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Taipei PLAS & Shoetech Taipei 2018

Seminar Reports

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Table

East Asia Embarks on Wastefree
Game Plan

Waste Tires Into New Burning Coal?

TAIPEI PLAS
Taipei International Plastics & Rubber Industry Show

ShoeTech Taipei
Taipei International Shoe Making Technology Show

AUG. 18-19, 2018

SHOW DAILY

**TOTAL ACCUMULATED VISITOR
(LOCAL + FOREIGN VISITORS)**

12,639 DAY **4&5**



Taipei PLAS 2018 SHAPING NEW PLASBILITY AND FUTURE

The 16th Taipei PLAS and the first ShoeTech Taipei have almost come to an end. This year, Taipei PLAS has highlighted its new plastic and rubber products with the most advanced development in the industry. On the other hand, ShoeTech Taipei has also dazzled the crowd with new automated & smart machinery and their whole plant solutions. ShoeTech Taipei has attracted many buyers, which include domestic shoe makers like PCG, FENG TAY, and foreign brands like NIKE and UNITED ARMOUR. From over 90 procurement meetings on the first day that

offer channels for bridging business opportunities, to nearly 30 seminars that deliver on recent industry events, Taipei PLAS 2018 is certainly a must visit show with much to harvest. Taiwan plastic and rubber industry has devoted 50 years in research and innovation, which has lead to Taipei PLAS grown into a leading show in Asia. Taiwan, competing with other leading supplying counties like Germany, Japan, Italy, and China, is now ranked as the 6th largest production country and still an important supplier to the world market.



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New Production with High Density Polymer : Smart Manufacture Trend on 3D Printing Plastic Products

Content and photo by Plastics Industry Development Center (PIDC)

Unlike the expensive 3D printing models that you find in stock and are still limited on their applicable products due to materials hardness, the Plastics Industry Development Center (PIDC) research team now produces a new model capable to deal with elastic materials made of high density polymer. The elastic materials like TPEE and SEBS have offered new solutions for more options to smart manufacture.

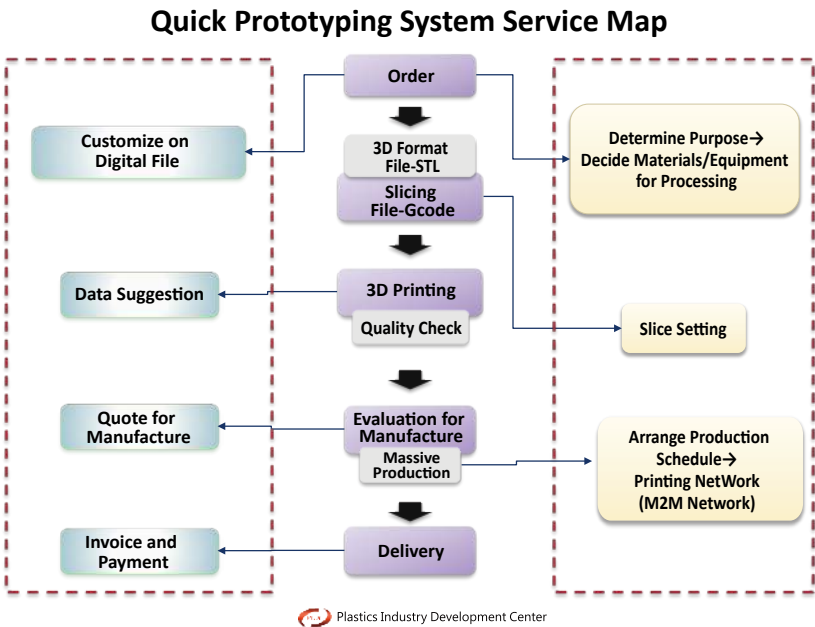
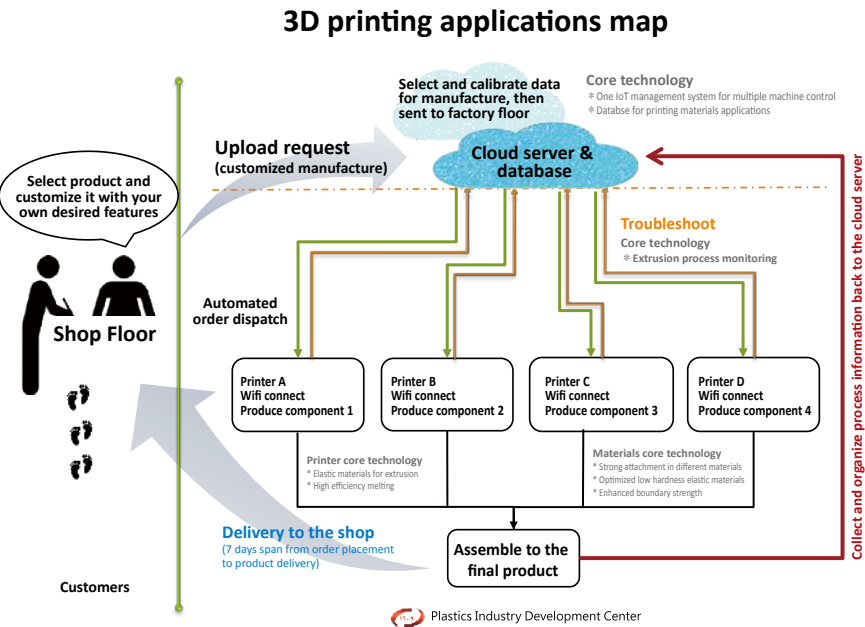
Using PIDC's 3D printers, they can now all connected under the same IoT network and one management system, allowing simultaneously dispatch work orders to printers at different locations. Moreover, the elastic materials can

