precision of electric appliances in the smart phone, showing a decline of 30%,” said Masayoshi AMANO, President of JMTBA.

JMTBA also observed that due to lack of manpower and cost, Japan's automated machinery has made great strides, resulting

in diversified products, saving companies' costs, processes and space. In addition, the factories are also committed to the use of analytical big data, as well as the additive manufacturing, which also made great progress, greatly improving the processing precision and speed.

“In order to improve services, we have added design slogans and multi-language labelling to facilitate the identification of overseas people, presenting better service in Tokyo,” added Ishihara.

Japan's overall economy is forecasted to reach 1.3% growth in 2019, in spite of the several natural disasters that hit Japan. Growth began slowing in 2018 but appeared stable with an estimated 0.9% GDP. The economic benefits brought by the 2020 Tokyo Olympics is predicted to produce 2.7% growth in investments from private enterprise equipment and other sectors.

General machinery, automobile, aviation, shipbuilding, electrical precision and other industries are driving JIMTOF's domestic demand, posting 750.3 billion yen, an increase of 19.2% year-on-year, exceeding 2017 performance. ■



TIMTOS 2019 EVENT / SEMINAR PROGRAM

| Date | Time | Event/Seminar | Organizer | Venue | Remarks |
|---------------|---|---|---|---|--|
| 3/4 (Mon.) | 10:30 | Opening Ceremony | TAITRA, TAMI | Lobby, 4F, Taipei Nangang Exhibition Center, Hall 2 | By Invitation Only, Miranda Chien +886-2-27255200#2867 |
| | 8:00-17:00 | Bfuture Global Launch & Products Announcement | Ching Hung Machinery & Electric Industrial Co., Ltd. | Room 402c, Taipei Nangang Exhibition Center, Hall 1 | +886-4-23509188#527 |
| | 8:00-17:00 | Fagor CNC & Feedback Systems Products Introduction | Fagor Automation Taiwan Co., Ltd. | Room 602, Taipei Nangang Exhibition Center, Hall 2 | Samuel Wen +886-4-23851558 |
| | 13:30-16:30 | TIMTOS 2019 Procurement Meetings | TAITRA | Room 504, Taipei Nangang Exhibition Center, Hall 1 | Tina Ko +886-2-27255200#1573 |
| | 14:00-15:00 | Press Conference, TIMTOS 2019 | TAITRA TAMI | Room 403, Taipei Nangang Exhibition Center, Hall 1 | Savannah Hou +886-2-23494677 |
| | 16:00-17:30 | Market Briefing of Machinery Industry in Malaysia & Signing Ceremony for the Memorandum of Understanding between Penang Foundry & Engineering Industries Association (PENFEIA) and Taiwan External Trade Development Council (TAITRA) | TAITRA | Room 404, Taipei Nangang Exhibition Center, Hall 1 | Melody Chen +886-2-27255200#2693 |
| 3/5 (Tue.) | 8:00-17:00 | Bfuture Global Launch & Products Announcement | Ching Hung Machinery & Electric Industrial Co., Ltd. | Room 402c, Taipei Nangang Exhibition Center, Hall 1 | +886-4-23509188#527 |
| | 8:00-17:00 | Fagor CNC & Feedback Systems Products Introduction | Fagor Automation Taiwan Co., Ltd. | Room 602, Taipei Nangang Exhibition Center, Hall 2 | Samuel Wen +886-4-23851558 |
| | 8:30-12:00 | Intelligent Manufacturing and Machine Tool Key Component Application Technology | Intelligent Machinery Technology Center, ITRI | Room 505a, Taipei Nangang, Exhibition Center, Hall 1 | Helena Chang +886-49-2345309 |
| | 9:00-12:00 | 台日機械企業經貿交流會 | TAMI | Room 504bc, Taipei Nangang Exhibition Center, Hall 1 | +886-2-23494668 |
| | 9:00-16:00 | TIMTOS 2019 SUMMIT | BOFT, MOEA | Room 101, TICC | Lilyan Kao +886-2-27255200#2679 |
| | 16:00-17:00 | German Company Talk @ TIMTOS | TAITRA German Trade Office Taipei | Room 101, TICC | Suzie Cheng +886-2-7735-7524 |
| | 10:00-12:00 | Renishaw's XK10 alignment laser system-new tool for machine tool assembly and alignment | Renishaw (Taiwan) Inc. | Room 402a, Taipei Nangang Exhibition Center, Hall 1 | Eric Chuang +886-4-24603799 |
| | 10:30-12:00 | TNC 640 高效率五軸輪廓控制器 - 高可靠度創新加工技術的優勢 | HEIDENHAIN Co., Ltd. (Taiwan) | Room 403, Taipei Nangang Exhibition Center, Hall 1 | Gloria Tsai +886-4-2358-8977 #1035 |
| | 13:00-15:00 | NIDEC- Commander C Product Launch | Raise Precision Co., Ltd. | Conference Room 4, TWTC Exhibition Hall 1 | Judy Chen +886-4-22606502 |
| | 13:00-15:00 | Industry 4.0- Intelligent Manufacturing Conference/Mold intelligent production unit | Accutex Technologies Co., Ltd. | Room 402ab, Taipei Nangang Exhibition Center, Hall 1 | +886-4-23599688#226 |
| | 14:00-15:00 | JIMTOF 2020 Press Conference | Japan Machine Tool Builders' Association | Room 404, Taipei Nangang Exhibition Center, Hall 1 | Keiko Honda +81-3-34343961 |
| | 14:30-16:30 | 智慧製造聯網數據加值產業聯盟會員大會 | ITRI | Room 504a, Taipei Nangang Exhibition Center, Hall 1 | +886-3-5916720 |
| | 15:00-16:00 | 臺灣機械工業同業公會與馬來西亞檳城機器廠商會簽訂合作協議 | TAMI | VIP Briefing Room, 4F, Taipei Nangang Exhibition Center, Hall 1 | Ryan Lin +886-2-23494694 |
| | 15:00-17:30 | Litz Hitech Global Dealer Meeting and New Product Announcement | Litz Hitech Corporation | Room 401, Taipei Nangang Exhibition Center, Hall 1 | Lisa Mo +886-4-26815711#246 |
| | 18:30 | Reception for TIMTOS 2019 and the Ceremony of Taiwan Machine Tool Industry Awards for Excellence in Research & Innovation | TMTF, TAITRA, TAMI | The Banquet Hall, 3F, Taipei Nangang Exhibition Center, Hall 1 | Bonnie Tsai +886-2-23110358 |
| 3/6 (Wed.) | 8:00-17:00 | Bfuture Global Launch & Products Announcement | Ching Hung Machinery & Electric Industrial Co., Ltd. | Room 402c, Taipei Nangang Exhibition Center, Hall 1 | +886-4-23509188#527 |
| | 8:00-17:00 | TIMTOS 2019 High School, University Students Guided Tour | TAMI | Room 500, Taipei Nangang Exhibition Center, Hall 1 | +886-2-23494672 |
| | 8:00-17:00 | Fagor CNC & Feedback Systems Products Introduction | Fagor Automation Taiwan Co., Ltd. | Room 602, Taipei Nangang Exhibition Center, Hall 2 | Samuel Wen +886-4-23851558 |
| | 9:00-16:00 | TIMTOS 2019 SUMMIT | BOFT, MOEA | Room 101, TICC | Lilyan Kao +886-2-27255200#2679 |
| | 16:00-17:00 | German Company Talk @ TIMTOS | TAITRA German Trade Office Taipei | Room 101, TICC | Suzie Cheng +886-2-7735-7524 |
| | 8:00-17:00 | The Trend of Industry 4.0 and Intelligent Machinery Technical Application Seminar | igus Taiwan Company Ltd. CTIMES | Room 505, Taipei Nangang Exhibition Center, Hall 1 | KF Sun +886-2-25855526#225 |
| | 9:00-11:00 | YCM Dealer Meeting | Yeong Chin Machinery Industries Co., Ltd. | Room 401, Taipei Nangang Exhibition Center, Hall 1 | Claire Chen +886-4-25623211#1812 |
| | 10:30-12:00 | 選擇美國投資研討會 - 錢進美國教戰守則 | AIT TAMI | Room 501, Taipei Nangang Exhibition Center, Hall 1 | Jackie Hong +886-2-27201550#334 |
| | 13:00-17:00 | New Product Launch | Vision Wide Tech Co., Ltd. | Room 502, Taipei Nangang Exhibition Center, Hall 1 | Michelle Huang +886-4-22712000#231 |
| | 13:00-17:00 | Goodway Group New Product Launch Event | Goodway Group | Room 504a, Taipei Nangang Exhibition Center, Hall 1 | Lisa Chiang +886-4-24629698#62107 |
| | 13:30-16:30 | Application of mineral casting (polymer composite) in machinery field | Shandong Nano Advanced Materials Technology Co., Ltd. | Room 304, Taipei Nangang Exhibition Center, Hall 1 | +86-531-88917773 |
| 13:30-17:00 | 中國砂輪新產品發表會 | KINIK COMPANY | Conference Room 2, TWTC Exhibition Hall 1 | +886-2-26791931#3309 | |
| 3/7 (Thu.) | 8:00-17:00 | 直得科技新品說明會 | Chieftek Precision Co., Ltd. | Room Happiness, 3F, Taipei Nangang Exhibition Center, Hall 1 | +886-6-5055858#162 |
| | 8:00-17:00 | Bfuture Global Launch & Products Announcement | Ching Hung Machinery & Electric Industrial Co., Ltd. | Room 402c, Taipei Nangang Exhibition Center, Hall 1 | +886-4-23509188#527 |
| | 8:00-17:00 | TIMTOS 2019 High School, University Students Guided Tour | TAMI | Room 500, Taipei Nangang Exhibition Center, Hall 1 | +886-2-23494672 |
| | 8:00-17:00 | Fagor CNC & Feedback Systems Products Introduction | Fagor Automation Taiwan Co., Ltd. | Room 602, Taipei Nangang Exhibition Center, Hall 2 | Samuel Wen +886-4-23851558 |
| | 13:30-17:00 | 2019 台北國際工具機展 GLORIA 智慧製造創新應用論壇 | MOST, TAITRA, TAMI | Room 402ab, Taipei Nangang Exhibition Center, Hall 1 | Jessica Guo +886-2-25774249#827 |
| | 14:00-16:00 | Energy Saving Technology for Hydraulic System and Filtration of Cooling Lubricant | HYDAC Technology Ltd. Sterling TSI Co., Ltd. | Room 502, Taipei Nangang Exhibition Center, Hall 1 | Jojo Yang 886-4-22602278 |
| 14:00-16:00 | Improving the quality and efficiency of grinding processing | Join Star Trading Co., Ltd. | Room 505b, Taipei Nangang Exhibition Center, Hall 1 | Jamie Chang +886-2-29115226#607 | |

Subject to change without notice.



Before he took long hours flight, Vilas Boas had made up his mind to buy machines in TIMTOS whatsoever. With regular purchasing and confidence in Taiwanese machine tools, after he arrived at Taipei Nangang Exhibition center for two days, Vilas Boas has ordered several 5-axis machining centers and more than 10 grinding machines. One of his suppliers said that Vilas Boas usually bought at least 20 machines from his company every year.

Eduardo Vilas Boas
Mafermaq Maquinas Ferramentas, Lda
Portugal



It is his first time to Taiwan and TIMTOS. Aleksanda is impressed by the modernization and progression of Taiwan. He found that he can find some interesting stuffs in TIMTOS, for instance, finishing and grinding machine is very good. Aleksanda said that these new findings would help him get more opportunities. He plans to buy EDM machines, grinding machines and tube bending machines, this time.

Fefelov Aleksanda
Vekprom Company
Russia



As a furniture manufacturer, Zakaria feels that Taiwanese machine tools' quality is very good and is close to those of Japan and Germany. He is targeting advanced MIT milling and drilling machines in TIMTOS though, he also has seen more other MIT products. After TIMTOS, he has an appointment in Tainan to meet a very big machine tools maker.

Djafour Zakaria
SimoDeco
Algeria



His company being one of the few makers of precision binoculars in Taiwan and in a business of "small-volume with diverse items' production", Chiang comes to TIMTOS for high-end & advanced machines to help him producing high-end & advanced binoculars in Taiwan. He praises TIMTOS, hosted by TAITRA & TAMI, is an important helping hand for Taiwanese precision industry and overseas buyers.

Chin-Hsi Chiang
Long Perng Optics
Taiwan



Jozef is a regular buyer from Belgium. This is his fifth time of coming to TIMTOS. He found that the scale of TIMTOS is getting bigger and bigger, and the new products are more and more. This year, he is aiming at grinding machines. Jozef told Show Daily that 80% machine tools in his company are made in Taiwan. Because he likes the competitiveness of Taiwanese products in price and quality, compared to Japanese goods.

Wouters Jozef
ADP Antwerp Diesel Pumps N.V.
Belgium



With three days' experience in TIMTOS 2019, Kang feels that the moving lines of all the halls are fantastic, which helped her very easy to find the booth and the place she is looking for, especially those booths with powerful machines inside. She is ready for a report about the delicate arrangement of TIMTOS. Other than Industry 4.0 and machine tools, she will write about the attentiveness of the host.

Soon Chen Kang
CEI Haymarket Media Ltd.
Hong Kong

TIMTOS 2019 EVENT / SEMINAR PROGRAM

| | | | | | |
|---------------|-------------|--|--|--|------------------------------------|
| 3/8 (Fri.) | 8:00-17:00 | 直得科技新品說明會 | Chieftek Precision Co., Ltd. | Room Happiness, 3F, Taipei Nangang Exhibition Center, Hall 1 | +886-6-5055858#162 |
| | 8:00-17:00 | Bfuture Global Launch & Products Announcement | Ching Hung Machinery & Electric Industrial Co., Ltd. | Room 402c, Taipei Nangang Exhibition Center, Hall 1 | +886-4-23509188#527 |
| | 8:00-17:00 | TIMTOS 2019 High School, University Students Guided Tour | TAMI | Room 500, Taipei Nangang Exhibition Center, Hall 1 | +886-2-23494672 |
| | 8:00 | Fagor CNC & Feedback Systems Products Introduction | Fagor Automation Taiwan Co., Ltd. | Room 602, Taipei Nangang Exhibition Center, Hall 2 | Samuel Wen +886-4-23851558 |
| | 9:30-18:00 | 智慧製造論壇 | Fusionmedium TAITRA | Conference Room 4,5, TWTC Exhibition Hall 1 | Sica Lin +886-2-87715865#180 |
| | 9:30-14:00 | Diplomatic Motion Solution Product Training and Conference | Diplomatic MS S.p.A Ace Pillar Co., Ltd. | Room 502, Taipei Nangang Exhibition Center, Hall 1 | +886-2-29958400#1232 |
| | 10:00-17:00 | 中興大學與精密機械研究發展中心 智慧機械產學論壇技術成果發表會 | 國立中興大學 & 財團法人精密機械研究發展中心 | Taipei Nangang Exhibition Center, Hall 1 | +886-4-22858139 |
| 3/9 (Sat.) | 13:00-16:00 | 3D Printing+3D Scanning | Road Ahead Technologies Consultant Corp | Room 404, Taipei Nangang Exhibition Center, Hall 1 | Evelyn Lin +886-2-2999-6788#284 |
| | 8:00-17:00 | TIMTOS 2019 High School, University Students Guided Tour | TAMI | Room 500, Taipei Nangang Exhibition Center, Hall 1 | +886-2-23494672 |
| | 8:00-17:00 | Fagor CNC & Feedback Systems Products Introduction | Fagor Automation Taiwan Co., Ltd. | Room 602, Taipei Nangang Exhibition Center, Hall 2 | Samuel Wen +886-4-23851558 |

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Smart Manufacturing: Gateway to Cutting-Edge Technology



Taipei International Machine Tool Show (TIMTOS) is as always, exciting, enriching and exhausting! But, what did we see and what qualified as expected vs. unexpected? And what does it all mean to innovation partners like TAMI and TAITRA who work hard to bring these exhibition to life and into the hands of consumers?

TIMTOS 2019 highlights: Industry 4.0 and Smart Manufacturing, and while you can't argue that these are the big ingredient technologies of today, the truth is, it's the innovation, inspiration and ideas that use these technologies that will truly transform our future.

So, before we get into the new technologies and developments at TIMTOS, let's just take a moment to talk about the application forums happened during the exhibition and understand the sheer scale and importance of the event.

Everyone agrees that Smart Machinery and Manufacturing are keys in upgrading not only Taiwan companies but also global enterprises in order to achieve collective success.

The Ministry of Science and Technology has put together six Global Research & Industry Alliance (GLORIA) at TIMTOS to hold the "Smart Manufacturing Innovation Application Forum."

Experts from the production and academic groups were assembled together to provide their keynotes to all attendees present during the forum in order to assist them in implementing Industry 4.0 into their companies. The lectures offer solutions and extensive knowledge about the manufacturing and machinery industries, and also deliver new opportunities and advancements with smart manufacturing in mind. The Universities include: National Cheng Kung University, National Chung Hsing University, National Formosa University, National Central University, Chung Yuan Christian University, and Far East University.

And it is when all these minds collide, from universities to industry giants that the magic happens. Seeing the innovation and the application of technology in one place often sparks an idea in another. That is the goal of the forum. It aims to create a new prospect for companies to increase their know-how and upgrade their manufacturing

processes. Sometimes that can mean an amazing collaboration too, at this forum we heard and saw that technology partnerships can breakdown industry barriers. We have collected some interesting thoughts from speakers. Find out more below:

Development Trends of Industry 4.0 and Smart Manufacturing

National Chung Hsing University Vice President explained that by integrating CPS with intelligent system (ex. intelligent production, scheduling, intelligent logistics, and intelligent services) in the current industrial practices, it would transform today's factories into an Industry 4.0 (Smart Manufacturing) factory with significant economic potential.

Artificial Intelligence (AI) is defined as a system's ability to correctly interpret external data to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation. Colloquially, the term "artificial intelligence" is applied when a machine mimics "cognitive functions that humans associate with other human minds, such as learning and problem solving.

A quote from Professor Nick Bostrom, Director of Artificial Intelligence Program from University of Oxford, was shared to give inspiration to the lecture. According to Nick, "We need to think of intelligence as an optimization process, a process that steers the future into a particular set of configurations. A super intelligence is a really strong optimization process."

Since Germany introduced the Industry 4.0 technology development strategy in Hannover EMO Exhibition last 2013, countries around the world have developed relevant strategic plans for the development of the manufacturing industry. Industry 4.0 is to build a large number of network technologies and software. IoT technology, cloud computing, Big Data, Artificial Intelligence and other technologies are integrated into a fully digital intelligent manufacturing system.