attach firmly to other materials and provide stronger boundary strength to the final products. Added with additional application onto the printer, it even allows Wi-Fi connection for real-time monitoring and delivers extrusion with better stability, which in turns speeds up the printing process and enhances the product quality.

In the future, PIDC plans to extend on its IoT network to connect with different types of machines. By combining different machinery in one factory, PIDC hopes to achieve real Machine-to-machine (M2M) connections on all types of machines. Also, it's with doubt that PIDC will still continue to deliver faster 3D printer and provides

more possibilities in smart manufacturing.

Being quick, low risk, and highly customized are the requests for first stage testing by conducting the Rapid Prototype and Rapid Tooling, offering the result for evaluation on massive production. Compared to the traditional molding process, this new manufacture works better for customized requests and offers various resin materials for maximized service life on mold to deliver hundreds to even thousand times of clamping possibility. Now, PIDC's rapid tooling is already applicable to many industries, from high-tech, shoemaking, hand tools, to precious metal accessories, medical equipments and mold decoration use.



Taipei PLAS 2018 Event / Seminar Program

* Subject to change without notice.

Time	Event/Seminar	Host/Speaker(s)	Organizer(s)	Venue	Remarks
08:30 11:30	Plastic Molding for Long Glass Fiber Application	Tsutomu Nagaoka Ph.D	Queen's Machinery Co., Ltd	Room 503 , Taipei Nangang Exhibition Center, Hall 1	Jason Chang +886-3-3289035 #310
10:00 10:50	Device networking and intelligent management solutions	Wang, Wen-Shin, Manager, Advantech Co., Ltd.			
10:50 11:40	Frequency phase detection technology of mainframe of plastic rubber machine	Shen, Shin-Ying, Engineer, Precision Machinery Research & Development Center			
13:00 13:50	Machinery Cloud Service	Meng, Yi-Heng, Vice Director, Institute for Information Industry			
13:50 14:30	Injection Molding Smart Manufacturing Factory Integration Solution	Wang,Yung-Sheng, Engineer, Precision Machinery Research & Development Center			
14:30 15:10	How AOI and CNN Technology Apply to the Footwear Industry	Chen,Yi-Ji, Ph.D., Footwear & Recreation Technology Research Institute	TAITRA TAMI	Room 402bc, Taipei Nangang Exhibition Center, Hall 1	Rita Chang +886-2-23494666 #682
15:20 16:00	Integrated Industry 4.0 to Cloud Service Manufacturing	Sung, Fa-Jang, General Manager, EMO Management Technologies Inc			
16:00 16:40	Industry 4.0 for Plastic Injection Molding Factory	David Maa, Ph.D., Special Assistant to Chairman, Techmation Co., Ltd.			
16:40 17:20	The CAE Applications in Composite Material Industries	Jiang, Bo-Jang, Manager, CADMEN Taiwan Auto-Design Co			
17:20 18:00	Induction Heating Drive Technology for Molding Machines	Chou,Ming-Ching, Engineer, Precision Machinery Research & Development Center			