Machine learning is the subset of AI that includes abstruse statistical techniques that enable machines to improve at tasks with experience. The category includes deep learning. Deep learning on the other hand,

in which is a subset of machine learning, is composed of algorithms that permit software to train itself to perform tasks, like speech and image recognition, by exposing multi-layered neural networks to vast amounts of data.

Intelligent Manufacturing and Industry 4.1.

Mr. Fan-Tien Cheng of Intelligent Manufacturing Research Center (iMRC) from the National Cheng Kung University talked about Intelligent Manufacturing and Industry 4.1.

As domestic industries are facing various challenges and the competitiveness of nations around the world, companies must exert great efforts to promote Productivity 4.0 to spearhead domestic industrial upgrades and transformation. To echo the energy of Productivity 4.0, companies must leverage advanced ICT and manufacturing technologies, such as Internet of Things (IoT), Cloud Computing (CC), Big Data Analytics (BDA), Cyber-Physical Technology (CPT), and Automatic Virtual Metrology (AVM), to develop an Advanced Manufacturing Cloud of Things (AMCoT) to help domestic manufacturing industries to enhance production yield and product quality, as well achieve the near-zero-defect realm of products.

By the total-inspection capability of the CPAVM service, abnormal products can be timely detected and thus excluded during the production. Accordingly, the goal of zero-defect delivered products can be achieved. Furthermore, by using the BDA-based YE and YM services, the key stage influencing yield in the production line can be found. Also, by using the cause-effect-relationships (CERs) established by the CPAVM and CPEP/CPMMS services, the key factors causing yield decline can be discovered and suggestions about conducting predictive maintenance on equipment can be provided. Such continuous improvement can make the products in manufacturing near zero defects. The R&D concepts and results of this project possess technological innovation, advancement, and industrial applicability. This project can leverage academic research capacity to help domestic manufacturing industries go toward the realm of zero-defect products of Industry 4.1 which is defined as Industry 4.0 plus AVM. In

addition to high-tech (e.g. semiconductor and solar-cell) industries, the developed AMCoT can be applied to traditional (e.g., machine-tool) industries as well.

He added, "AVM for Machine-Tool Industries is a method to conjecture manufacturing quality of a process tool based on data sensed from the process tool and without physical metrology operation."

On another note, "E-Manufacturing is advanced manufacturing that takes advantage of Internet and information technologies to efficiently integrate the Manufacturing Execution System (MES) and Equipment Engineering System (EES) within a company (intra-company integration), and the Supply Chain (SC) and Engineering Chain (EC) among member companies (inter-company integration), Mr. Cheng explained.

In addition, MES is a shop floor control system which includes either manual or automatic labor and production reporting as well as on-line inquiries and links to tasks that take place on the production floor. MES includes links to work orders, receipt of goods, shipping, quality control, maintenance, scheduling, and other related tasks. The mission of MES is to increase productivity and yield.

Ganeshan and Harrison defined SC as a network of facilities and distribution options to perform the functions of materials procurement; transformation of materials into intermediate and finished products; and distribution of these finished products to customers. SC is designed to achieve timely and economical delivery of desired products for accomplishing the cycle of "order-to-delivery (O2D)".

In closing, innovation is alive and kicking all around the world in numerous countries that had groups represented at the show. From changing the way companies innovate to game-changing building blocks, TIMTOS 2019 has been a sensory overload, suggesting that this year will be another bumper year of innovation. The show is powerfully positioned to help people innovate and deliver that innovation. It is what they do, and it's a privilege to work with such creative minds and disruptive technologies.

TIMTOS is a striking foundation for the innovation and change that 2019 will bring, and we're looking forward to getting to work to enable even more innovation around the world. ■



Show Updates

Bringing Smart Manufacturing to Automotive Industry

On the third day of TIMTOS 2019, “Automotive Manufacturing Revolution” is one of the key agendas in the summit. According to ABI Research’s latest report titled, Smart Manufacturing in Automotive, the automotive industry has become the most active sector for adopting transformational smart manufacturing technologies. Audi, Volkswagen, Ford, Honda, Daimler, and BMW are all applying smart manufacturing to the manufacturing processes.

About 50% of the automotive industry’s operation is automated, when other industries use only 20-30% in their productions. The automation technologies include additive manufacturing (AM) and artificial intelligence (AI), machine learning, augmented reality (AR), collaborative robotics, and the Industrial Internet of Things (IIoT) platform.

“The automobile manufacturing industry is suffering from manpower shortage, and regarded as a highly polluting industry,” analyzed HT Choong, ABB regional manager. He used Toyota’s production line as an example.

“Due to the company’s current situation of small and mixed production, the manufacturing line needs to be more flexible and more efficient. “It used to achieve the past results with three production lines, but now we only have to use one production line using smart manufacturing,” said HT Choong.

Since 2013, the automobile industry reached its milestone because of smart manufacturing; and by 2017, production lines using smart manufacturing has reached 30% in the global automobile manufacturing. Annual output reached 380,000 units, in which the Asian market grew the highest, reaching over 30%. Meanwhile, American

and European markets make up of 12% and 18%, respectively.

According to statistics, the total robot production in Taiwan was more than 10,000 units in 2017, ranking sixth after China, Japan, South Korea, the United States, and Germany. “In the case of ABB, automobile manufacturing have been added into all the manufacturing processes of the factory. Among them, the laser arm has been used to join the top roof and the main part of the car, in that way the top cover and the surrounding parts of the car are more closely combined,” pointed out HT Choong.

“Bosch Rexroth believes that the future factory should meet the three conditions,” said Charlie Chen, Division Sales Manager of Industrial & Mobile Application Bosch Rexroth Taiwan.

“First, the production space must be a smart space, that is, it needs to be intelligent in all aspects of space. Equipment operations can be monitored and data can be collected to optimize production lines, manpower and manufacturing processes.”

“In addition, it is necessary to use a movable device, for example, a combined conveyor line. When the factory is re-arranged, it is not necessary to completely remove the modified device, only the device needs to be re-arranged. Finally, all production needs to be simulated through virtual mode, which can increase plant productivity and save efficiency,” Chong added.

“The intelligent environment can effectively manage energy consumption and use logistics analysis to monitor materials, which can also save energy. The people in the factory are also managed in an intelligent way. As a result, the manpower, productivity, performance and manufacturing processes of the factory are under intelligent monitoring

and control, making production a more user friendly and environmental friendly,” Charlie Chen further analyzed.

“Transparency is the foundation for continuous improvement,” emphasized Charlie Chen. From the initial concept to the establishment of the system, then create a mobile system, introduce a production planning system, further promote value changes, and complete the complete process of intelligent manufacturing.

Fan-Tian Cheng, Chair Professor & director, Intelligent Manufacturing Research Center, National Cheng Kung University explores the benefits of intelligence manufacturing and how it improves product quality. He cited Samsung as an example to summarize the importance of Industry 4.1 for product quality and vision. In 2016, Samsung lost US\$2.4 billion due to Galaxy Note 7 battery defects, indicating that product quality may be seriously ignored when the factory requires higher output. According to Bloomberg, Samsung has reduced its surplus by US\$200 million, and its market value has decreased by US\$2.2 billion.

The automobile manufacturing industry is undergoing rapid changes, and the industry as well as academia are actively investing. “The revolution is speeding up. Are we ready,” asked Jwu-Sheng Hu, Vice President and General Director, Mechanical and Mechatronics Systems Research Laboratories, ITRI, in the “thematic dialogue”.

It is said that Tesla recently announced that its car price will be cut by half, and the physical sales department will be closed, and online sales will be fully adopted. “This will greatly change the sales and manufacturing of automobiles, and it is also worthy of attention in the future.” said Jwu-Sheng Hu.

“Looking forward to the future, the

automobile industry will produce 30% of fully self-driving cars. However, how to produce self-driving cars? How to sell in the future? It deserves our attention.” pointed out Jwu-Sheng Hu. He explained that Taiwan’s automotive electronics industry is very large, with an annual output value of more than NT\$200 billion. In the future, how will Taiwan’s automobile industry keep up with the trends of intelligent manufacturing? That’s what everybody is paying attention and actively participating.

“Bosch Rexroth has a huge impact on the issue of intelligent manufacturing,” said Charlie Chen. He stated that diesel engines accounted for more than half in Bosch’s revenue. Once intelligent manufacturing is started, revenue will be greatly affected, however Taiwan’s automotive electronics industry is well developed, and the investment in intelligent manufacturing is promising.

“The concept of cloud should be added into car design, after-sales service and car repair,” mentioned Fan-Tian Cheng. Referring to the repair part, once the car experience problems, smart device can alert the owner early, making the car maintained for better quality, improving the entire automobile industry.

In the past, when someone wants to buy a car, he is considering about the performance and interior of the car, but now, the first question asked by the buyer is whether the car can be linked with his mobile smart device, said Jwu-Sheng Hu.

“After intelligent manufacturing, will the robot eliminate the work of all workers? How do workers respond to intelligent manufacturing of the automotive industry?” asked Jwu-Sheng Hu.

Intelligent manufacturing should not destroy employees, but inspire more capabilities of employees, further explained Jwu-Sheng Hu. He also asked the big question: “What is the relationship between intelligent manufacturing and auto workers? How can technology help field workers?”

Intelligent manufacturing is not destroying employees, nor replacing employees. Instead, it solves the problems faced by employees on the production line, automates repetitive actions, and allows employees to no longer only repeat mechanized actions, cited HT Choong.

“After Bosch promoted Industry 4.0, the number of employees did not decrease, but increased,” pointed out Charlie Chen. The monitoring in production not only improves production efficiency, but also ensures the safety of employees on the production line.

“The tool monitoring system is an idea made by the public staff. The computer can’t predict the possible timing of the tool failure, but only the senior staff on the production line have a deep understanding,” commented Charlie Chen. ■



Asia Leads Smart Coatings Market



Image courtesy of BASF

Emerging economies, such as Indonesia and Thailand, are projected to register high growth in smart coatings market, reports Markets and Markets.

APAC is estimated to account for the largest share of the Smart Coatings Market, in terms of volume and value, and is also projected to register the highest CAGR during the forecast period, in terms of value. The high demand from the APAC region has significantly contributed to the growth of the smart coatings market. China led the APAC smart coatings market owing to the increased production and consumption of smart coatings in the past five years, because of high demand from the countries automotive & transportation and marine end-use industries.

According to Markets and Markets, the market is projected to grow from US\$2.15 billion in 2018 to US\$6.27 billion by 2022, at a CAGR of 23.87% from 2017 to 2022. The market is driven by the use

of smart coatings in a wide range of end-use industries, such as automotive and transportation, aerospace & defence, marine, and building & construction.

Smart coatings are used in various end-use industries, such as automotive and transportation, aerospace & defence, marine, and building & construction. The automotive & transportation end-use industry is estimated to account for the largest share of the smart coatings market in 2017, in terms of volume and value, because of the higher demand for smart coatings in body hardware, door closure, lock part, exhaust, suspension, engine components, and clamps & hose connections for the protection against abrasion. The marine end-use industry is estimated to register the highest CAGR during the forecast period, in terms of value, followed by the automotive & transportation industry. ■

Source: Int'l Metalworking News for Asia

AM with Metal Powders Market to Hit US\$1.1B by 2024

Additive Manufacturing with Metal Powders Market is set to exceed US\$1.1 billion by 2024; according to a new research report by Global Market Insights, Inc. Increase in trend towards adoption of prototype has led to the development and validation of design faster along with reduction in production time & cost in various industrial sectors which has stimulated additive manufacturing with metal powders market demand. Increasing E&P activities in oil & gas sector has forced manufacturers for various technological advancements in 3D printing for efficient oil recovery, thereby propagating metal additive manufacturing market growth.

Positive application scope in aerospace industry in making engine, turbine parts and interiors should trigger additive manufacturing with metal powders market growth. Over 20% of aerospace engineering companies are using this technology to make tooling components. The industry is constantly putting effort to minimise aircraft weight by using lightweight metals such as stainless steel, titanium, aluminium, and copper.

Growing trust for these technologies in aerospace firms, should minimise costs for developing models and prototypes, resulting in additive manufacturing with metal powders market growth.

Aluminium alloys from additive manufacturing with metal powders market demand should witness gains over 27% up to 2024. Components manufactured from aluminium powder have usage in automotive, motor racing and general engineering as it is light and rigid. Superior properties such as corrosion resistance, durability and welding properties make aluminium metal powders suitable for automotive industries, thus enhancing product demand.

PBF technology from additive manufacturing with metal powders demand would surpass USD 950 million up to 2024. This technique along with titanium powder is widely used to make orthopaedic devices owing to cost-effectiveness and less lead time. DMLS technique from this particular technology is used in making prototypes and end products. ■

Source: Int'l Metalworking News for Asia



Global Tech Giants to Lead Industry 4.0 Revolution

The Industry 4.0 market is forecasted to reach US\$1 trillion by 2030, dominated by global technology giants including Alphabet-Google, HP, Samsung, IBM, NEC, Microsoft, and more. According to the new 4-volume report by HSRC: Global Industry 4.0 Market & Technologies 2018-2023, the Industry 4.0 market will reach US\$214 billion by 2023.

The Industry 4.0 market race is led by the global tech giants that invest billions of dollars in Industry 4.0 products R&D, M&A, commercialisation and internal use. Furthermore, these companies have acquired smaller technology companies, especially in the AI sector, to strengthen their industry 4.0 capabilities.

Industry 4.0 holds immense potential.

Smart factories allow individual customer requirements to be met, meaning that even one-off items can be manufactured profitably. In Industry 4.0, dynamic business and engineering processes allow last-minute changes to production and deliver the ability to respond flexibly to disruptions and failures on behalf of suppliers.

End-to-end transparency is provided over the manufacturing process, facilitating optimised decision-making. Industry 4.0 will also result in new ways of creating value and novel business models. It will provide start-ups and SMEs with the opportunity to develop and provide downstream services.

The Industry 4.0 competition is not only about technology or offering the best products; it is also, and in particular, about the companies that collect the appropriate data, combine it to provide the best digital services, and utilise it for their own benefit. Those who know what the customer wants, and can forecast consumer demand, will

provide the information to develop an "unfair" competitive advantage.

The major winners might be those that control "Industry 4.0 Platforms", software layers that syndicate various devices, information and services, on top of which other firms can build their own offerings.

According to the report, the Industry 4.0 revolution will be driven by an ensemble of emerging technologies, such as Industrial Internet of Things (Industrial IoT), Big Data analytics, advanced industrial robots, Artificial Intelligence (AI) and predictive maintenance. In the next decades, businesses, led by the giant tech companies, will establish global networks that incorporate their machinery, warehousing systems, and production facilities in the shape of cyber-physical systems that can be managed in real time. These extremely flexible value networks will require new forms of collaboration between companies, both nationally and globally. ■

Source: Int'l Metalworking News for Asia



Image Courtesy of Siemens

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COMPACT B

Gantry Type High Speed 5-axis Machine Center

- Gantry type
- Box-in-Box symmetrical design
- Column and base one piece design
- X/Y - axis linear motor drive
- Direct-drive motor two-axis milling head



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LinMAX B

Gantry Type High Speed 5-axis Machine Center

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- Column one piece design
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- Direct-drive motor two-axis milling head
- Modular design milling head



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- Hydrostatic rotary table
- Short throat depth tilting milling head



LICO: 13-axis Turn-Mill Machine with High Speed and High Precision

At this year's TIMTOS show, LICO Machinery brings its 13-axis screw machine with milling, which combines the speed of traditional automatic lathe and CNC precision to the highest degree. With its professional knowledge and technology, the machine has repeatedly proven to be faster than Swiss-type machines or Twin-Spindle Twin-Turret in most parts machining, and it is also less investment than the European and Japanese Twin-Turret machines. For many metalworking job shops, Swiss-type machines are easily chosen as go-to machines to easily setup jobs with no consideration for efficiency. After careful studies, they will find that less than 25% of the work belong to the Swiss-type parts, which are slender or tiny-diameter parts (L/D length-diameter ratio is greater than 4 times).

LICO Machinery specializes in CNC single-spindle screw machines that blend the speed of screw machines with the precision and versatility of CNC lathes. With 41 years in cam-type automatics and 25 years in CNC Multi-Slides Turn-Mill Centers, LICO has teamed up with many experienced



machinery dealers throughout the world to ensure good services.

The LICO LNT series of CNC screw machines feature various levels of technology enabling the customer to match the right machine to the right part. Built on a rugged base, these machines employ up to four 2-axis cross slides arrayed around the spindle. All 4 slides and the turret are capable of overlapping with each other [Parallel Machining] or [Multi-tasking]. The slides are dovetail and gib design, giving you the rigidity to make use of form tools to maximize material removal rates without chatters. The machines include a 2-axis eight position turret with live-tooling on every position. These machines are fixed headstock machines, so no special material or learning sliding-headstock technology is required. Spindle bores range from 36mm through 65mm. On most parts, the LNT machines will outperform any Swiss-type machines up to 7-axis. Our 3-turret version, LNTS-T3, outperforms all 2-spindle competitions to win orders.

The latest machine model is the LNDD machines, which adds 2-3 cross slides to a traditional Twin-spindle Single-turret machine. The turret has a True-Y axis (+/-55mm) that allows for multiple tools at each turret position for working on both spindles. This machine also comes in larger spindle bores, 80mm and 100 mm.

In 1993, LNT-42 CNC Lathe got the prize of "It's Very Well Made In Taiwan"



No.1., got the patent from Taiwan, Mainland China and Germany. Its LA32H automatic lathe and functional complex CNC lathe in 1994 and 1999 respectively won the same award: in 1996, ISO9000 certification; In 2001, the CE Mark approved by Amtri Veritas in the UK; In 2002, LNE42 awarded the prize of "Innovative Research Award of SMEs" hosted by Taiwan Ministry of Economic Bureau; In 2004, LICO developed LNT machine with automatic loading & complete machining for forging; In 2005, LICO developed LNC-D automatic bar feeding with 12-position live tools and sub-spindle back machining CNC automatics; In 2006, LICO developed compact, affordable

sliding-headstock CNC automatic lathe for long shaft machining, stainless steel ball valve stem with Y-mill and hand tools with polygonal turning... LICO has been developing stably and continuously into a market leader.

Today, the company exports to more than 50 countries and regions, with China, southeast Asia, the United States, Europe and Latin America as its key markets, in addition to Taiwan.

LICO Machinery Co., Ltd.

Tel: +886-4-2563-0950

E-mail: sales@licomachinery.com

Website: www.licomachinery.com

Booth No.: N-0330

Smart Manufacturing: Interconnected Solutions from HEIDENHAIN

In TIMTOS 2019, HEIDENHAIN brings its Connected Machining, a smart manufacturing solution that has been developed in recent years. This solution includes the Remote Desktop Manager, HEIDENHAIN DNC, and State Monitor.