Edible Plates Now Served on Your Table



We now live in a new world where almost every day is crowded with news like sea turtles or dolphins being stranded by fishing net, or dead animals with straw or plastic fork stuck in their respiratory or stomach. There are many movements calling upon environmental protection, but ocean trash is definitely one of the worst issues on which we will urgently need to handle. Luckily, the ocean trash has brought much attention to new starting businesses and many of them have been trying to design solutions for delivering a better life for our future.

The LOLIWARE is a new starting business based in New York, and their LOLISTRAW is claimed to be the first edible straw in the world. Now, you don't have to throw away the straw after you finish the drink. "We are offering an alternative option other than dropping the

straw. This creates more fun, and it solves the plastic straw problem" said by LOLIWARE's co-founder, Chelsea Briganti. In fact, back in 2015, LOLIWARE had already created an edible cup made of seaweed, and they even provide different color choices on the cup by adding different natural dye from fruits or vegetables. Likewise, LOLISTRAW is also made of seaweed with different color choices. Even if you prefer not to eat your straw, this edible straw can easily be degraded through natural decomposition process.

On the other side of world, the Indian inventor Narayan Peesapaty also uses natural ingredients like millet, rice, or flour to make them into forks and chopsticks. These fully edible utensils have accumulated over 15 million users in India already. Narayan's next target is to expand to making more tableware including forks, knives, bowls, plates, hoping this can become a new life changing trend to the world.

A Polish farmer named Jerzy Wysocki, whom mixed wheat bran with water and compress it with heat, has created a light-weight but tough wheat bran plate. Now, this idea have been massively produced into up to 15 million different types of tableware and successfully

sold to 12 European and USA markets. Jerzy also expects wheat bran tableware can someday replace the traditional disposable tableware and create a zero trash environment.

In the past ten years, there have been numerous innovations continually been brought to the market, where they all focus there are 5 aspects of technology development. These include being Green to the environment, Recyclable for reuse, Advance in technology, Smart design feature, and Safe for both living beings and the environment. The new innovations will keep bringing new products that may change our life all over in the future. One may say that, "invention is all about solving problems". When ocean trash becomes less and people build stronger sharing economy, then our earth will finally be able to enjoy a healthy future.



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TAIPEI PLAS
Taipei International Plastics & Rubber Industry

Booth No. **J0118**

REVIEW ON TAIPEI PLAS & SHOETECH TAIPEI 2018

Exhibitors



PAILUNG

Pailung is specialized in innovation. We also set up an innovation lab to generate new thoughts on making new knitting machines for future. Exhibiting with ShoeTech Taipei 2018 is definitely a good start, and we also hope more companies from related industries will join to make ShoeTech Taipei a more diverse and abundant show.



FCS

We invited our existing clients to Taipei PLAS not only for visit but also for signing orders at the show. We've received orders already on the first day. FCS has

been in active researching new solutions for smart manufacturing, and our effort is being recognized through winning the excellent prize at the "Research & Innovation Award" with our smart injection molding solution. For Taipei PLAS, we think there could be an option to consider changing to host Taipei PLAS every three year to lure more interests to visit Taipei PLAS. But, we still hope for the best toward Taipei PLAS and wish it maintains and thrives in Taiwan.



YE-I

The ban on one-time plastic products is moving rapidly on its way and government has made official announcement on this ban in supermarkets by 2019. Due to this change, it might affect buyers' decision for new purchases, whereas foreign country and Southeast Asia markets doesn't have as much of this concern. Over the year, Ye-I has been focusing on exporting with continuously bring more new products to the markets on enhancing productivity and efficiency. We hope Taipei PLAS is able to attract more foreign buyers and achieve as even better and bigger procurement platform.



CHIAO FU

Now it's in the midst of transformation to new materials, which is why Chiao Fu has been participating at Taipei PLAS and presenting our environmental friendly compound for agricultural film. There were a lot of inquiries, but it hasn't brought us much leads at the moment since the environmental friendly compounds are still quite pricy. As the transformation has just begun, it still takes much effort and cost on new materials research. However, the domestic market is limited market and Taiwan manufacturers usually focus more on export. Like from our experiences at Chinaplas this year in April, it's still bigger in both the exhibitors and visitors crowd. In contrast, Taipei PLAS still needs more promotion.



Buyers

TURKEY / Tarik Özdemir

Our company is looking for PP and PE raw materials. Even though this is my first visit to Taipei PLAS, we found this show to be rich in machinery exhibits. We expect to see more raw materials exhibitors exhibiting for future Taipei PLAS.

UAE / Hitesh

We supply PE, PP, and PS compound to the middle east with annual turnover around USD 5-700 million. Before, We used to purchase products from China and found not compatible to what we are looking

for as high-quality machines. Now, I'm here for the first time in Taiwan to search for recycling machinery, Even though Taiwan price is higher, but we will still evaluate on machines' quality and the value they can provide us.

ROMANIA / Adrian Georgescu & Maria Desmirean

We have 3 machines made in Taiwan in our factory, and we are here to check on the blown film extrusion machine and bag-making machine for making shopping bags, construction film sheet,

and agricultural film. We've been in touch with 6-7 suppliers at the show already and will gather information for further discussion.

RUSSIA / Svetlana Glotko

I'm here to search for PP and PE pellets supplier. We are trading company in Russia and cooperate with several foreign brands like DAELIM. Now, we wish to widen our product range. Though not many raw material suppliers are exhibiting at Taipei PLAS, we still received information from 5 companies and hope these can be something we can expand on.





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Tel:028-22539826

East Asia embarks on wastefree game plan



全文請見
(QR code)



China has extended the ban on foreign waste to include 24 types of recyclable materials.

Waste disposal will be one of the major challenges for the Asian region in the years to come, says Pöyry in its report.

Asia, home to growing economies, is also home to the world's largest marine litter offenders, according to a 2015 environment report identifying China, Indonesia, the Philippines, Thailand and Vietnam that account for 60% of the total 8 million plastic waste entering the water.

JAPAN: scores in recycling, energy recovery approach

Based on a World Bank (WB) data of worldwide MSW generation, Japan creates

144,466 tonnes/day of MSW, and by 2025, this is projected to increase to 146,982 tonnes/day. Nonetheless, waste management disposal is addressed through various modalities, including recycling, energy recovery, and the like.

CHINA: defeating waste through bans and incineration

From January 2018, the country is not accepting shipments of recyclable waste, which includes 24 types of scrap materials. China has since then rolled out measures to boost its own waste management programme, and local recycling industry.

In a district of Beijing, China's capital, households are given incentives to sort out their trash, in exchange for points to earn prizes such as toiletries and other small household items.

TAIWAN: making a case in recycling and burning waste

On the other hand, incineration is also adopted as a means to get rid of the waste generated. It also says that the rate of proper garbage

disposal has reached 100%, and the waste incineration rate is now 99.23%. Other measures that are nationally implemented and found to be effective include kitchen waste recycling, Trash Per-bag Fee Collection policy, which has reduced the amount of garbage by nearly 67%, and the resource-recycling rate by nearly 48%.

SOUTH KOREA: Korea: charges forward in curbing plastics use and converting landfills

South Korea, coming to terms with the blow of China's waste ban, is intensifying its recycling efforts amid the rising. Commercial retailers have since reduced their use of plastic bags with materials that are degradable and compostable like paper cups and reusable containers instead been offered as packaging. In a latest plastic ban effort, since May this year, Seoul has started eradicating disposable plastic bags. This, as South Korea continues to squash its waste nemesis, its East Asian neighbours are making bold moves to achieve a zero-waste goal.