"With the Remote Desktop Manager, the machine operator can easily and safely use all data and information available in the company by directly accessing the company's PCs and servers. State Monitor provides an easy-to-read overview of

machine data in production. The machine's efficiency can be ascertained through the evaluation of important data such as current machine status, override settings and the usage history," said Mr. Lee Chao-Hsi, Managing Director of HEIDENHAIN Taiwan.

The HEIDENHAIN CNC system has always been known for its superior performance.

"HEIDENHAIN's 'Connected Machining' provides a simple solution for the traditional customer to build a paperless factory. Machines equipped with HEIDENHAIN CNC system can all be connected through HEIDENHAIN DNC software, then the TNC control system will acquire all the resources and data to make analysis," added Mr. Lee.

At the same time, the Remote Desktop Manager gives machine operators direct access to the company's computer or server,

making it easy and secure to use all of the company's available data and information. For example, the machine operator can directly use the CAD/CAM system data on the TNC control system, and sharing information to all relevant workers in the workshop.

HEIDENHAIN

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Uni Magnetic Industrial: the automated expert in filtration system

— An interview with Vice General Manager Ms. Lin

Uni Magnetic has over 35 years of experience in manufacturing industrial filtration systems. The major equipment that Uni Magnetic produces are centrifuge, magnetic separator, magnetic roller conveyor and candle filters - the company is presently involved in greater innovative products. Ms. Lin remarked that their products are widely sold to different industries because the filtration systems can achieve very high precision in machining. Moreover, the company has improved the issue of waste production as their filter elements are all sustainable for at least three years. This move fundamentally increased the efficiency in manufacturing and solved environmental issues by cutting waste materials. Given the high capacity, Uni Magnetic's equipment is being heavily facilitated in the field of automobile and fields that need high precision in machining and finishing – such as glass manufacturing, surface manufacturing and smartphone panel manufacturing. A major multinational company such as GE has also been attracted by Uni Magnetic's equipment.

Achieving unmanned factory, a step closer to smart factory

Regarding the smart manufacturing theme that TIMTOS 2019 highlights, Ms. Lin told us that the company has been putting a lot of efforts in realizing unmanned filtration systems. They are exhibiting Rare Earth magnetic separator. The magnetic force is up to 5,000 gauss, makes the filtration efficiency up to 10 μ , with no extra consumption at all, and applicable to weakly ferrous metal, oil-based or water-based coolant.

They have added in control, examination and testing devices to their machines and ensure the filtration systems operate smoothly without human intervention. The goal is to create a series of intelligent system that could be easily combined with machine tools and start machining without any problems", said Ms. Lin. She believes that the future of filtration systems would be in a great degree of collaboration with machine tools. She therefore is optimistic about any potential cooperation with other machinery manufacturers.



For the market plan of 2019, Uni Magnetic will carefully assess the uncertain factors generated by the U.S. and China's economic clashes and trade policies, and plan out their best responses. In the meantime, they will consolidate their existing customers, while putting more resources in the Asia-Pacific region. She welcomes

international guests to visit their booth at TIMTOS and have a close look at their automation filtration systems.

Uni Magnetic Industrial Company

Tel: +886-4-7810-900

Fax: +886-4-7810-901

E-mail: matildalin@unimag.com.tw

Website: www.unimag.com.tw

Booth No.: R-0908

MicroLab: Challenging for New Trend Markets and Products with Customers



Taiwan machine tool industry faces enormous challenges, and it has become increasingly critical and essential to find the right markets and the corresponding products to cut into the markets. MicroLab develops and designs new products based on the idea of how to collaborate and develop together with customers.

The two main trends in the machinery industry are multi-axis machining and

multi-tasking. With advancements in materials science, and in response to market needs of high speed cutting and high efficiency cutting, soon afterwards the high-torque, high-rigidity machines are spring up in European market. Therefore, at the TIMTOS exhibition, MicroLab mainly shows the following three types of products: multi-axis machinery; multi-tasking machinery; high torque, high

rigidity machinery. In addition to its own spindles, MicroLab also R&D for the positioning rotary table to integrate to spindle, that will work out higher performance and excellent precision. Over the years, Taiwan's advantage lies in the industrial production division; however, they face the difficulty of components integration, such as spatial configuration, precision combination and so on. In order to help the machinery makers using these components smoothly and get better performance, MicroLab introduces integrated products - precise rotary positioning spindle head.

MicroLab has its advantages in design and innovation, refuse the route of mass-production, but focus on the flexible design of customized products. The key markets set to Taiwan and Europe. The increasing performance required from customers and more complex in technique, that impels MicroLab continuously to launch more patented products. Such as, the pneumatic brake device of turning and milling machine is new patented product announced in recent 2 years. The torque of full-round brake is more powerful.

In R&D, MicroLab tends to collaborate

with external research institutions. For example, they build a three-year research program with National Tsing Hua University on the hydrostatic spindle. At present, the laboratory stage has been completed, and the next step - second stage is the practice of grinding and cutting to verify the spindle performance.

Looking forward to the future trend of machine tool industry, MicroLab will focus on the automatic and intelligent spindle. Machine tool must be combined with robot arms to accelerate the realization of automation; at the same time, various sensors must be embedded in the spindle to monitor the spindle condition at any time, including detection on bearings, cutting torque and so on. For example, a customer who cuts the surface of IC packaging must know the cutting condition through spindle torque. Standard spindle obviously cannot achieve this goal. So MicroLab offers a new design to meet the customer's needs.

MicroLab Precision Technology Co., Ltd.

Tel: +886-4-2239-2345

Fax: +886-4-2239-2357

E-mail: microlab@twspindle.com

Website: www.twspindle.com.tw

Booth No.: TaiNEX 2, Q1212

Operational Excellence in the Industry 4.0 Era

From before the Industrial Revolution until the present day, manufacturers have shared common goals: producing a certain number of parts, in a certain amount of time, at a certain cost. Manufacturing processes evolved from craft-made single-item methods to mass production lines and output of increasingly greater numbers of identical parts: a high-volume/low product mix (HVLM) scenario. Most recently, digital technology in programming, machine tool controls and workpiece handling systems are facilitating a manufacturing environment known as Industry 4.0 that enables cost-efficient manufacture of highly diverse parts in small batches: high-mix/low-volume (HMLV) production.

However, those strategies generally relate to HVLM production and are not always effective when applied in HMLV scenarios. An important contributor to streamlined HMLV output is the Group Technology approach, in which classifying and coding parts into machinable families enable a shop to achieve the highest level of operational excellence.

Group Technology

Group Technology is a manufacturing organizational strategy in which parts with certain similarities such as geometry, material, manufacturing process or quality standards are classified into groups or families and manufactured under a common production method. Operations are planned for the part family rather than individual workpieces.

The creation of part families in Group Technology is based on part codification and classification. Each part is assigned a code consisting of letters or figures or combinations thereof, and each individual letter or figure represents a certain feature of the workpiece or a production technique that is required to produce the workpiece.

The part codes are used to plan

production and make price quotes by referring to an imaginary or non-existent part called a complex workpiece. Complex in this case does not mean difficult; it describes a generic workpiece that illustrates all the features that a company is able to create, such as high- and low-accuracy holes, deep and shallow pockets, side milled features, etc. The parts on the first line of the figure represent workpieces that can be produced with operations selected from those described on the complex workpiece in the second line. Summing up the costs of producing the required features produces a representative total cost and simplifies estimation of pricing. It is not necessary to analyse the costs on an individual part-by-part basis.

Production planners and estimators work with a drawing of a workpiece and develop a price quote by matching features on the workpiece with those on the complex workpiece and also determine other production elements such as the machine tool required, whether coolant will be needed, etc. In addition, executing the Group Technology technique with the help of a sophisticated CAM system further reduces pre-machining engineering time requirements. Additional benefits include improved communication between departments in a facility as they all work from the same complex workpiece model.

In some cases, Group Technology prompts reorganization of the shop floor. The circuitous path parts take through a shop that is organized in a traditional layout based on machine functions including turning, milling and grinding. However, when workpieces are grouped and processed as families in a cellular layout, machine tools can be arranged to streamline manufacturing flow and minimise part movement within the shop. Each different workpiece family is machined in the most efficient way without unnecessary transport within the shop. Significant reduction of the time required to produce the parts is the result.

As always, the adoption of new concepts offers both benefits and challenges. The Group Technology approach offers benefits in engineering, process planning and manufacturing time savings, but possible challenges exist as well. First, to some extent the Group Technology approach reduces flexibility. The traditional shop setup is more flexible if there is a significant increase in demand for a certain workpiece configuration that creates a production bottleneck. In the traditional layout other machines in the department can be used to produce the parts. Secondly, managing machine downtime can also be a challenge. If one part family experiences a temporary decline in demand, the machines in the cellular layout will be idled.

Another possible difficulty arising from implementation of Group Technology concepts is a tendency to spend an excessive amount of time comparing one coding system to others. More important than the specific coding system itself, however, is that a company should thoroughly know its equipment and resources and the results desired. In that case, a custom coding system created in-house can be a simple and efficient approach. Possibly rearranging the shop floor to machine part families more efficiently is another facility-specific decision. It may be easier for larger companies to realign their machinery while smaller companies may face economic constraints and other factors.

Faster, More Accurate Quotes

The Group Technology approach to creating part quotations can increase both revenue and profitability. An example comes from an aerospace subcontractor in an HMLV production environment, with batch sizes from one to five workpieces that receives about 4,000 price requests per year. Insufficient time to analyse and quote each part separately slowed the pricing process and the shop could make serious quotes for only 1,500 of the 4,000 possible jobs. About 2,600 orders were received. Then, using analysis supported by Group Technology initiatives and quoting parts using complex workpiece information, the subcontractor found it could make 3,000 serious quotes per year. More serious quotes attracted more orders, to the level of 3,200 annually. Most importantly, the bids, based on cost plus profit, averaged more than 30 percent lower than the bids made before the application of Group Technology concepts.

The faster, more accurate quoting process had two benefits. There were fewer incidents of erroneous underbidding that negatively affected profit margins, and there

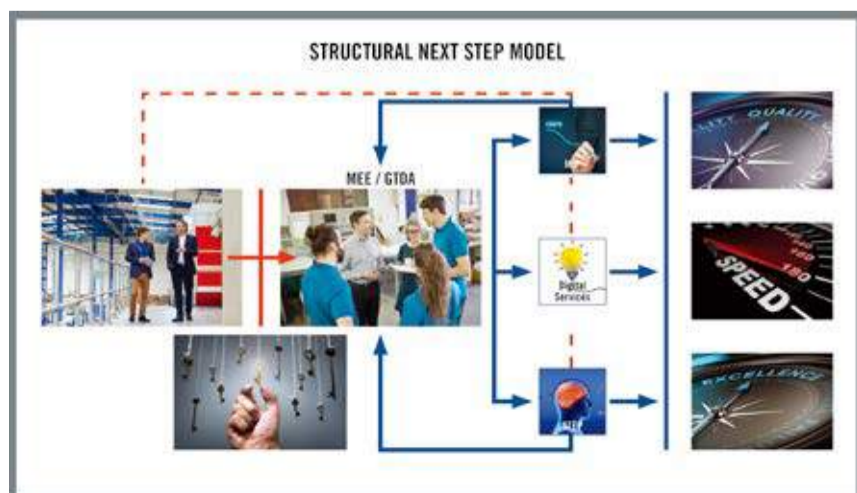


were fewer quotes that were inaccurately high and discouraged customer acceptance. Implementation of Group Technology concepts gave the manufacturer more control over what was being done and how much it cost, and reduced the incidence of inaccurate quotes.

Group Technology dictates that instead of thinking through every individual workpiece and its production parameters, parts with similar characteristics are grouped and machined together. In a clear example of this approach, a shop was producing pulleys for a belt-style transmission. For use with different belt sizes, the diameters, widths, and profiles of the belt groove differed from pulley to pulley. The changeover time between machining of different configurations was about an hour and a half.

Analysis of the process showed that for each changeover between pulleys the machine was completely dismantled, and all the tools were taken out and cleaned and stored. To machine the next pulley, most of the same tools were put back in the machine. Under the Group Technology approach, the similar but not identical wheels were grouped as a family. Changeover then involved changing the NC program, altering some machining parameters and sometimes changing the tool that machined the groove profile. Depending on the workpiece, changeover time dropped from one and a half hours to ten minutes. The key challenge was convincing shop personnel that the parts they were making belonged to the same family and could be machined much more quickly. ■

Source: Int'l Metalworking News for Asia





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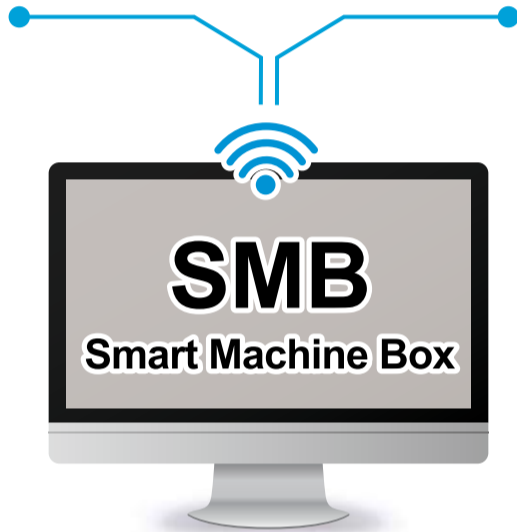
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- ◆ Difficult Processing Materials High-efficiency Processing Manufacturing Technology Forum 2019 (customized Conference) | 15 APR, Beijing
- ◆ High-efficiency Machining Conference 2019 - Nanjing | 22 MAY, Nanjing
- ◆ The Mold Technology (Ningbo) Forum 2019 | 30 MAY, Shanghai
- ◆ 2019 Global Laser Processing Technology Summit | 06 JUN, Shanghai
- ◆ The 6th Mould High Efficiency Manufacturing Technology Summit 2019(semi-customized Conference) | 10-11 JUN, Shanghai
- ◆ Global Smart Factory Summit 2019 | 28 JUN, Shanghai
- ◆ Implantable & Interventional Medical Device Manufacturing & Technology Conference 2019 | 8-9, AUG, Suzhou
- ◆ The 2nd New Energy Vehicle Manufacturing Conference 2019 | 04-05 SEP, Shanghai
- ◆ China International Internal Combustion Engine Advanced Manufacturing Technology Summit 2019 | 06 SEP, Suzhou
- ◆ China International Internal Combustion Engine Advanced Manufacturing Technology Summit 2019 | 17-18, OCT, Suzhou
- ◆ 2019 China Intelligent Laser Manufacturing Technology Forum | 24 OCT, Shenzhen



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Exhibit Highlights

UFO Family

1. "UFO" design is the Y.T.'s innovative-patented insert positioning with tapered polygonal design to achieve higher centering accuracy. The minimum thickness starts from 0.5mm and the available diameters are Ø 10, Ø 15, Ø 20, Ø 25, Ø 30. There is standard stock available for every 0.1mm size in the size under 2.0mm thickness. It has a complete range of specification and very effective chip removal design best for small grooving. This UFO design is available with UFO chamfer insert and UFO Radius insert. All these inserts can fit in a common tool holder. For more details, see "UFO Family Series".

2. The patented design center insert position boosts insert tool-life and machining precision



YIH TROUN Enterprise Co., Ltd.

Tel: +886-2-8521-3035

Fax: +886-2-8522-3039

Email: a003@cut-tools.com.tw

Website: www.cut-tools.com.tw

Booth No.: A0424

MASTARR Series Vertical Machining Center-QMC600

The 2nd generation QMC-600 which was developed with the idea of "Evolutionary Performance". This model delivers higher speed spindle, excellent efficiency and accuracy which could perfectly applied to small size mold & die, parts machining, and nonmetal processing industries.

Advantages:

1. Three axes are roller guideway with excellent working performance which enhanced the rigidity and sustainability of machine.

2. Ideal design of chip groove is rear out for saving floor space.

3. Increase column width for improve cutting precision and stability.

4. Spindle motor and spindle is separated by oil cooling board that effectively inhibits the thermal compensation of motor towards the spindle.

5. Longer and larger design of Z axis linear blocks and maximum span length



compare to other competitors, which highly enhances the Z-axis stability while machining.

6. Saddle and work table sections are heighten which greatly increases the rigidity and reduce the loading effect on precision.

MAXMILL Machinery Co., Ltd.

Tel: +886-4-2338-8879

Fax: 886-4-2336-1750

E-mail: freya@maxmill-cnc.com.tw

Booth No.: I0832

Taiyu - The World Class Transparent, Long Lifetime Cutting/Grinding Fluid

HI-CHIP NC-21A

HI-CHIP NC-21A is an unique supreme transparent cutting/grinding fluid made by TAIYU, Japan. This product can keep its separability, dust dispersibility and antibacterial ability when mixing with foreign lubricant.

The fluid can remain transparent without any corruption and its lifetime can last longer than 2-3 years which reduce the cost effectively.

This transparent coolant, HI-CHIP NC-21A, is specially designed for the processing of cast iron materials which cause rust easily.

HI-CHIP NC-21A is well complimented by the mechanical industry, which makes it a real world-class product.

1. Transparent under any condition
2. Rapid dust sedimentation
3. Great cutting and grinding processing
4. Excellent rust preventive
5. Versatility
6. Low foaming
7. Long lifetime, low consumption, reduce oil changed cost significantly
8. Safe, compliance with ROHS & REACH

Shuan Cherng Enterprise Co., Ltd.

Tel: +886-2-2503-2056

Fax: +886-2-2504-5636

E-mail: oilconc@ms21.hinet.net

Booth No.: S0111

CNC Internal External Grinding Complex Machine

One axis equips with 2 internal spindles. This design is specialized to do complicated processing which including internal grinding, external grinding and surface grinding. Especially when workpieces need multiple steps, it can finish processing without changing clamping method. For example, one spindle processes the taper and the other spindle processes internal/external/surface. In this design, we are able to keep outstanding accuracy for workpieces.



Brand new optimize design from outlook to spindle distribution. KG-150D includes twin grinding spindles to achieve high grinding efficiency. Moreover, sliding table design for wheel spindles significantly decrease interfere problem during grinding. KG-150D also equips with new conversational interface which help to simplify the training for operators and increase the productivity from easy operation. KG-150D – committed to optimize your production line.

GUAN-YU Machine Co., Ltd.

Tel: +886-4-2524-9998

Fax: +886-4-2524-7698

E-mail: guan.yu168@msa.hinet.net

Booth No.: L0302

CNC Lathe



SUPERSONIC provides completed CNC lathe with a brief specification of 510mm to 1200mm swing over bed, 890mm to 5000mm centers distance, and 85mm to 380mm spindle bore diameter. We are one of the main OEM of CNC lathe frame for the domestic companies in Taiwan.

2000 SERIES CNC HEAVY DUTY LATHE

Spindle bore: 85mm(D1-8)

Swing over bed: 510mm

Centers distance: 1000, 1500, 2000, 3000mm

Spindle speed (3 ranges): 30-2000rpm

SUPERSONIC Enterprise Co., Ltd.