Apply AOI & CNN onto Making Footwear

By Chen Yi-Ji, Ph.D., Footwear & Recreation Technology Research Institute

Shoemaking is a highly labor-intensive manufacture. Over the years, most of the footwear factories have been moved to low-wage countries. However in recent years, labor forces all over the world have massively decreased and wages have been increasing, which result in less profit and even threatens the factories survival. Therefore, it's crucial for factories to transform to automated and smart production. This transformation has also motivated the shoemaking machinery makers to input with new elements on their original models; the Automated Optic Inspection (AOI) is one of these new elements. Now, this technology is applied to automatic tracking for outsole gluing, automatic size-grading in the lasting machine, and monitoring on all processing stages for excess adhesives, defected sole, and even the shoe sizes.

Given that said, the AOI still have difficult issues in its application. First, its precision still needs to improve. Second, high inspection success rate equals to minimum leakage and overkill, which the two of the numbers may conflict with one another and be hard to achieve. Third, simply enhancing resolution doesn't resolve the issue to increase inspection success rate but results in too much unnecessary cost. To conquer all the above 3 issues, AOI needs to be collaborated with using AI technology. The AI can provide better inspection precision and lower both leakage and overkill for higher inspection success, and it is a more reasonable cost for manufacturers. As the result, the self-learning AI is a great option for improving on the current AOI equipped machines, and this has become gradually more common and applied within the shoemaking industry.

One of the good examples is the Convolutional Neural Network (CNN), which features strong graphic recognition ability and is capable to assist AOI equipment for checking on shoe defects. After AOI system identifies the shoe defect, CNN can further analyze and memorize the numbers of all defects and deliver feedback to the manufacturing end. As the shoe styles are changing rapidly and causing quick shifting of the popular styles on the market, many shoe brands have already put high emphasis on developing more automated and smart manufacture. Taiwan shoemaking machinery manufacturers need to catch up with all the trends to compete in the market. The AOI and AI are only one of the few new trends. Other popular trends include also using more environmentally friendly materials, leaner manufacturing process, and rethinking design with matching to new styles' life cycle.



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Waste Tires Into New Burning Coal?



Every Year Taiwan produces 100-120 thousand tons of waste tires, and the most common disposal method is to remake them into substitute for burning coal. How does this work?

High Heating Value & Energy Utilization Ratio Shines on "Renewable Energy"

"Even though different in percentage, almost every nation has regulations for recycling and reusing waste tires. Taking Japan as example, which also experiences energy shortage, the country transforms up to 80% of their waste tires into auxiliary fuel" shared by Wang Wen-Yu, the Environmental Engineering Professor with

expertise in recycling and energy & greenhouse gas management.

The heating value is the heat released during the combustion process. Compared to coal, the rubber chips shredded from waste tires are able to release 1.2-1.5 times more heating value. This also means that these rubber chips generate less carbon dioxide than coal under the same heat value. Professor Wang even added that, "burning waste tires has a lower rate in generating dioxin".

To further analyze on burning waste tires, let us focus on the three main toxins commonly generated in burning process, which are the nitrogen oxides, sulfur oxide, and dioxin. Waste tires contain only 1/4 of nitrogen and 1/5 of chlorine compared to coal; therefore, burning waste tires definitely generate less nitrogen oxide and dioxin. Even though waste tires may contain more sulfur depending on the types of coal for comparison, the fluidized bed combustions used on burning auxiliary fuel in Taiwan can retain most sulfur in the burner simply by inputting some limestone. Furthermore, Wang pointed out that waste tires also contains less heavy metal like lead, cadmium, chromium, mercury, and arsenic. Waste tires are without doubt the better alternative energy.

Into the Factory and Discover how Waste Tires Becomes A Renewable Energy

In Taiwan, factories like paper making and cogeneration (combined heat and power) are using rubber chips as their main alternative fuel source, and having the fluidized bed combustion is essential. The fluidized bed combustion is a special type burner, where the burning process will create pressurized vapor to rotate the steam turbine and the vapor can also later becomes the heat source for manufacturing use in the factory. The heat released by waste tires is used twice and deliver really high energy utilization ratio at 81%-86%.