Tel: +886-4-2234-9241

Fax: +886-4-2236-0634

E-mail: ycc@supersonic.com.tw

secochen@ms43.hinet.net

Booth No.: K0015

Tongtai Line Management System (TLM)

Tongtai Line Management System receives data from equipment connected to the network. It then calculates the information such as real-time operation rates or activation, and presents it on a user-friendly interface. By using TLM, operators can effectively control the production status and the overall equipment efficiency (OEE) to optimize the production line and improve the overall production efficiency.

Furthermore, Tongtai organized a team, composed of professional software development members, to do customized revision to meet your demands so you can enjoy the greatest benefits.



Tongtai Machine & Tool Co., Ltd.

Tel: +886-7-976-1588

Fax: +886-7-976-1589

E-mail: valenfann@tongtai.com.tw

Booth No.: J0830

Surface grinding machine-Rotary Series

600R Column moving type design. The cross feed of spindle head is designed with dual-driven system and driven at the center of the gravity

to minimize vibration and increasing high grinding ability. The oversize roller type guideways reinforce the precision and rigidity of the machine. Touch screen and graphical HMI interface to make operating easier, friendly and reduce human power, increase productivity. The standard function of auto dressing and compensation can reduce human power and increasing more processing efficiency. A friendly-operated interface is designed to reduce human power and increase productivity. Such a design fulfills the trend of wise-machine development.

PERFECT Machine Co., Ltd.

Tel: +886-04-2350-3099

Fax: +886-04-2350-3066

E-mail: info@perfectmachine.com.tw

Booth No.: I1002

CNC Vertical Turning Lathe – VTL-12/16M

Designed for heavy duty, large parts turning and featuring and optional milling function, the VTL-12/16M is engineered for the manufacturing of parts requiring high rigidity and stability.

ALEX-TECH Machinery Industrial Co., Ltd.

Tel: +886-4-2562-6039

Fax: +886-4-2562-6040

E-mail: alextech@ms24.hinet.net

Booth No.: J0130



Exhibit Highlights

Borer Chemie AG

Borer Chemie AG is a leading supplier of products and technologies for cleaning and disinfection. We develop, produce and market internationally known brand products and proven processes for professional applications in hospital hygiene, industry, laboratories and pharmaceutical sector.

Cleaning prior to coating, ophthalmic glass cleaning, flat panel display cleaning, laboratory glassware cleaning and instrument reprocessing are niches, in which Borer Chemie AG is successfully positioned. Services like cleaning validation and chemical analyses are further examples for the offered assistance by Borer Chemie AG.



Klingelberg Viper500

The VIPER 500 cylindrical gear grinding machine is designed for component diameters of up to 500 mm and is optimally suited for small to medium-sized batches. To suit individual requirements, the machine is available in three different configurations: profile grinding, small grinding wheels for custom jobs and multiple-wheel technology (K) and generation grinding (W). Its features include:

- Convertible machine for generating, profile, and internal grinding (VIPER 500 W)
- Retooling from generation grinding to profile grinding in less than 5 minutes (VIPER 500 W)
- Retooling to internal grinding in less than 15 minutes
- Highly dynamic axes at 5 m/sec² acceleration and 20 m/min rapid traverse
- Low-maintenance machine concept due to separation of working chamber from drive technology
- No pump station needed for grinding oil
- Optimal energy efficiency (e2) thanks to recovery and on-demand powering of units

DKSH Taiwan

Tel: +886-4-2385-2668
Fax: +886-4-2385-2078
E-mail: rita.lin@dksh.com
Booth No.: N0106

DM Series

Function: DM series servo cylinder is a revolutionary new product introduced by TOYO in Taiwan. The DM series is equipped with DC servo motor and precision ball screw. The maximum speed is up to 1000mm/s and the precision can achieve ±0.01mm. The size is reduced as the size of a business card, which is convenient for installation and does not take up space. It

can be positioned at any point in the stroke, which improves the shortcomings of the previous use of pneumatic cylinders that cannot be multi-positioning, and effectively improves the energy consumption and maintenance problems of air leakage for long-term use of the cylinder. Following the footsteps of automation of smart factory, and in order to improve production efficiency and meet flexible production, DM series with XC100 controller can effectively capture the production data, upload and integrate into production big data, effectively alleviate the error, and then let the factory fulfill the real Industry 4.0.



Features: DM servo cylinders have three types, namely embedded guideway type, mini rail type, and economic type for customers to choose. Built-in servo motor

enable DM series to be miniaturized, and no need for additional motor space and wiring. The size is designed as the same as the cylinder, so it can replace the cylinder naturally. DM series can be customized for clean room and dust-proof style. The equipped controller can meet three control modes in one machine, including position control, pulse control and communication control. It's very flexible and handy.

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Exhibit Highlights

Collet Chuck – 10 secs Quick change

· **QUICK-GRIP COLLETS**

[Advantage] :

- Reduction of vibrations
- Less tool wear
- No wear on the collet
- Does not mark the surface of the piece
- Quick collet change
- Fewer machine downtimes



· **Ten-Second Quick**

[Advantage] :

- Ten-Second Collet Changes Slash Setup Times.
- Industry-Leading Gripping Range.
- Ultra-Precision Accuracy.
- Extreme Grip Force = Most Aggressive Chip Removal/Fastest Cycle Times.
- Maximum Rigidity Produces Superior Part Finishes.

Best Tool Clearance – Critical For Live Tooling.

MONG TEC Enterprise Co., Ltd.

Tel: 886-04-2265-3360

Fax: 886-04-2265-3386

E-mail: mongtec.asia@msa.hinet.net

Booth No.: 609

CNC Lathe

Ideal for turning various flanges, rollers, aluminum alloy rings, valves, tire molds and various mold bases. This is a heavy duty precision CNC lathe that has the function of output full horse power during low & high speed, available for big, special and mold workpiece.

The structure of bed is adopted high toughness Meehanite cast iron, stabilize properly parallel precision, bed ways are induction hardened and ground.

CNC headstock with spindle bore 152mm(6") (OP: 9"~21"), spindle 4-speed speeds auto-change, is designed to be supported by 3-point precision heavy duty bearing, installed with hydraulic cylinder used for speed auto-change, matched with 4 gears speed change, which each speed can be output at full power and the heavy cutting



function can be achieved.

The slide ways and ball screws can be lubricated automatically by central lubrication system. Oil flow and lubrication frequency can be set as desired. An alarm occurs in case of lack of oil.

The coolant system delivers high pressure coolant to flush chips and extend tool service life.

Hydraulic turret H4, V8, V12, and VDI type H4/V8/v12 & powerful turret are available.

Controller: Fanuc, Siemens, FAOGR.

Bed width 610mm, bed is adopted high toughness Meehanite cast iron; stabilize properly parallel precision. Bed ways are induction hardened and ground.

Bed surface and slides are ultra-frequency heat treated, precision ground to increase the service life.

Gear & mandrel & spindle are made if high quality alloy carbon treated, precision

ground to acquire much superior hardness and tenacity.

DENVER Ind. Co., Ltd.

Tel: 886-4-2335-4989

Fax: 886-4-2335-4969

E-mail: denver@ms77.hinet.net

GBC-4028 Bevel Gear Cutting Machine

GBC-4028 is built on a highly rigid and stable artificial machine bed, and applies the most advanced technologies. With the self-designed Windows-based software embedded, GBC-4028 can generate all of the NC process automatically after parameters feed in. Not only the contact pattern is designed easily, but the surface correction motion is calculated in an instant.

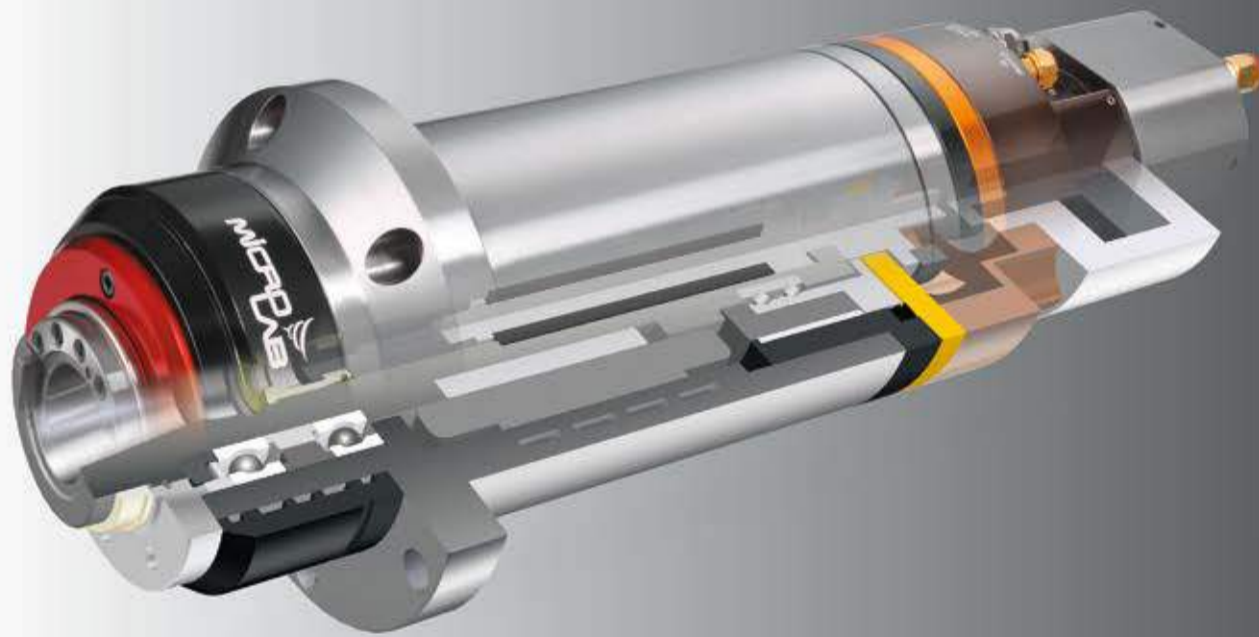
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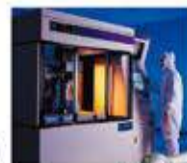
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台中市40643北屯區松竹路一段530號
<http://www.twspindle.com>

Exhibit Highlights

5 Axis Vertical Machine Center

ER-VMC-1886; Table size 1800 * 860; XYZ travel 1800 * 860 * 900; Spindle Speed 12000 RPM built-in spindle; Rapid feed rate 18 * 18 * 15(Box)

For swing processing, the spindle rotation range is plus or minus 110 degrees.

Optional rotary table, increase the diameter of the screw up to 1720mm.; Coolant-through with three ball screws. Precise head scrapping for spindle. 6 siding blocks on spindle head. Reliable lubrication system. 18 pieces of wedge adjusting on 3 axes avoid spindle head hanging down, saddle and work table swaying.

The rolling wheel of elastic cover does not damage the sliding trace.

EVERRICO Co., Ltd.

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Booth No.: I0302



Workshop Crimper YL-32

Our YL-32 2'' workshop crimping machine is generally used at the hardware store/ workshop.

The scope of crimping diameter are from 4mm to 2 inch, which the crimping force reach to 2200kN. We will be attached for 12 set standard dies set (14, 16, 19, 22, 26, 30, 34, 39, 45, 51, 63, 69mm).

*For the maximum installation dies set can be attain to 78mm

YUNG LUNG AIR HYDRAULICS Co., Ltd.

Tel: +886-49-2322-176

Fax: +886-49-2302-851

E-mail: ylcrimp@gmail.com

Booth No.: R0010



production. Connected Machining offers a set of solutions that permit the exchange of information with all areas of the company that accompany production.

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Go Taiwan

Kenting

Located in Hengchun Town of Pingtung County, Taiwan, Kenting is sunny year-round with a tropical weather, azure ocean water, and beautiful sandy beaches. Kenting is noted as the paradise for sea lovers in Taiwan. For visitors that forgot to bring their swimwear or equipments for the water sports, shops on the Kenting Street open up till late, where visitors may shop after dinner for surfboard, swimwear, as well as T-shirts and beach shorts to get ready for the water activities next day.



Kenting National Park

Kenting National Park is one of the eight national parks in Taiwan. Located in Hengchun Town, Pingtung County, Kenting National Park is Taiwan's first and southernmost national park. The park is famous for its unique sceneries, and tropical climate with sunshine throughout the year. There are spectacular geographical sceneries, precious ecosystems, and rare ecologies in Kenting National park.

Along the beaches and bays of the Kenting National Park, adventurous and interesting water activities are available such as scuba diving, banana boat, water scooter, submarine, and coastal diving. Another big event happens here in Kenting every year in April since 1995 is called "Spring Scream". The festival showcases a variety of music from Taiwan and oversea bands. Every year during spring time, large numbers of music lovers gather in Kenting for vivid and relaxing concerts.

Eluanbi Lighthouse

Located within Kenting National Park, Eluanbi Lighthouse is one of the most recognized attractions in the park. The name of "Eluan" is derived from the Paiwan aboriginal tribe meaning "yacht". Eluanbi Lighthouse is also the landmark of Eluanbi peninsula, the southernmost point of Taiwan with coast covered with coral reefs. The lighthouse is cylindrical shaped colored in white, with a height of 18 meters and circumference of 110 meters. It is also renowned as "the Light of East Asia" for its strong optical power of light that can reach 20 miles at most.



Food

Kenting Street is where visitors are offered with a complete selection of foods while embraced by a relaxing holiday ambience. As the main road of Kenting, Kenting Street becomes a splendid night market filled with both local and international travelers in the evening. A wide array of traditional Taiwanese snacks such as braised food, grilled seafood, mochi (glutinous rice cake), prawn crackers, as well as exotic cuisines ranging from European, Korean, Indian, Italian, to Thai. In addition, fresh tropical fruits and seafood can also be found along the street.

Source: Sabrina Feng Travel King

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產品特性

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應用

內藏式主軸、DD馬達。



SVMA系列 (IP23)感應伺服器馬達

(IP23)Compact Asynchronous motors Quick positioning. High torque moment.Efficient cooling

產品特性

定位快速、精準、瞬間扭力大、低慣量設計、反應靈敏，高效率冷卻設計，抗干擾線圈，高精度製程設計、符合您精密機械的需求。

應用

工具機主軸、印刷機械、塑膠射出成形機、壓鑄機、分條/複捲機械、包裝機械、紡織機械、沖床(延伸膜)、一般產業機械。

LINEAR MOTOR 線性馬達

The ironcore design for the higher efficiency of linear motor, and the higher speed and positioning accuracy than ball screw.

產品特性

有鐵心設計提高線性馬達效率。高效率的冷卻系統及較高佔槽率大大提高線性馬達的功率體積比。

應用

P,C,B鑽孔機、工具機、產業機械。



SPMA系列 同步伺服器馬達

Compact Synchronous motors Good speed control & torque control.

產品特性

高精度、低慣量設計、反應靈敏，速度控制、位置控制、轉矩控制、特性優越符合您精密機械的需求。

應用

工具機主軸、印刷機械、塑膠射出成形機、分條/複捲機械、包裝機械、紡織機械、一般產業機械。



DDM系列 直驅伺服器馬達

Suits injection molders, die-casting machines, machine tools, escalators, elevators, printers and industrial machines that require low speed, high-torque drive.

產品特性

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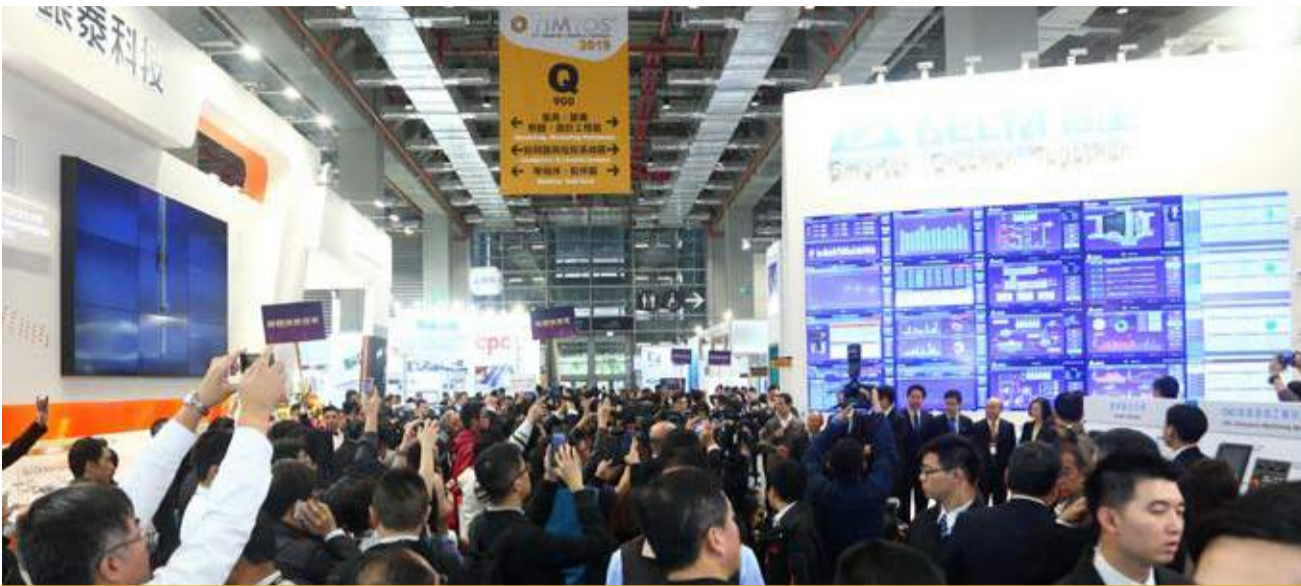
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陽春三月喜聚臺北 智慧製造通達全球



TAMI柯拔希：機械人才 續留臺灣 發光發熱

臺灣機械工業同業公會 (TAMI) 理事長柯拔希 (Alex Ko) 指出，臺灣的機械產業不再屬於傳統產業，而是高科技產業。2017年臺灣機械業產值已突破新臺幣一兆元目標，乃世界第四大出口國。他期勉臺大機械系同學們畢業後，人才一定要留在機械領域裡發揮，展現臺灣的驕傲，創造人類的福祉。

國立臺灣大學機械工程學系副教授蔡耀陽所率領的96位臺大機械系同學，7日參觀2019年台北國際工具機展 (TIMTOS)，下午聚集在南港展覽館1館1樓大廳，由理事長柯拔希及秘書長王正青等人接待。

柯拔希理事長語重心長告訴臺大機械系同學，他是臺科大機械系畢業，一輩子都在從事機械業，希望同學們畢業後和他一樣，留在臺灣繼續打拼。

他並指出，機械乃工業之母，而工具機是機械之母。臺灣機械產業已經成為全世界第四大出口國，僅次於德國、日本、義大利。臺灣機械業產值持續成長，2017年機械業產值突破新臺幣一兆元，去年 (2018) 機械業出口值為274億美元，成長7.2%，而生產值達到新臺幣1.18兆元，成長約7.3%，續創歷史新高。

柯理事長強調，今年邀請各院校機械系學生前來觀摩TIMTOS，主要是讓同學們看到展覽現場所展現的，和書本中所讀的「理論」並不一樣，而會場呈現的是「實務」，也是機械前輩們打拼的心血。機械產業早已非傳統產業，而是科技產業。現場可以看到學長們，如何運用智慧機械落實這次TIMTOS展覽的主軸「工業4.0與智慧製造」，將產品行銷到全世界。

2019年報名參觀TIMTOS的學生

團體非常踴躍，有一百多個團體，超過六千多名學生前來觀摩。

科技部產學及園區業務司副司長涂君怡也在下午參觀會場，勉勵臺大

機械系同學們，透過台北國際工具機展覽會現場的觀摩學習，瞭解理論與實務的差異並精進自身能力，相信對未來的就業發展有一定的幫助。■



汽車為智慧製造領頭羊 自動化幫助員工生產效能與安全



2019TIMTOS高峰論壇關注「汽車製造業變革」，6日邀請國內外專家探討此一議題。根據ABI Research最新報告《汽車業的智慧製造》(Smart Manufacturing in Automotive)指出，汽車產業已經成為採用轉型的新技術最積極的部門，包括奧迪(Audi)、福斯(Volkswagen)、

福特(Ford)、本田(Honda)、戴姆勒(Daimler)，以及BMW，都正在應用智慧製造最新科技。

在整體自動化程度上，當其他產業在營運中只有20~30%採取自動化之時，汽車產業卻達到接近50%的水準，上述的自動化技術包括積層製造(Additive Manufacturing ; AM)、

人工智慧(AI)、機器學習(Machine Learning)、擴增實境(AR)、協同式機器人，以及工業物聯網(IoT)平台。

ABB區域經理鍾鴻鈿分析，汽車製造業因人口老化、被視為高污染產業等因素，造成人力的稀缺，因此更加驅動汽車產業的智慧製造動力，在電子製造、金屬加工等製造業中，為智慧製造產量最高的產業。

因應少量與混合生產 智慧製造更具效率

鍾鴻鈿舉Toyota產線為例，因應少量生產與混合生產等現狀，產線需要更具有彈性，而採用智慧製造，可以使產線更有彈性、更具效率，「過去需要同時開設2、3條產線，現在只需要一條產線，就可以達到過去的效果。」

鍾鴻鈿綜觀全球市場，從2013年開始，汽車即開始智慧製造的里程碑，至2017年統計，全球汽車製造中，智慧製造的產量已經達到30%，年產量達到38萬台，其中亞洲市場成長最高，

超過30%，美洲和歐洲則分別為12%、18%。

根據統計，2017年全球機器人總產量中，台灣位居第6名，共生產1萬餘台，排名在中國、日本、南韓、美國、德國之後，密度則位居全球第8名。鍾鴻鈿指出，以ABB來說，工廠各個製造流程都已經加入智慧製造，其中，汽車頂蓋的部份已經使用雷射手臂，加入智慧機器人，讓頂蓋和周邊零件更緊密結合。

智慧環境可改善製程 提升人力產能績效

台灣博世力士樂工業及行走應用部門業務協理陳俊隆指出，博世力士樂認為，未來工廠應該符合3大條件，首先，生產空間必須是智慧空間，也就是在空間各個層面都需要智慧化，在智慧型空間之中，設備運行都能加以監測，同時可以搜集數據，用以優化產線、人力和製造流程。

再來，要用可移動式器具，例

TMK扭力馬達優化您的銑車複合機台設計

TIMTOS 2019
2019年3月4~9日

南港二館 Q0124

高性能

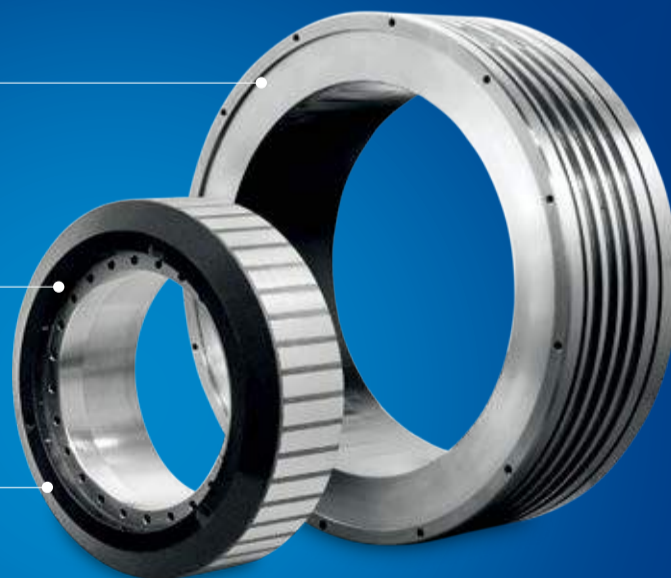
高效率、低發熱，減少熱變位，確保機台精度

高速高扭力

比起一般的扭力馬達，轉速提高8倍。連續轉矩提高30%

優化設計

提供市場上最佳的扭力輸出與密度，流暢的運轉，提升輪廓和表面精度



ETEL

ETEL專注於直驅運動控制技術，為滿足客戶精密運動控制的需求，致力於線性馬達、扭力馬達、運動控制以及高階運動平台等多樣的产品開發，產品線完整多樣，並持續創新精進。

如，組合式輸送線，當工廠進行重新佈局時，不需要全面拆除改製器械，只需要重新佈局裝置即可。最後，所有生產都需要透過虛擬模式進行模擬生產，如此一來，可以提高工廠生產效率和節省效能。

陳俊隆進一步分析，智慧化環境能有效管理能源消耗，使用物流分析監控物料，同樣可節省能源。工廠中的人員同樣以智慧化方式管理，如此一來，工廠的人力、產能、績效和製造流程，都在智慧化監測與控制之下，讓生產成為更友善人類與環境的行為。

「透明化是持續改善的基礎。」陳俊隆強調，從初始概念到建立系統，進一步創建流動系統，引入生產計畫系統，推動價值改變，完成智能製造的完整流程。

智慧製造可改善產品品質 產官學界持續投入

成功大學智慧製造研究中心主任鄭芳田綜觀分析智慧智能的好處，他舉Samsung為例，總結工業4.1對於產品品質和願景的重要性。2016年，Samsung因為電池缺陷，造成24億美

智慧製造不是
在消滅員工，也不是
代替員工，反而是解
決員工在生產線上面
對的難題，把重複性
的動作自動化，讓員
工不再只有重複機械
化的動作。

金的損失，顯示當工廠要求更高產量時，產品品質可能被嚴重忽略，根據《彭博》估計，Samsung因而減少2億美元盈餘，市值減少22億美金。而智慧製造卻可以改善產品品質。

汽車製造業變革非常快速，產官學界都正熱烈投入，工研院機械與系統研究所所長胡竹生在「主題對談」中拋出問題，「改革正在加速，我們準備好了嗎？」他說，近日傳出特斯拉 (Tesla) 宣布旗下汽車售價將降價一半，並關閉實體銷售部門，全面採取網路銷售，胡竹生說，這將大幅度改變汽車銷售與製造，也是未來值得關注的議題。

胡竹生指出，展望未來，汽車產業將生產3成的完全自駕車，然而自駕車如何生產？未來如何銷售？都值得我們關注。他分析，台灣汽車電子產業非常龐大，每年產值達到2千多億台幣，未

來台灣汽車產業如何跟上智慧製造，是大家都在關注與積極參與的。

「博世力士樂在智慧製造議題中，影響甚為鉅大。」陳俊隆分析，在博世力士樂 (Bosch) 營收中，柴油引擎占一半以上，一旦啟動智慧製造，營收將受到巨大衝擊，不過他指出，台灣汽車電子產業發達，投入智慧製造生產之後，前景可期。

智慧製造非消滅人力 員工人數不減反增

鄭芳田則提及，汽車設計、售後服務和汽車維修，都應該加上雲端概念。

在維修的部分，智能設備可以提早警示車主，汽車可能出現問題需要提早應變，讓汽車維護品質更好，提升整個汽車產業，更為人性化。

胡竹生比喻，過去買車，買主看的是車子性能和內裝，現在，車主問的第一個問題，則是車子可否和我的行動智慧裝置連動？他也提問邀請大家集思廣義，智慧製造後，機器人是否會消滅所有工人的工作？工人如何因應汽車產業智慧化？

胡竹生進一步解釋，智慧製造應該不是消滅員工，而是啟發員工身上更多的能力，他同時拋出大哉問：「智慧製造和汽車工人的關係會是如何？科技如

何幫助現場工人？」

鍾鴻鈞也認為，智慧製造不是在消滅員工，也不是代替員工，反而是解決員工在生產線上面對的難題，把重複性的動作自動化，讓員工不再只有重複機械化的動作。

陳俊隆指出，博世力士樂 (Bosch) 推動工業4.0之後，員工人數沒有減少，反而增加，生產中的監測不僅是提升生產效率，更是保障員工在產線上的安全。例如，刀具故障監測系統，是由基層員工主動發想、提出的改變，「電腦無法預測刀具故障的可能時機，產線上的資深員工才有深刻了解。」■

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歡迎蒞臨
TIMTOS 台北國際工具機展
2019/3/4-9
Taipei Int'l Machine Tool Show
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「2019年台北國際工具機展」研討會/活動日程表

| 日期 | 時間 | 活動內容 / 講題 | 主 / 協辦單位 | 地點 | 備註 | |
|---------------|-----------------|--|-----------------------------------|---------------------------|-----------------------------------|---------------------------|
| 3月4日 (星期一) | 10:30 | 開幕典禮 | 外貿協會·機械公會 | 南港展覽館 2 館 4 樓門廳 | 憑邀請函入場 簡韻茗小姐 +886-2-27255200#2867 | |
| | 8:00-17:00 | Bfuture 全球新品發布會 | 慶鴻機電工業股份有限公司 | 南港展覽館 1 館 402c 會議室 | 林盈函小姐 +886-4-23509188#527 | |
| | 8:00-17:00 | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |
| | 13:30-16:30 | 2019 台北國際工具機展採購洽談會 | 外貿協會 | 南港展覽館 1 館 504 會議室 | 柯采慧小姐 +886-2-27255200#1573 | |
| | 14:00-15:00 | 2019 台北國際工具機展記者會 | 外貿協會·機械公會 | 南港展覽館 1 館 403 會議室 | 侯馨青小姐 +886-2-23494677 | |
| | 16:00-17:30 | 馬來西亞機械市場說明會暨 TAITRA 及 PENFEIA 合作備忘錄簽約典禮 | 外貿協會 | 南港展覽館 1 館 404 會議室 | 陳冠儒小姐 +886-2-27255200#2693 | |
| 3月5日 (星期二) | 8:00-17:00 | Bfuture 全球新品發布會 | 慶鴻機電工業股份有限公司 | 南港展覽館 1 館 402c 會議室 | 林盈函小姐 +886-4-23509188#527 | |
| | 8:00-17:00 | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |
| | 8:30-12:00 | 工具機關鍵模組暨智慧製造應用技術發表 | 工研院智慧機械科技中心 | 南港展覽館 1 館 505a 會議室 | 張惠怡小姐 +886-49-2345309 | |
| | 9:00-12:00 | 台日機械企業經貿交流會 | 機械公會 | 南港展覽館 1 館 504bc 會議室 | 王篠傑先生 +886-2-23494668 | |
| | 9:00-16:00 | TIMTOS 2019 高峰論壇 | 經濟部國際貿易局 | 台北國際會議中心 101 會議室 | 高麗茹小姐 +886-2-27255200#2679 | |
| | 16:00-17:00 | 德國工藝 享譽國際 - 德國工具機產業發展新趨勢 | 外貿協會德經處 | 台北國際會議中心 101 會議室 | 鄭芳姿小姐 +886-2-7735-7524 | |
| | 10:00-12:00 | 《工具機組裝新利器 -Renishaw 全新 XK10 校準雷射系統》新品發表會 | 雷尼紹股份有限公司 | 南港展覽館 1 館 402a 會議室 | 莊詠偉先生 +886-4-24603799 | |
| | 10:30-12:00 | TNC 640 高效率五軸輪廓控制器 - 高可靠度創新加工技術的優勢 | 海德漢股份有限公司 | 南港展覽館 1 館 403 會議室 | 蔡語耕小姐 +886-4-2358-8977 #1035 | |
| | 13:00-15:00 | NIDEC-Commander C 產品發表會 | 睿欣實業股份有限公司 | 世貿一館 第 4 會議室 | 陳曦小姐 +886-4-22606502 | |
| | 13:00-15:00 | 工業 4.0 智慧製造研討會 / 模具智能化生產單元 | 徠通科技股份有限公司 | 南港展覽館 1 館 402ab 會議室 | 張詠晴小姐 +886-4-23599688#226 | |
| | 15:30-18:00 | 徠通科技全球代理商會議 | 徠通科技股份有限公司 | 南港展覽館 1 館 402ab 會議室 | 張詠晴小姐 +886-4-23599688#226 | |
| | 14:00-15:00 | 2020 年日本國際工具機展覽會 JIMTOF 記者會 | 日本工作機械工業會 | 南港展覽館 1 館 404 會議室 | +81-3-34343961 | |
| | 14:30-16:30 | 智慧製造聯網數據價值產業聯盟會員大會 | 財團法人工業技術研究院 ITRI | 南港展覽館 1 館 504a 會議室 | 陳玉雲小姐 +886-3-5916720 | |
| | 15:00-16:00 | 臺灣機械工業同業公會與馬來西亞檳城機器廠商會簽訂合作協議 | 機械公會 | 南港展覽館 1 館 4 樓貴賓簡報室 | 林子鈞先生 +886-2-23494694 | |
| | 15:00-17:30 | 台灣麗馳全球代理商大會暨新產品發表會 | 台灣麗馳科技股份有限公司 | 南港展覽館 1 館 401 會議室 | 莫金燕小姐 +886-4-26815711#246 | |
| | 18:30 | 2019 年台北國際工具機展歡迎酒會暨工具機研究發展創新產品競賽頒獎典禮 | 工具機發展基金會·外貿協會·機械公會 | 南港展覽館 1 館 3 樓燴館宴會廳 | 蔡宜真小姐 +886-2-23110358 | |
| | 3月6日 (星期三) | 8:00-17:00 | Bfuture 全球新品發布會 | 慶鴻機電工業股份有限公司 | 南港展覽館 1 館 402c 會議室 | 林盈函小姐 +886-4-23509188#527 |
| | | 8:00-17:00 | 「2019 年台北國際工具機展」高中職、大專、大學、研究所導覽活動 | 機械公會 | 南港展覽館 1 館 500 會議室 | 黃雅華小姐 +886-2-23494672 |
| 8:00-17:00 | | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |
| 9:00-16:00 | | TIMTOS 2019 高峰論壇 | 經濟部國際貿易局 | 台北國際會議中心 101 會議室 | 高麗茹小姐 +886-2-27255200#2679 | |
| 16:00-17:00 | | 德國工藝 享譽國際 - 德國工具機產業發展新趨勢 | 外貿協會德經處 | 台北國際會議中心 101 會議室 | 鄭芳姿小姐 +886-2-7735-7524 | |
| 8:00-17:00 | | 工業 4.0 與智慧機械技術應用趨勢研討會 | 台灣易格斯有限公司 遠播資訊股份有限公司 | 南港展覽館 1 館 505 會議室 | 孫桂芬小姐 +886-2-25855526#225 | |
| 9:00-11:00 | | 永進機械代理商會議 | 永進機械工業股份有限公司 | 南港展覽館 1 館 401 會議室 | 陳家欣小姐 +886-4-25623211#1812 | |
| 10:30-12:00 | | 選擇美國投資研討會 - 錢進美國教戰守則 | 美國在台協會商務組 臺灣機械工業同業公會 | 南港展覽館 1 館 501 會議室 | +886-2-27201550#334 | |
| 13:00-17:00 | | 新產品說明會 | 喬崑進科技股份有限公司 | 南港展覽館 1 館 502 會議室 | 黃悖密小姐 +886-4-22712000#231 | |
| 13:00-17:00 | | 程泰集團年度產品發表會 | 程泰集團 | 南港展覽館 1 館 504a 會議室 | 江苡璉小姐 +886-4-24629698#62107 | |
| 13:30-16:30 | | 礦物複合材料 (人造花崗石) 在機械領域的應用 | 山東納諾新材料科技有限公司 | 南港展覽館 1 館 404 會議室 | 崔美麗小姐 +86-531-88917773 | |
| 13:30-17:00 | | 中國砂輪新產品發表會 | 中國砂輪企業股份有限公司 | 世貿一館 第 2 會議室 | 王文仁先生 +886-2-26791931#3309 | |
| 8:00-17:00 | | 直得科技新品說明會 | 直得科技股份有限公司 | 南港展覽館 1 館 3 樓福軒 | 李家慶先生 +886-6-5055858#162 | |
| 8:00-17:00 | | Bfuture 全球新品發布會 | 慶鴻機電工業股份有限公司 | 南港展覽館 1 館 402c 會議室 | 林盈函小姐 +886-4-23509188#527 | |
| 8:00-17:00 | | 「2019 年台北國際工具機展」高中職、大專、大學、研究所導覽活動 | 機械公會 | 南港展覽館 1 館 500 會議室 | 黃雅華小姐 +886-2-23494672 | |
| 8:00-17:00 | | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |
| 13:30-17:00 | | 2019 台北國際工具機展 GLORIA 智慧製造創新應用論壇 | 科技部·外貿協會·機械公會 | 南港展覽館 1 館 402ab 會議室 | 郭瑀璇小姐 886-2-25774249#827 | |
| 14:00-16:00 | | 液壓系統節能技術與切削冷卻液之過濾處理 | 台灣賀德克技術有限公司 得霖企業有限公司 | 南港展覽館 1 館 502 會議室 | 楊雅淑小姐 +886-4-22602278 | |
| 14:00-16:00 | 研磨加工品質、效率的確保與提升 | 忠達貿易有限公司 | 南港展覽館 1 館 505b 會議室 | 張怡婷小姐 +886-2-29115226#607 | | |
| 3月7日 (星期四) | 8:00-17:00 | 直得科技新品說明會 | 直得科技股份有限公司 | 南港展覽館 1 館 3 樓福軒 | 李家慶先生 +886-6-5055858#162 | |
| | 8:00-17:00 | Bfuture 全球新品發布會 | 慶鴻機電工業股份有限公司 | 南港展覽館 1 館 402c 會議室 | 林盈函小姐 +886-4-23509188#527 | |
| | 8:00-17:00 | 「2019 年台北國際工具機展」高中職、大專、大學、研究所導覽活動 | 機械公會 | 南港展覽館 1 館 500 會議室 | 黃雅華小姐 +886-2-23494672 | |
| | 8:00-17:00 | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |
| | 13:30-17:00 | 2019 台北國際工具機展 GLORIA 智慧製造創新應用論壇 | 科技部·外貿協會·機械公會 | 南港展覽館 1 館 402ab 會議室 | 郭瑀璇小姐 +886-2-25774249#827 | |
| | 14:00-16:00 | 液壓系統節能技術與切削冷卻液之過濾處理 | 台灣賀德克技術有限公司 得霖企業有限公司 | 南港展覽館 1 館 502 會議室 | 楊雅淑小姐 886-4-22602278 | |
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| 3月8日 (星期五) | 8:00-17:00 | 直得科技新品說明會 | 直得科技股份有限公司 | 南港展覽館 1 館 3 樓福軒 | 李家慶先生 +886-6-5055858#162 | |
| | 8:00-17:00 | Bfuture 全球新品發布會 | 慶鴻機電工業股份有限公司 | 南港展覽館 1 館 402c 會議室 | 林盈函小姐 +886-4-23509188#527 | |
| | 8:00-17:00 | 「2019 年台北國際工具機展」高中職、大專、大學、研究所導覽活動 | 機械公會 | 南港展覽館 1 館 500 會議室 | 黃雅華小姐 +886-2-23494672 | |
| | 8:00-17:00 | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |
| | 9:30-18:00 | 智慧製造論壇 | 流線傳媒股份有限公司 外貿協會 | 世貿一館 第 4、5 會議室 | 林淑靜小姐 +886-2-87715865#180 | |
| | 9:30-14:00 | 迪普馬移動解決方案產品培訓研討會 | 迪普馬移動解決方案集團公司 羅昇企業股份有限公司 | 南港展覽館 1 館 502 會議室 | 吳容睿小姐 +886-2-29958400#1232 | |
| | 10:00-17:00 | 中興大學與精密機械研究發展中心 智慧機械產學論壇技術成果發表會 | 國立中興大學 & 財團法人精密機械研究發展中心 | 南港展覽館 1 館 403 會議室 | 葉湘琳小姐 +886-4-22858139 | |
| | 13:00-16:00 | 活用 3D 列印與 3D 量測科技，邁入 3D 智能檢測時代 | 馬路科技顧問股份有限公司 | 南港展覽館 1 館 404 會議室 | 林雨潔小姐 +886-2-2999-6788#284 | |
| 3月9日 (星期五) | 8:00-17:00 | 「2019 年台北國際工具機展」高中職、大專、大學、研究所導覽活動 | 機械公會 | 南港展覽館 1 館 500 會議室 | 黃雅華小姐 +886-2-23494672 | |
| | 8:00-17:00 | 發格控制器及光學尺產品介紹 | 發格自動化股份有限公司 | 南港展覽館 2 館 602 會議室 | 溫恕民先生 +886-4-23851558 | |