Wang, however, shared that there are many different types of tires with different materials buildup, and materials also differ from tire side to tire surface. In order to make the full use of the waste tires, it is also crucial to understand each material in the tires.



PRODUCT

The Most Innovative and the Fastest Electronic Guide Bar Motion Control System Raschel machine: WMH-210GF-3EL

Wei Meng presents the Bale and Wrap Net Raschel Machine (Model: WMH-210GF-3EL), which is the first set of having electronic pattern control system in Taiwan. It is also the fastest Raschel Machine at present as the machine speed can reach up to 600 RPM.

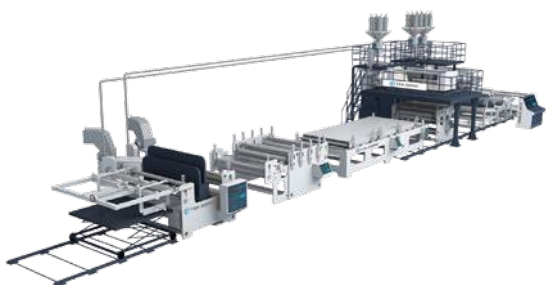
To ensure a precision control under high speed machining, the entire machine is equipped with German high quality electronic control components including the German brand PLC, servo motor, servo drive and servo position cylinder.

After years of developing and testing, Wei Meng has successfully applied their self-developed electronic motion control system to their Knotless Raschel Machine, Agricultural Shading Net Making Machine, and Double Needle Bar Machine. The new type Knotless Raschel Machine has already been sold to European market. By focusing on new innovations, Wei Meng will continue to present the newest and best products to the worldwide.



Air Bubble Hollow Profile Sheet Machine: YSW-FS

Air bubble hollow profile sheet main using is PP and other additivity resin for application on mono or co-ex extrusion. The sheet weight can be set in a range from 250gsm to 3000gsm, thickness range from 2mm above, and width range from 1000mm to 2000mm. Adopt in-line recycle waste material to reuse, in-line laminated with textile, foam and film...etc. and offers flat surface for printing directly. Additionally, YEN SHENG provides accurate tracing cutting system with sheet receiver. The hollow honey-comb structure sheet is extremely rigid and amazingly lightweight; thus, the sheet can be widely applied for False Ceiling, Wall Panel, Door Panel / Partition, wood protector, floor protector, and wall facing board, and packaging, automotive interiors.



Rotary Automatic Injection Molding Machine for Multiple Simultaneous Machining - HC-258B

Horng Chii HC-258B Rotary Automatic Injection Molding Machine can perform multiple actions at the same time. On this model, it requires only one operator per machine, and there's no need to weigh material or consider the production type. As the result, it can save labor cost and preparation time.

The specially designed screw can effectively shorten the curing time to enhance working efficiency. The machine also coordinates the design of mold to accurately control the injected material quantity, which reduces waste and ineffective burr, and it saves cost and machining time. The machine is equipped with auto mold open/close system, auto collect system and quick mold change system to achieve automated production.





TAIPEI PLAS M0319
Aug. 15-19 2018 Booth (4F)



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APPLICABLE MATERIAL: PE, PP, ABS, PS, PLA, EPS, EPP
- 模頭切 DIE-FACE PELLETIZER
- 產量：100KGS/HR. – 1,200KGS/HR.
CAPACITY: 100KGS/HR. – 1,200KGS/HR.



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PRODUCTS: FLAT BAG, PRINTED BAG, EMBOSSED BAG, GARBAGE BAG AND GENERAL PACKAGING BAG

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APPLICABLE MATERIAL: HEAVY PRINTED FILM, WASHED FILM AND CONTAMINATED MATERIALS
- 模頭切 DIE-FACE PELLETIZER
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CAPACITY: 100KGS/HR. – 1,000KGS/HR.



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● 士林觀光夜市 Shilin Night Market

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★ 交通：捷運淡水信義線 - 劍潭站 1 號出口。

Shilin Night Market is the largest night market in Taipei City and a must-see for foreign tourists visiting Taipei. People who come to the night market mainly focus on food and shopping. There are a variety of novelty and fun products and foods.