如有修正，以現場實際狀況為準，不另通知。



飛機坐了23個小時，遠從葡萄牙來看TIMTOS，維雅斯博許來之前已決定此行絕不空手而回。果然第二天已經下單買五軸加工機和十幾台磨床，這還不包括他一年買臺灣幾十台立式綜合加工機的訂單。他的一位臺灣供應商承認，他每年買這家公司至少二十台，維雅斯博許說，他應該是臺廠在歐盟市場最大的買主吧？

埃多阿多·維雅斯博許
Mafermaq Maquinas Ferramentas, Lda
企業主，葡萄牙



亞歷山大第一次到臺灣來看展，對臺灣的進步和現代化印象非常好。他發現TIMTOS上可以看到許多有趣的東西，比方說，他看到臺製的研磨和拋光機做的很好，有助於幫他找到新商機。不過他這次打算買的是EDM放電加工機、磨床和彎管機。亞歷山大說，他來看TIMTOS只有三天時間，但肯定會買一些MIT產品回去。

費費洛·亞歷山大
Vekprom Company
技術顧問，俄羅斯



在阿爾及利亞做各種傢俱生意，包括木製、鐵製和塑膠傢俱的札卡利，雖然到臺灣沒幾天，但已對先進和品質優良的臺製產品感到非常滿意，他認為臺灣工具機的品質已經接近德日產品。他這次想買的是鑽床和銑床，由於展場佈置很好，讓他很容易找到想要看的產品。

加弗·札卡利
SimoDeco
企業主，阿爾及利亞



從事精密望遠鏡等各種光電產品及設計製造的江金汐說，他發現台北國際工具機展覽會整體的規劃很不錯，比其他先進國家的專業展覽毫不遜色。他看TIMTOS主要是因公司從事少量多樣的產品，例如高階鏡頭，需要尋找精密度夠的先進機器設備，他對臺灣的產品品質很有信心。他認為，工具機對臺灣的精密工業扮演重要的角色，主辦單位長年來舉辦TIMTOS，對各國的買主來說很重要。

江金汐
龍鵬實業公司
董事長



在看過三天TIMTOS後，江欣珍認為，展場動線佈置的很好，主辦單位相當用心，在各個展覽場都可以很容易看到和找到想看的功能強大的機器，她準備把這次TIMTOS在各方面的精心安排做特別報導，除了工具機和工業4.0的主題外，她對主辦單位的各項安排都覺得非常值得其他地方舉辦展覽時學習。

江欣珍
CEI Haymarket Media Ltd.
助理編輯，香港



來自比利時的買主喬瑟夫表示，這是他第五次來臺灣參觀TIMTOS，發現展覽的規模越來越大，新產品越來越多。二十五年前就來臺灣採購工具機的喬瑟夫，今年主要打算採購磨床。他的公司有百分之八十的機器設備都是從臺灣採購，因為相較日本的產品，臺灣產品的品質及價格，都很有競爭的優勢。除在臺北參觀TIMTOS外，他也要到高雄考察當地的設備。

伍特·喬瑟夫
ADP ANTWERP DIESEL PUMPS N.V.
總經理，比利時

2020年日本國際工具機展 (JIMTOF) 記者會5日舉行

2020年日本國際工具機展 (JIMTOF)，將於2020年12月7-12日在日本最大的展示會場——東京BIG SIGHT舉辦。

株式會社東京國際展覽中心取締役社長石原清次，5日在台北南港展覽館1館舉行記者會，說明2020年日本國際工具機展 (JIMTOF) 籌備概況，並由日本工作機械工業會 (JMTBA) 專務理事天野正義，報告日本工具機產業的最新趨勢。

石原清次指出，2018年日本國際工具機展於11月上旬舉辦，由於明年會場將由東京奧林匹克所使用，因此2020年JIMTOF將延後到12月上旬舉行。

2018年JIMTOF，計有來自21個國家和地區的共1,085家廠商參展，其中

海外廠商320家，而最多者是來自臺灣的參展廠商有81家，佔25%。參展攤位數共有5,524個，且參觀人數高達15萬3千人，均創下有史以來最高紀錄。

JMTBA專務理事天野正義記者會上說，台北國際工具機展覽會在日本知名度很高，今年日本有許多工具機的會員企業及法人前來參展。2018年JMTBA切削型工具機接單累計金額達到1兆8,158億日圓，連續兩年寫下最高額紀錄。

天野正義並說明日本工具機產業的最新趨勢，有五大方向：(1) 在人力不足及降低成本需求下，自動化、省力化機能，都有飛躍的進步。(2) 導入物聯網，實現智慧機器、智慧工廠的技術發展。(3) 在AI (人

工智慧) 方面，各廠推出運用解析大數據、機械適應控制、預防性保全技術外，採用語音輸入與影像辨識系統的案例，更受到矚目。(4) 機械外觀設計更加簡練俐落。(5) 積層製造 (Additive Manufacturing) 在機能方面有長足進步。■



加強產學研協作，點亮智慧製造新想像

3月7日下午，2019台北國際工具機展3x GLORIA智慧製造創新應用論壇在南港1館順利舉行。此次論壇由科技部整合6個國際產學聯盟（Global Research & Industry Alliance, GLORIA）共同舉辦，旨在加強產學研各界在推動臺灣製造業在智慧化方面的協作和融合。現場眾多產、學界重量專家齊聚一堂，針對製造與機械產業智慧化挑戰共尋解法，提供智慧製造升級新契機。

科技部涂君怡副司長、臺灣機械工業同業公會柯拔希理事長分別進行了開幕致詞，兩位長官都表達了對臺灣機械工業未來發展的信心，也強調了發展智慧製造的重要意義，呼籲產業界和學界應更緊密的合作，共同為臺灣機械工業的智慧化而繼續努力。

在主題演講部分，國立中興大學講座教授兼副校長/國立高雄科技大學講座教授周至宏教授、國立成功大學GLORIA鄭芳田教授、國立中興大學GLORIA陳政雄教授、國立中央大學GLORIA鄭永斌副教授、中原大學GLORIA王世明教授，分別就智慧製造的未來趨勢、工業4.1的理念和意義、智慧測量與品質控制、先進材料的智慧超聲波加工、人機互動智慧機器人整合、End-to-End完整智慧型解決方案等議題進行了深入的講解；而GLORIA網聯科技林鼎皓總經理、遠東GLORIA雙葉電子陳聖翔副理則分享了TANGRAM智慧製造平臺以及智慧製造在射出與壓鑄產業的具體應用。

何為真正的智慧化？

周至宏教授在演講中，特別闡述了



人工智慧的本質和意義，他認為，目前很多企業所講的“智慧化”，無論是產品、系統還是研發成果，都只是停留在自動化、順序控制化、資料化（收集資料/資料視覺化）的階段，尚未屬於真正的“智慧化”階段。真正的“智慧化”能力應該包括學習、調適、推理、決策等能力。

他還指出當下全球製造業關心的智慧製造領域的研究課題主要集中在生產系統、品質保證、製程優化、數位建模四大類別上。其中生產系統包括了生產排程、生產設備（狀態感測與監控、預知保養、狀態測量與估測、自動校正與補償、線上調機、系統控制技術）；品質保證則聚焦在品質檢測、品質估測、製程狀態診斷與分析等；製程優化主要指優化製程能力、制製參數優化、優化

生產效率、穩健優化能力；數位建模即數位雙胞胎。

談及未來智慧製造的趨勢，周教授認為，未來，生產網路將發揮日益重要的作用，製造運行管理系統將說明生產價值鏈中的供應商獲得並交換即時的生產資訊，供應商所提供的全部零組件都將在正確的時間以正確的順序到達生產線；虛擬類比與真實物理系統將完美融合，即生產製造過程中的每一步都將在虛擬世界被設計、模擬、優化，為真實的物理世界包括物料、產品、工廠等建立起一個高度模擬的數位雙胞胎。

工業4.1，品質優先

工業4.0已在業界被廣泛討論，但若提及工業4.1，應該只有少數的人聽

過這一概念。鄭芳田教授此次的演講聚焦於工業4.1這一理念，鄭教授認為，工業4.0強調提供企業生產力，但並未針對產品品質有太多著墨，以致無法做到真正零缺陷之境界，其關鍵原因是因為他們沒有具經濟實惠特性的線上即時全檢技術。

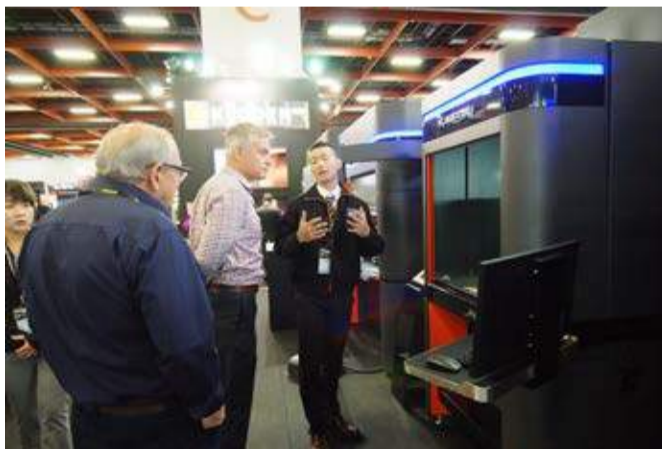
鄭教授還進一步指出，工業4.0系統平臺，若加上全自動虛擬量測（AVM）、智慧型預測保養（IPM）、智慧型良率管理（IYM）、先進製造參數優化造物聯雲等技術，就能做到產品接近零缺陷之境界，即工業4.1。

End-to-End完整智慧型解決方案

正如前面周教授所言，我們探討智慧化，應避免跟風式的盲從，任何智慧化的舉措都應是為了滿足實際生產需求，應創造真正的價值。王世明教授也認為，為了更好地落實生產，工業4.0應該從接單這一步驟就開始，然後貫穿至設計、生產、品質管控制到物流等全部過程。

王教授強調，以知識驅動、大數據、物聯網的智慧化引導和雲端平臺取代手把手式經驗傳承的生產，可將傳統製造業的獲利提升至15%以上。在演講中，王教授以模具生產為例，指出創新的智慧生產流程應包括訂單管理、模具設計、加工、成型、產品、ERP及MES等相應的軟體系統，並且各系統之間應實現相互連通和資料的即時共用。

得益於各位主講人的寶貴經驗分享，不難發現，臺灣機械業智慧化已進入關鍵時期，通過長期的研究探索，不少產學聯盟已形成了智慧製造領域豐富的理論知識，以及有益的應用案例。如何將這些有益經驗分享到更多的製造業主，如何連結現有的技術創新與產業需求或許應成為推動智慧製造產學研工作的未來方向。■



東南亞將成為下一個工業自動化市場

資訊化技術正在給傳統產業帶來巨大的影響，人力勞動生產模式已經過時，新一代工廠採用先進的機器人自動化技術。如今，只考慮提升生產效率是遠遠不夠的，市場需求變化多端，如何快速回應市場，精準找到需求才是現代製造業發展的正確方向。

工業4.0模式就是搭建一套資訊物理系統，通過物聯網技術將生產設備、產品、使用者和管理人員連接起來，從生產過程採集海量資料，利用大數據技術洞察市場需求，給管理者最佳的決策，分析和提升機器運行效率，引導產品從設計、生產到使用得到最合理的配置。

在萬物互聯的趨勢下，所有機器都要連接網路，這意味著要啟動工業乙太網交換機市場。一直以來工業自動化產品以國外品牌為主，經歷了多年發展，中國大陸工業乙太網交換機也形成了一些有實力的企業，如三旺、東土等。中國大陸品牌主要優勢在於性價比，目前三旺已經推出了萬兆級的工業乙太網交換機，並針對電力、軌道交通設計了專用的產品，還為廣大物聯網產品廠商開發了工業乙太網模式。

據三旺內部人員透露，中國大陸自動化市場競爭越來越激烈，公司正在積極拓展海外，尤其是東南亞市場。據悉，目前三旺在東南亞銷量約占總銷量的17%，未來幾年有望持續增長。近年來，東南亞製造業快速崛起，隨著大批工廠的轉移，東南亞是否會成為中國自動化廠商的下一站？

製造業向東南亞轉移

對於製造業來說，東南亞擁有充足、年輕的勞動力，有熟練和低成本的工人，這是最大的吸引力。《中國製造2025藍皮書》稱全球製造業佈局逐漸調整，正在加快向東南亞、南亞、非洲等成本更為低廉的地區轉移。

社會在進步，人類無法阻止勞動力成本上升的趨勢。美國似乎意識到去工業化的嚴重後果，希望通過政策吸引製造業回流，並大力投資自動化生產技術，企圖利用先進的生產技術贏得新競爭力。中國同樣面臨人力成本上漲的趨勢，全球製造向東南亞地區轉移是形勢所逼？

在成本壓力下，一些跨國製造業呈現向發達國家回流的趨勢，另一方面，全球製造業向東南亞、非洲等地區轉移。去年，上汽還與通用聯手在印尼斥資7億美元建設工廠，吉利收購馬來西亞第二大汽車品牌寶騰。製造業的轉移意味著市場的轉變，一些製造服務廠商開始注意到這些市場的變化。

機器人替代人是必然趨勢

根據國際勞工組織的研究，在未來

的二十年中，東南亞國家半數以上工人將要面臨失業危機，服裝業將首當其衝。此前，有媒體報導運動服飾巨頭耐吉要裁掉1,400名員工，關閉25%生產線。據悉，東南亞有900萬人從事紡織品、服裝和造鞋業的工作，機器替代人短期會對製造業造成巨大影響。

越來越多的企業考慮使用機器人，3D列印技術來生產產品。顧客越來越重視個性化服務，未來製造業必須有快速回應市場需求的能力。工廠生產要更快速、

更客製化，才能有效滿足客戶需求。

3D列印、人工智慧和機器人自動化技術的快速發展，現在製造業變得越來越先進。此外，機器人自動化產品的效率越來越高，成本也越來越便宜。無論是美國、中國還是東南亞地區，機器人替代人都是必然趨勢。

物聯網帶來新的改變

物聯網在東南亞已經成為一個十分

熱門的話題，當地政府和企業都在致力研究物聯網技術，據研究機構Frost and Sullivan預測，東南亞國家2015年在物聯網的投資16.8億美元，到2020年時將達到75.3億美元，複合年增率約35%。

例如，新加坡把物聯網視為邁向智慧國家的重要基礎，目前已經建設了多間創新科技培育中心，針對物聯網領域相關技術進行研究，物聯網產業有望成為馬來西亞的一個巨型產業。■

來源：榮格激光加工公眾號

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製造工業中的工具機互聯

在 CAD (電腦輔助設計) 系統中進行產品設計，在 CAM (電腦輔助製造) 系統中進行生產製造資料的準備和編譯，在虛擬環境中進行相關的模擬測試，在相應的軟體環境下進行刀具測量和刀具管理，上述的種種工作方式已經成為現代製造業的常態。

但是，在多個設備和多個工作人員之間實現無縫資料交接絕非易事。在這個過程中，大量的工作仍需以手寫的方式完成。為了減少手動輸入可能帶來的麻煩和錯誤，建成一個互聯生產所有步驟——從產品設計到成品出廠的數位生產系統變得十分迫切。在工業4.0背景下，將工廠的工具機設備互聯作為公司網路的核心，可以說是非常明智的選擇。

以工具機設備為焦點

大多數情況下，工件是在工具機設備上完成加工製造的，因此所有的資訊和資料都匯聚於此。以此為原點，與工件狀態和品質相關的關鍵資

訊必須回流到生產資訊平台上，也就是進入到資訊處理流程鏈中。

工具機設備的操作人員要對工件的品質負責，要保證每個加工程式按時完成，就必須有獲取所有相關資訊的途徑，還要將他的個人技術經驗融入到流程中。基於這樣的考慮，德國海德漢公司 (Heidenhain) 專門研發了一整套工具機互聯軟體解決方案，包括DNC介面、遠端桌面管理工具和狀態監控軟體等。