★ Transportation: Take the MRT Tamsui Xinyi Line - Jiantan Station Exit 1



● 寧夏夜市 Ningxia Night Market

以「千歲宴」打響國際名聲，且獲得眾多美食雜誌和網路爭相報導的寧夏夜市，以臺灣傳統小吃為主，其中以大同區圓環附近令人懷念的古早味，最讓老臺北人津津樂道。

★ 交通：捷運淡水信義線 - 雙連站，在大同區寧夏路（位於南京西路與民生西路間）

Ningxia Night Market has won recognition in numerous food magazine and online reports. The traditional Taiwanese snacks are the main focus of this area. Among them, the old-fashioned taste of the Datong District near the circle and is very popular for the elderly community of Taipei.

★ Transportation: Take the MRT Tamsui Xinyi Line - Shuanglian Station, located in Ningxia Road, Datong District (between Nanjing West Road and Minsheng West Road).



● 景美夜市 The Jingmei Night Market



多達數百家攤販的景美夜市，有 30 多年歷史，也是典型的傳統小吃，價格便宜。為了便於管理，將攤位全部集中在方形區域內。叫賣聲炒熱了市集的氣氛，隨意走走逛逛，就是一個悠閒的夜晚。

★ 交通：搭乘捷運松山新店線至「景美站」，2 號出口，過馬路即可進入景美街。

The Jingmei Night Market, with hundreds of street vendors, has more than 30 years of history and provides traditional and inexpensive Taiwanese snacks. In addition to eating, there are also vendors selling clothing, CDs, hardware department stores, etc., Relax and enjoy the atmosphere of the market and a leisurely night of walking.

★ Transportation: Take the MRT Songshan Xindian Line to Jingmei Station, exit No. 2, cross the road and enter Jingmei Street.

● 遼寧夜市 Liaoning Night Market

遼寧街夜市擁有許多老字號的知名店家，不乏臺式、泰式等各國風味的熱炒料理，成為了許多上班族下班後相約小酌一杯的好去處，讓工作了一整天的壓力與煩悶就在談笑聲中散去。

★ 交通：搭乘松山新店線或文湖線至「南京東路站」，出站後沿復興北路往南直行，右轉朱崙街即可抵達遼寧街。

Liaoning Street Night Market has many famous shops with many famous brands. The customers choose the cooking method and weight. It has become a good place for many office workers to have a drink after work, so that the stress and boredom of working all day is scattered in the laughter.

★ Transportation: Take the MRT Songshan Xindian Line or Wenhua Line to "Nanjing East Road Station". After exiting the station, go straight south along Fuxing North Road and turn right to Zhulun Street to reach Liaoning Street.



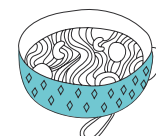
● 饒河街觀光夜市 Raohe Night Market

饒河街觀光夜市是臺北市最早的觀光夜市，規模並不大，攤位非常集中，只要是常來的熟客，很快就可以找到自己想吃的攤位，非常方便。

★ 交通：搭乘捷運松山新店線至松山站，出 1 號出口即可抵達。

Raohe Street Sightseeing Night Market is the earliest sightseeing night market in Taipei. The scale is not large, and the booths are very concentrated. As long as you are a regular customer, you can easily find the booth you want to eat at, which is very convenient.

★ Transportation: Take the MRT Songshan Xindian Line to Songshan Station and exit at Exit 1.