從刀具管理入手

在智慧互聯的理想狀態下，日常刀具管理的狀態應該是：毛坯件已經在工作台托盤上裝夾好了，等待著下一步的加工指令。現在我們需要知道有哪些刀具處於可使用狀態，並對刀具進行校準，掃描工具會通過刀柄的識別程式來獲取刀具的相關資訊。

為了實現此狀態，海德漢推出了 TNC 640 數控系統。該系統將CAM系統嵌入到刀具管理資料庫中，通過使用DNC (直接數控) 介面中的遠

端桌面管理工具 (Remote Desktop Manager)，數控操作員可以直接登錄到CAM系統中並創建工作。

TNC 640還提供了批次處理管理器 (Batch Process Manager) 功能，操作員可以通過它來執行生產設備的程式調試任務。在批次處理管理器中，數控程式和工件的裝夾位置資料都是和訂單資訊相關聯的，並且按照優先順序存儲在未完成訂單清單裡。有了批次處理管理器，操作員可以並行處理多個生產訂單

狀態監控軟體

預估加工時間對於製造商來說是非常重要的，它關係到訂單計畫的設定和後續生產工作的安排，以及完成工件的下一步物流走向。這一資訊同時還是新刀具訂貨量的重要依據。狀態監控軟體 (State Monitor software) 能夠說明數控操作員很好的完成這方面的相關工作。狀態監控軟體可以將已聯網的加工設備資訊收集起來，提供設備

狀態的即時監控，並且可以將收集到的資料傳輸到公司網路中的任一電腦或移動設備上。

靈活互聯

此工具機設備互聯解決方案的核心組成部分即為海德漢DNC介面、遠端桌面管理工具和狀態監控軟體。其中海德漢DNC介面建立了與企業資源規劃系統 (Enterprise-Resource Planning system) 和生產活動控制系統 (Production-Activity Control system) 的連結，並將狀態監控系統聯接到公司網路中，而遠端桌面管理工具則提供了對所有應用程式視窗的訪問路徑。

另外，海德漢數控系統支援多種現今流行的資料格式，比如PDF文檔、STEP和IGES格式的CAD檔等。事實上，在數控系統中整合有一個流覽器。接下來要做的就很簡單了，只需通過乙太網將數控系統聯接到公司網路中就大功告成了。■

來源：《國際金屬加工商情》



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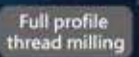
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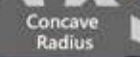
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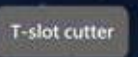
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看物聯網如何改變供應鏈格局

眾所周知，各個製造商都在為融入數位化浪潮做著積極準備，希望運用這一有力武器在市場競爭中取得絕對優勢。在2019年，這一潮流繼續升溫，製造商們將應用最新科技來改變供應鏈格局。

其中，工業物聯網 (Industrial Internet of Things) 將劍指智慧化，這是因為智慧製造將推動整個製造業到達全新的高度。物聯網能夠說明製造企業更好地監管、收集、分析資料，事實上，很多的製造商已經把智慧製造的概念和相關技術引入到工廠中，甚至是某個製造地區中了。但是，大多數的製造商還沒有在全球範圍內全面推廣智慧製造技術。

讓我們具體地來看一下，物聯網是如何使從貨倉到最終目的地的整個供應鏈變得更加流暢。

2018年運輸趨勢

在2018年，企業將繼續加強對運輸貨品狀態的監控能力，而不是依賴於到達目的地後的品質檢驗來管控供應鏈。

這樣的透明化管理，使得企業在整個路途中都可以對產品狀態進行有效驗證。

可以在多個位置放置傳感設備，包括將其安置在集裝箱內，或者是直接安裝到產品本身上，這樣一來供應鏈管理人員就能對多個區域做即時監控了。例如，在運輸開始後，在整個供應鏈上保持恒定的商品儲存溫度是非常重要的，為此可以在運載蔬菜、水果的集裝箱內安裝感測器，這樣貨物就能在適當的溫度下一路保持新鮮了，無論是買方還是賣方都會從中受益。對比更換腐壞的農產品所付出的成本，感測器的花費其實是相當合算的。

運輸資料

在運輸過程中會產生一系列的資訊資料，誰有許可權來訪問這些資料呢？例如，在運輸開始後，運輸方和接收方應該都有許可權。這時雙方可以同時查看相同的資訊源，並且承擔起各自的責任，也就是說當資料同步更新後，雙方看到的資訊是完全一致的，在整個供應鏈中，這能使雙方的相互信任達到更高

的程度。

除了溫度以外，供應鏈管理人員還要追蹤其它的變數資料，包括顛簸震動的情況及其對貨物的影響，以及在任意給定的時間點上的貨物位置。現在的資料分析平臺，已經智慧到可以根據需求來執行相應的資料收集操作 (即只有當預設規程被觸發後，才執行相應程式)，因此不會產生大量的難於整理又毫無意義的資料，智慧資料平臺只會出現問題時，才發出警報信號，從而大大降低了資料的傳輸成本。這樣的設置基本摒除了篡改監測記錄的可能性，並且即使是在網路不太穩定的環境裡，也能維持通信繼續進行。

物聯網對於物流業產生積極影響的另一個方面在於車載資訊系統。這一資訊平臺能夠為決策者提供更準確的到達時間預估資訊。這種預估功能，能夠使處於供應鏈中的多個運輸路段的多臺運輸設備的資料同步更加高效。

鐵路運輸

在傳統的供應鏈中，卡車將貨物運



送到火車站，之後火車裝載著貨物到達下一個地點，最後再由卡車將其運送至最終目的地。即使到了今天，鐵路也是國家物流基礎設施的重要組成部分，這是因為它對於長途貨運來說節能又高效。但是，當涉及到鐵路運輸時，到達時間往往無法準確估計，這種不確定性會在整個供應鏈中產生連鎖反應。

然而，通過物聯網，企業可以應用車載資訊系統對火車的貨運狀態進行即時追蹤，並將這些資訊同步到卡車的資訊系統中，從而對貨物的到達時間做出合理預估。這也使卡車運輸公司的運輸計畫更具策略性，最終達到減少停運時間、提高效率的目的。■

來源：《國際金屬加工商情》

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利高機械：融合了高速與高精度的13軸車銑複合機



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利高成立以來，其以生產車床、工業凸輪操作單軸自動車床和技術CNC車削中心而聞名。這些由利高開發的機器專為金屬加工領域而設計，並已被各種行業採用，如航空、車輛、計算機、水管配件和光學儀器等。

1993年，利高的LNT-42 CNC多滑座自動車床，榮獲第一屆“臺灣精品獎”，並取得臺灣、大陸、德國等專利，其LA32H自動車床和複合數控車床分別於1994年和1999年獲得同等獎項；2001年其經英國Amtri Veritas取得CE認證，編號9002；2002年，其LNE42榮獲臺灣經濟部主辦的“中小企業創新研究獎”；2004年，開發了具有自動進料的LNT鍛料全加工機；2005

年，利高開發了LNC-D自動送料裝置，帶有12位實時刀具和副主軸後加工CNC自動裝置；2006年開發了緊湊、經濟實惠的滑動頭座CNC自動車床，用於長軸加工，不銹鋼球閥杆、Y型銑刀和帶多邊形車削的手動工具.....利高機械一個腳印穩步持續發展，才有了如今在行業中的地位。

如今，利高向50多個國家和地區出口產品，除了臺灣市場，中國大陸、東南亞、美國、歐洲和拉丁美洲等都是其重點。

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本屆TIMTOS利高攜其13軸車銑複合機亮相，該款車銑複合機為利高近10年來主推的機型，其融合了傳統自動車床的速度與CNC車床的精度，更上一層樓，擁有超越多數車床能做到的精度與速度。憑藉其專業的知識與技術，利高的車床一再被證明能在多數的零件加工上快過瑞士型工具機或雙主軸雙刀塔，並且價格也優於歐日的雙刀塔機器。多數的加工車間在選用CNC車床時選用瑞士型的工具機當泛用車床，可

是仔細研究後會發現，只有少於25%的工件屬細長型或微小型的走心車床工件（L/D長徑比大於4倍以上）。

位於台中神岡的利高機械工業股份有限公司擁有41年自動車床的設計製造與應用的經驗，其各型工具機都是精密製成，超高功能，經久耐用，適合大量生產工作，機件皆有互換性，易於維修，其產品銷往世界各國。公司的主要產品線包括多滑動CNC自動車床，CNC自動車床，CAM型自動車床，



矩將：與客戶共同挑戰新趨勢的市場與產品

近年來，臺灣工具機業者面臨巨大挑戰，如何找到適當的市場以及相對應的產品來切入該市場，變得越來越重要且越來越有挑戰性；因此，如何與客戶共同合作、共同發展，就是矩將研發新產品的重要依據及方向。

機械業發展的兩大主流方向是多軸加工和複合加工，另外，再加上材料科學的進步，歐洲市場因應高速切削、高切削率的需求，市場隨即發展出高扭力、高功率的機械規格。因此，此次TIMTOS展，矩將主要展示以下三類產品：多軸機械，複合機械，高扭力、高功率機械。除了自己的主軸，矩將也同步研發和主軸結合的旋

轉定位的轉盤，這些轉盤是和主軸匹配結合，展現更高的性能及精密度。多年來，台灣的優勢在於分工，而問題則出現在產品的整合上，例如會出現空間配置、精密度結合等問題。為了讓機械廠能更順暢地使用這些元件，得到更佳性能，矩將推出精密旋轉定位主軸頭的整合性產品。

矩將的優勢在於設計和創新，不走量產路線，而是有彈性的設計客製化產品，其重點市場在臺灣和歐美。客戶對性能的要求越來越多且更複雜，這促使矩將推出更多專利產品，例如車銑複合機的氣壓煞車裝置就是近兩年的新專利，這種全圍煞車的扭力比較強。

在研發上，矩將傾向於與外部的研究機構合作，例如與清華大學共同進行液靜壓主軸的研究合作，時間長達三年，目前已完成實驗室階段，下一步是第二階段，即尋找機械廠來進行研磨和切削的實踐，以印證主軸的性能。

針對工具機產業未來的潮流，矩將



的重點發展方向是配合機械自動化和主軸智慧化。近幾年工具機廠必須配合機械手臂以加速自動化的實現；同時，必須在主軸中埋入各種感測器，以隨時監控主軸狀況，包括軸承是否正常、切削的扭力等。例如，客戶在切削時，必須透過主軸的扭力來瞭解切削刀具的狀況，標準的主軸無法實現這個目標，

矩將就必須根據客戶需求來進行新的設計與規劃。

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智慧製造：來自海德漢的互聯互通解決方案



工)，實現無紙化資訊傳遞和加工車間透明化提供了簡易的解決方案。所有配置海德漢數控系統的工具機都可以通過海德漢DNC軟體介面，TNC數控系統可連接資源規劃系統和控制台以及工具機和生產資料獲取軟體。TNC通過DNC介面提供詳細的資料，以利企業依此做資料分析。”李朝曦總經理補充說。

同時，遠端桌面管理器能夠讓工具機操作人員直接存取公司的電腦或伺服器，輕鬆並安全地使用公司內的

全部可用資料和資訊。例如工具機操作人員在TNC數控系統上直接使用CAD/CAM系統的資料，有效節約時間，也能將資訊回饋給生產流程中的所有相關方面，例如在車間調整的切削資料和進給設置值。

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本次展會，海德漢將重點展出其近年來大力開發之智慧製造解決方案——Connected Machining。這一解決方案囊括遠端桌面管理員（Remote Desktop Manager）、HEIDENHAIN DNC以及State Monitor。

海德漢股份有限公司總經理李朝曦介紹說：“遠端桌面管理員（Remote Desktop Manager）（選配#133）可以直接於控制器中遠端操作Windows作業系統的個人電腦；只要在操作面板上輕敲一個按鍵，使用者就可以輕易地切換控制器畫面或是Windows個人電腦的畫面。”

HEIDENHAIN DNC（選配#18）不僅允許TNC和Windows應用程式間資訊的存取，亦允許讀寫存取TNC的資料。

藉由海德漢DNC（選配#18）實現客戶端-伺服器（Client-server）的機器資料應用。新的軟體State Monitor實現現場機器狀態的快速瀏覽、在不同時段與不同機器間的狀態歷程檢視與評估，並清楚地顯示機台利用率和使用率；同時可匯出CSV或PDF的格式，亦可依照需求進行設定，再經由e-mail或SMS傳遞特定資訊。State Monitor為親近使用者的網路版介面，可經由任何支援的網路瀏覽器的設備進行使用。

一直以來，海德漢數控系統都以優越的高速加工和五軸同動性能著稱。李朝曦總經理提到，在過去幾年中海德漢陸續推出了實現工具機智慧自我調整加工的動態高效（Dynamic Efficiency）/動態高精（Dynamic Precision）功能，為提升工具機加工效率和加工精度提供解決方案。

“海德漢的‘智慧製造（Connected Machining）’一系列功能，為海德漢數控系統傳統的客戶群（車間的加

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參展商採訪

源利電磁：過濾設備的自動化專家

——專訪源利電磁林妙洋副總

源利電磁是一間在臺灣已成立超過35年的工業過濾設備製造者。源利主要生產的設備為冷卻液過濾設備、切削研磨屑過濾設備以及塵霧收集設備。源利在TIMTOS 2019年將展出強力磁鐵過濾機 (MSK系列)、多磁輪刮板輸送機 (RCM系列)、以及全自動濾心過濾機 (CFT系列)。強力磁鐵過濾機磁力高達5000高斯，過濾精度可達10μ完全無耗材，因此只需一台即可滿足過濾的需求，適用於弱磁性金屬、油性或水性切削液。

創立以來，源利持續推出新型過濾設備。他們設備的過濾精度極高，並且擁有非耗材的濾材，可以延長濾材的壽命，讓濾材更換週期達三年。林副總表示，

源利的過濾設備已大幅地使用於汽車製造、精密加工使用的磨床以及刀具磨床等工具機，在世界各個市場運作著。本屆TIMTOS展覽，源利會著重在全自動濾心過濾機上，該機型是針對需要超高精度的刀具加工、放電加工等加工所研發。具有無耗材、濾材可自動清潔等特點，符合工業4.0無人化、能大幅減少工業廢棄物，且對環境友善。

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有關本次TIMTOS所強調的智慧生產主題，林副總強調，源利的過濾設備已能達到完全無人化的目標，是實現智慧工廠的一大重要指標。此外，源利每季均會檢視機械設備進行修正與改進。今年源利的特別之處是設備變得更加智慧、有效率；「我們在設備中加入控制零組件以及許多偵測零組件，使用者能完全掌控機械的運行狀況。並將操作方法變得更加友善，使用者能夠簡單的操作，且過濾設備可無縫的與工具機結合，完全不需要有人力介



入。」林副總說道。

未來，林副總認為更多與工具機與過濾機結合將是此領域的趨勢，她也十分期待未來與工具機產業各種合作的可能性。

有關2019年的市場規劃，林副總認為歐美中的政治走向以及經濟政策將會是決定性的因素，故，源利會先鞏固現有的歐美市場，把握當前的老客戶（包含GE也是客戶），同時加強亞太區的佈局。

本次為源利第五屆參展，林副總希望

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MASTARR立式綜合加工機 QMC-600

QMC-600型綜合加工機，三軸採用全滾柱線軌設計，可大幅提高使用壽

命及機器剛性。且排屑槽採後排設計，精簡機器佔地面積。立柱寬度加大，提高機台加工切削精度之穩定。主軸馬達鎖固介面採油冷板設計，有效抑制馬達熱溫昇。另外，Z軸滑塊採長型大規格尺寸，並向兩側最大延伸，支撐跨距最大化。鞍座及工作台面高度經加高尺寸，剛性大幅增加，精度受承載力影響更小，此機種是一部擁有超高性能的綜合加工機。



仕元機械股份有限公司
電話：+886-4-2338-8879#35
傳真：+886-4-2336-1750
郵箱：jessie@maxmill-cnc.com.tw
攤位號碼：I0832

花鍵滾製機（冷作滾造成型機）

功能：花鍵滾製機是運用齒條模/刀具，而非使用圓柱狀的牙輪；許多不同型的花鍵齒型、鋸齒、油溝、蝸輪、螺絲、滾花、螺紋和類似形狀可在短短3到7秒間單獨或組合式滾製。適用加工精密汽車、機車、農機、堆高機、汽壓、油壓及各類五金工具零件。



特色：這台特殊設計的冷作滾造成型機，具有獨特的高速加工特性，比傳統機械切削的加工速度 快近30倍，在齒形、導程、節距表面精度上均可達到高精密的要求，而且可以確保工件材質上均勻性。

羿晨機械股份有限公司
電話：+886-4-7221-234
傳真：+886-4-7265-265
郵箱：sales@yiehchen.com
攤位號碼：M1102

一般生產型扣壓機

最大扣壓管徑：2"
扣壓範圍 (mm)：ψ4...ψ87
模具型號 (mm)：32
模具擴張度 (mm)：+32
主要模具長度：80
馬達 (kW)：3.6
電壓 (v)：220 / 440
泵浦 (l/min)：11.5



扣壓力 (kN)：2200
扣壓量 (每小時)：1200
特色：YL-32 適用於車間或一般五金店面使用。扣壓範圍從4mm至2"
永隆空油壓機械有限公司
電話：+886-4-2283-3033
傳真：+886-4-2280-3472
郵箱：ylcrimp@gmail.com
攤位號碼：R0010

重型切削數控立式車床

功能：此機型是專為重切削及大型零件加工之需求而設計的；其特點和選配項目之一的「銑削功能」可以強調出 VTL-12/16M是為切削高剛性及高穩定性零件的需求而建造之機器。

特色：寬大的工作臺和強大有力的扭矩；堅固的鑄件結構進而實現加工的穩定性；工作臺直徑：1250mm (49.2")；最大車削直徑及最大旋徑：1600mm (63")；最大加工高度：1250mm (49")；最大工作臺扭矩：



11870NM (8754LB)
伍將機械工業股份有限公司
電話：+886-4-2562-6039
傳真：+886-4-2562-6040
郵箱：alextech@ms24.hinet.net
攤位號碼：J0130

變頻無段變速鑽銑複合機/鑽床

專業生產變頻無段變速鑽銑複合機/鑽床，變頻無段變速鑽銑機，圓鋸機。外銷世界各國，主要銷售歐美國家。內銷更遍及各大小工廠，科技公司，實驗室，醫院，中研院，學校...等，操作簡單，保養容易，堅固耐用。產品資訊請參考本公司網站www.supersonic.com.tw。本公司自1995年起參展每屆TIMTOS。歡迎蒞臨參觀本公司於南港展覽1館一樓攤位K0015。現場展覽機台皆有特惠價格，售完為止。

功能/型號：
DP-925GAD變頻無段變速自動進刀鑽床(齒輪傳動)：MT#4主軸攻牙系統，主軸轉速表，冷卻系統，最大鑽孔能力 [鋼鐵40mm/選購：50mm/鑄鐵45mm]，最大攻牙能力24mm/選購：30mm。
MD-930變頻無段變速鑽銑複合機(齒輪傳動)：MT#3主軸，攻牙系統，主軸轉速表，最大鑽孔能力 [鋼鐵32mm]，最大攻牙能力20mm。
DP-915AH 變頻無段變速鑽床(時

規皮帶傳動)：MT#3 主軸，攻牙系統，主軸轉速表，最大鑽孔能力 [鋼鐵25mm/鑄鐵32mm]，最大攻牙能力 [鋼鐵16mm/鑄鐵20mm]。
呈興企業有限公司
電話：886-4-2234-9241
傳真：886-4-2236-0634
郵箱：secochen@ms43.hinet.net
攤位號碼：K0015

Connected Machining智慧製造解決方案



海德漢TNC控制器的加工串聯 (Connected Machining) 解決在製造過程中一連串的數位作業管理流程，強大的功能包含：遠端桌面管理員 (Remote Desktop Manager)、HEIDENHAIN DNC以及State Monitor。

遠端桌面管理員 (Remote Desktop Manager) (選配#133) 可以直接於控制器中遠端操作Windows作業系統的個人電腦；只要在操作面板上輕敲一個按鍵，使用者就可以輕易地切換控制器畫面或是Windows個人電腦的畫面。

HEIDENHAIN DNC (選配#18) 不僅允許TNC和Windows應用程式間資訊的存取，亦允許讀寫存取TNC的資料。

藉由海德漢DNC (選配#18) 實現客戶端-伺服器 (Client-server) 的機器資料應用。新的軟體StateMonitor實現現場機器狀態的快速瀏覽、在不同時段與不同機器間的狀態歷程檢視與評估，並清楚地顯示機台利用率和使用率；同時可匯出CSV或PDF的格式，亦可依照需求進行設定，再經由e-mail或SMS傳遞特定信息。State Monitor為親近使用者的網路板介面，可經由任何支援的網路瀏覽器的設備進行使用。

海德漢股份有限公司
電話：+886-4-2358-8977
傳真：+886-4-2358-8978
郵箱：info@heidenhain.tw
網址：www.heidenhain.tw
攤位號碼：Q0124



CNC傘齒輪切齒機

功能：GBC-4028傘齒輪切齒機具高剛性與高穩定度結構，搭配自行開發之windows-based智慧交談視窗，操作者僅需輸入齒輪參數即可自動產生NC程式。不僅能自動預測齒印，亦能自動



計算修正齒形與齒厚的誤差。本系統也提供了各軸高階運動補償功能，使加工形狀不受刀具或砂輪非線性的誤差限制。如客戶已有其他大廠設備，本系統亦可讀取其數據，製作相同之傘齒輪，給予客戶最便利的使用經驗。

特色：GBC-4028採用專用杯狀銑刀（Cup Type Milling Cutter），切削傘齒輪效率高。更輔以專用設計之HSK刀把，更換刀具既靈活又精準，加工亦穩定。此外B、C軸採用高精度直驅馬達，使加工更精準。無蝸桿蝸輪磨耗後需要調整背隙的問題，增加可靠度，可長時間做多軸同動加工。陸聯精密自行

開發傘齒輪加工軟體，在最複雜的部份，提供了操作者最簡單的使用。包含了視覺化與直覺化的齒印設計調整，與自動加工路徑補償。

陸聯精密股份有限公司
電話：+886-3-5786-767
傳真：+886-3-5773-488
郵箱：leonsun@luren.com.tw
攤位號碼：N0806

TCNC內外圓研磨複合機

功能：再一移動軸上配置二個內孔砂輪軸，可針對工件之內孔、外徑、端面做研磨加工亦可利用一軸加工錐度，另一軸加工內外徑及端面等複雜之零件加工。



特色：符合現代的空間並搭配機械極致美學外觀，兼具雙研磨軸功能，展現高效率加工能力；該機型採用全新的對話式圖形介面功能，使其操作更為簡

單方便；創新設計二個砂輪利用滑台定位方式，更是減少了研磨時加工的干涉問題；KG-150D是一部可以提升企業競爭力的研磨加工設備。

冠昱機械股份有限公司
電話：+886-4-2524-9998
傳真：+886-4-2524-7698
郵箱：guan.yu168@msa.hinet.net
攤位號碼：L0302

美國SGSPRO鎢鋼滾磨刀

功能：在廣泛的材料上進行快速切削作業，例如鋼、銅、鑄鐵和鎳合金。

- 特色：
1. 允許快速切削作業
 2. 提高工作產量
 3. 從而使操作更順暢
 4. 具有很高的切削效率



禾誌貿易有限公司
電話：+886-2-2999-0488
傳真：+886-2-2999-0486
郵箱：hojtool@ms48.hinet.net
攤位號碼：A0812

直立式NC自動控制銑床

- 功能：
1. 支援G碼，可作圓弧銑削
 2. 可手動、自動二用
 3. 觸控式螢幕可搭配藍牙鍵盤

特色：人性化及客製化界面，簡單程式碼，操作簡單易學，USB傳輸並可達工業4.0傳輸要求高CP值自動化控制銑床。

堡豐工業(股)公司
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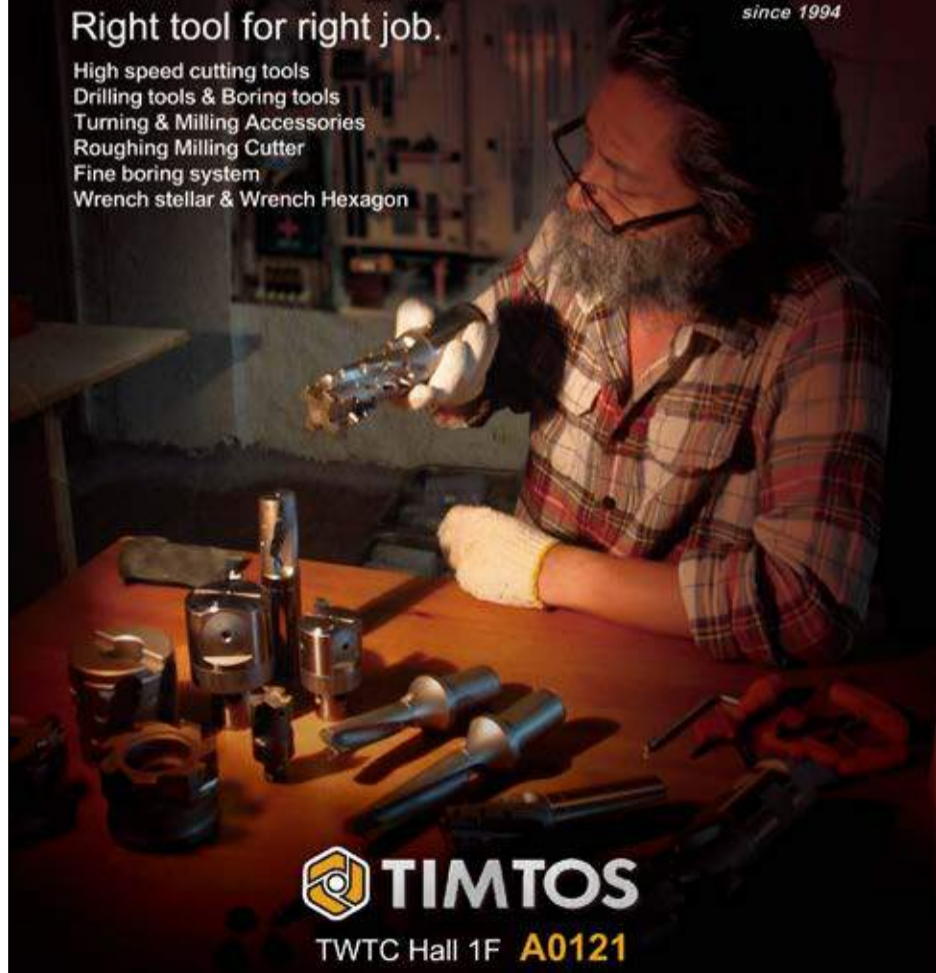


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產品報導

平面磨床-旋轉盤系列

功能：平面研磨/角度研磨/階梯研磨最主要使用於墊圈/螺帽等圓形工件之平面研磨

特色：600R採動柱結構設計，前後軸採雙驅動設計及重心驅動並搭配加大級距的高剛性滾柱型滑軌來強化機器的剛性及精度。操作控制採引導式圖形化人機界面設計，並提供最實用之研磨功能模式配合自動修整及補償參數系統達全自動化功能模式，降低操作者的技術門檻，讓操作更簡易，有效提升操作的便利性及工作效率。友善的操作介面，減少人力需求達到多樣化的生產，符合未來趨勢的智慧化機器設備。



普發工業股份有限公司
電話：+886-4-2350-3099
傳真：+886-4-2350-3066
郵箱：info@perfectmachine.com.tw
攤位號碼：I1002

直驅式馬達分度盤

功能特色：

由旭陽國際精機董事長、總經理、副總經理以及其研發團隊，共同開發並配合台灣工業技術研究院的技術轉移，加上旭陽國際精機本身成熟/強大的研發能力與加工能力所生產製造。透過直驅馬達取代以前傳統複雜的機械結構，使得外型尺寸縮小，工具機的空間搭配限制更低，以期達到客戶更高規格的需求。直驅結構的特性讓本產品具有高反應速度，除了在同步加工的表現上可以達到高精度及高加工品質外，也適合針對3C產品...等等的輕型加工，更能有效提升客戶對大批量生產加工需求的產能效率。旭陽國際精機以高標準、高規格檢驗直驅馬達分度盤，各項數據表現皆令人相當滿意，並且提升公司在市場的競爭性。旭陽國際精機將持續研發更多款符合市場需求的直驅式馬達分度盤，以期更加充實其產品線陣容。
旭陽國際精機股份有限公司
電話：+886-4-2537-7888*817
傳真：+886-4-2536-8899
郵箱：hr00672@gsaplus.com.tw
攤位號碼：S0508



CNC數值控制車床

功能：適用各種法蘭、鋁合金輪圈、凡而、輪胎模、模座、滾輪等。

本機為強力精密型電腦車床，高低速時亦有全馬力輸出功能，對中大型、特殊零件及模具工件最適合。

特色：6" (OP: 9~15") CNC主軸箱，主軸四段油壓自動變速，主軸箱設計有三點式重負荷軸承支撐，配備自動變速用的油壓缸，搭配四檔齒輪式速度變換，使各轉速能全馬力輸出，發揮重切削功能。中央自動給油裝置，潤滑個滑動面及滾珠螺桿。冷卻系統提供高壓冷卻液，具強力沖屑功能，確保刀具使用壽命。

油壓四方刀塔 HP-350-VDI, V8, V12, VDI TYPE-H4/V8/V12 & 動力刀塔 皆可安裝。Fanuc Oi-TF控制器，其他品牌控制器，皆可安裝。床面寬度610mm床身米漢納鑄鐵，耐負荷。床面、滑台面均經高週波熱處理、精密研磨增加使用壽命。齒輪、軸心採用高合金鋼，經滲碳、精密研磨



銘全工業股份有限公司
電話：886-4-2335-4989
傳真：886-4-2335-4969
郵箱：denver@ms77.hinet.net
攤位號碼：M1329

Berucut金屬加工油

功能：適用於旋削、鑽孔、銑削、研磨、深鑽孔、螺紋切削、垂直鉸孔、鋸切、螺紋製造、冷擠壓成型等特殊加工方式，能防止切屑邊緣的堆積，具優異的冷卻效果，可支援相對苛刻的加工參數，在交叉孔加工上具有優異的表現。

特色：新世代金屬加工用油，採用天然合成 (GTL) 之基礎油，不含芳烴、重金屬等雜質，具高閃火點、低揮發性能，優異的潤滑效果、排氣性、消泡性、抗氧化性，明顯減少加工房油霧狀況與提高刀具使用壽命。



台灣快密刀科技有限公司
電話：+886-4-2418-0000
傳真：+886-4-2418-0888
郵箱：fimitech11@gmail.com
攤位號碼：R0434

超小型伺服電動缸

功能：DM系列電動缸為東佑達公司在台灣革命性推出的新品，DM系列搭載DC伺服馬達與精密滾珠螺桿，最高速度可達1000mm/s，高精度±0.01mm，體積縮小如名片大小，方便安裝，不佔空間。行程內可任意點定位，改善了過去多使用氣壓缸無法做多點定位的缺點，並且有效改善氣缸長期使用之空氣洩漏的耗能及維修問題。隨著工廠智慧自動化的腳步，為了提高生產效率，滿足彈性生產，DM系列搭配XC100驅控器可將生產數據有效的擷取，上傳彙整為生產大數據，有效改善錯誤，進而讓工廠實現真正的工業4.0。

特色：DM微型電動缸推出多樣化三款內嵌滑軌型、迷你滑軌型、經濟型供客戶選擇。伺服馬達內藏，可實現小型化，不需要另外的馬達空間與配線。設計的尺寸與氣缸大小一致，可無痛替換氣缸來使用。並可客製無塵室專用與防塵樣式。搭載的驅控器可一機滿足三種控制模式，包含位置控制、脈波控制、通訊控制，彈性便利。

東佑達自動化科技股份有限公司
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▲ VB-116/127/147/168/208 立式綜合加工中心機(硬軌) Vertical Machining Center (Box way)



▲ SDC-8/10/12 SDC-16/22/32 龍門高速加工中心機 CNC Double Column Machining Center



SV-85S/110S/130S SV-865S/1165S/1365S 立式綜合加工中心機 Vertical Machining Center

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迅猛龍VelociRaptor高精度三次元座標量床(CMM)

功能：傳承德國工藝設計，全機國際技術整合的高精度三次元座標量床

快：三軸傳動系統採用美國AMETEK高性能馬達和獨特傳動專利技術；狠：三軸花崗石精密構件，結構設計傳承德國百年工藝，採用有限之分析精密技術；準：美國RATIONAL DMIS CAD計量標準軟體，通過德國PTB演算法準確性、可靠性之認證

特色：METROLOGY台灣黑馬牌三次元座標量床之獨特性

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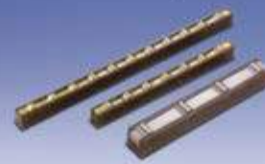
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墾丁

墾丁位於臺灣最南部，吏屬屏東縣，東臨太平洋，西靠臺灣海峽，南望巴士海峽。地質以珊瑚礁為主，在三面環海北依山巒的地形下，加上長達半年的落山風吹拂，造就了墾丁特殊的地形風貌。

參考遊記：早起床，買上早餐開始包車輕鬆遊，去最重要的預約景點龍坑，結束後可返回觀光船帆石砂島，經埔頂看看草原風光，然後去龍盤草原，中午跟隨司機去覓食，隨後去鵝鑾鼻公園玩，最後讓包車送至小灣自己玩沙子看海，結束後漫步回酒店修整，洗洗刷刷在自家海景陽臺看夕陽，入夜找一家心儀的餐廳用餐。

墾丁的海

由墾丁街向南端前行，就會看到蔚藍的海面上，聳立了一顆高約 18 公尺、形似帆船的巨大珊瑚石，這就是船帆石，也有人說像極了美國前總統尼克森的頭像。

砂島貝殼砂保護區為一座小型海灣，早期因為海灘的砂子堆積如小島般，因而被稱之為「砂島」，由於砂島上的貝殼砂相當美麗，曾帶來一陣淘沙熱潮，為保護這塊淨土，將此地列為生態保護區，並禁止挖採，更特別興建了「貝殼砂展示館」，並且設有貝殼砂觸摸區及顯微鏡讓玩家可以更瞭解貝殼砂。



鵝鑾鼻燈塔

鵝鑾鼻公園位於台灣最南端，前身為海底礁岩，故園內珊瑚礁、石灰岩地形遍佈，因受海浪、強風及雨水侵蝕，造成巨礁林立、奇峰、洞穴等奇觀。步道縱橫交錯，可通往好漢石、滄海亭、又一村、幽谷、迎賓亭等風景區，處處引人入勝。園內步道縱橫交錯，就好象是迷宮一樣。

鵝鑾鼻燈塔為公園標誌，高 18 米，周長 110 米，以炮臺為塔基，圍牆上設有槍眼，四周更有壕溝，為全世界唯一的武裝燈塔。二次大戰末期曾遭炸毀，後改建並換裝新式大型四等旋轉透鏡電燈，是目前臺灣地區光力最強之燈塔，享有“東亞之光”美稱。此外在塔旁還有巨像一座，供遊人瞻仰。巨像前有“臺灣八景”紀念石碑一座，供旅客照相留念。



龍坑

龍坑緊鄰鵝鑾鼻公園，在佳鵝公路的起點，龍坑全區為隆起的珊瑚礁地形，由於地處鵝鑾鼻夾角的端點，冬季海浪拍打著礁岸，旺盛的侵蝕作用，造就了龍坑全區的崩崖、裙礁、峽穀等獨特的地形，由於形狀像條龍，龍坑因而得名，215 種珊瑚礁海岸植物滋養其間，並有種類繁多的鳥類和爬蟲類等，不論是珊瑚礁地形或是動植物生態都深具研究的價值，所以被列為生態保護區。



美食

- 龍蟻餐飲，靠近龍磐草原。
- 巷子內海鮮熱炒合菜，墾丁路海濱巷 9-3 號，也有生魚片哦。
- 蝦匠，墾丁大街的入口轉角。哈蜆、蝦、生蠔味道鮮美。
- 墾丁夜市：QQ 蛋奶、池上飯包、老牌炸蛋蔥油餅、公正包子、打洞香腸、大腸包小腸、火焰色子牛、臺北深坑臭豆腐串燒、一品滷味、貝力岡霜淇淋、勇字 型大小石板烤肉、南風微醺酒吧。



——來源：馮穎

只要一個步驟即可瞭解TIMTOS展覽訊息

今年您除了由榮格工業傳媒承辦的展會快報瞭解TIMTOS展會訊息之外，還可以通過**現場直播**，通過動態影片的即時報導，您可以無時無刻瞭解展會現況。

直播內容包含開幕典禮、採購洽談會、記者會、2019高峰論壇、學生參觀及導覽、工業4.0智慧製造研討會、智慧製造聯網數據增值產業聯盟會員大會、2019年台北國際工具機展歡迎酒會暨工具機研究發展創新產品競賽頒獎典禮、2019台北國際工具機展GLORIA智慧製造創新應用論壇以及展商採訪等等精彩內容。不論您是否在現場，都可以通過直播間，快速瞭解2019年TIMTOS的最新動態。

我們也誠摯邀請您前來榮格攤位獲取其他更多產業訊息，如金屬加工、汽車、醫療、智慧製造等。
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