廢輪胎能作為煤炭的替代能源？

文、圖：環保署資源回收管理基金管理會提供 .2018 年 22 期電子報

臺灣每年穩定產出 10~12 萬噸的廢輪胎，最為大宗的回收處理方式，即是將廢輪胎替代「煤炭」利用，為何廢輪胎能替代煤炭利用？聽聽專家的分享。

高熱值、高能源利用率時下夯「再生能源」

「對於廢棄輪胎的再利用途徑，國際間均有一定比例作為能源回收，能源短缺的日本應用於輔助燃料的情形就高達 80%」，專精於資源回收處理、能源管理與溫室氣體管制的朝陽科技大學環境工程與管理系的王文裕教授說。

由於相較於煤的熱值（也就是在燃燒過程中所產生的能量），廢輪胎破碎的膠片，熱值較

同樣質量的煤高上 1.2~1.5 倍，也就是說，在供應相同熱量情形下，廢輪胎所產出的二氧化碳，可比同質量的煤還低，不僅溫室氣體排放量較低，王教授更進一步表示：「廢輪胎燃燒後產生戴奧辛的機率也相對較低。」

進一步剖析輪胎的本質，從主要三項指標—氮氧化物、硫氧化物、戴奧辛來看，廢輪胎的氮僅是煤的 1/4、氯甚至是一般煤的 1/5，因此燃燒後衍生氮氧化物、戴奧辛產生量會較低。廢輪胎的硫含量則視煤種而互有高低；但國內輔助燃料所應用的流體化床鍋爐，可以在燃燒爐內直接投入石灰石吸收硫，因此大幅降低硫氧化物產生量。此外，王教授還提到，對環境

影響程度大的鉛、鎘、鉻、汞、砷等重金屬成份，廢輪胎的含量都比煤還低。也因其相較於煤炭擁有熱值高、被應用於流體化床鍋爐的高能源利用率特質，讓廢棄輪胎成了炙手可熱的「替代能源」。

走入去化現場：廢輪胎如何變成可替代煤炭的再生能源？

教授分享，國內造紙廠、汽電共生廠，使用廢輪胎膠片來作為主要替代能源，「流體化床鍋爐」為重要功臣，「流體化床鍋爐」是一個相當特殊類型的鍋爐，該類型的鍋爐透過燃燒熱能產生高壓蒸氣，推動蒸汽渦輪機發電後，再進一步將蒸氣送至工廠製程提供熱能，也就是一份廢輪胎膠片的能量前後利用兩次。也因為使用「廢輪胎」的能源轉換率非常高，最終可被運用的能源利用率可達 81~86%，成為替代能源的要角。

王教授強調，從機車、汽車到大卡車等各類車輛所使用的不同輪胎，其組成特性互有差異，胎側與胎面的材料組成也都有所不同，能再利用的途徑亦相當多元，如何掌握廢輪胎這些不同部位材料的特性以再生利用，則是我們需要用心掌握的議題跟關鍵。



相較於煤的熱質，廢輪胎的膠片就比同樣質量的煤熱質高上 1.2~1.5 倍

產品報導

臺灣最高轉速的 Raschel Machine: WMH-210GF-3EL

威盟工業(股)公司在這次展出的 Raschel Machine Model:WMH-210GF-3EL 是臺灣第一台具有電子控制花盤的捆綁網機器，機速高達 600RPM 也是臺灣最高轉速的 Raschel Machine。

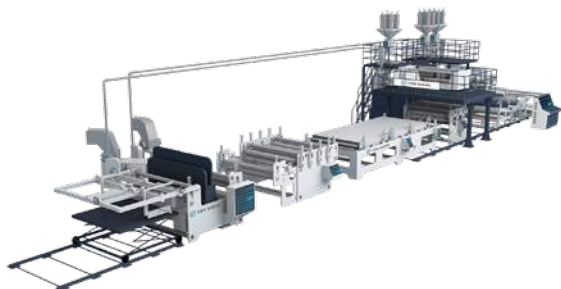
本機全部採用德國電子控制產品配件，包含德國 PLC SERVO MOTOR 及 SERVO DRIVER 以確保精準高速的運轉。經過了這幾年來的不斷研發測試，威盟已成功的將此新的 ELECTRONIC MOTION CONTROL SYSTEM 應用到無結漁網機、農業用遮陽網機及 DOUBLE NEEDLE BAR MACHINE 機種上，其中無結漁網機也成功的銷售到歐洲市場上。本公司將會秉持不斷研發創新的目標上繼續努力，以服務全球客戶。



YSW-FS 氣泡中空板機

氣泡中空板機主要是使用 PP 與其它複合性樹脂應用於單層押出或共擠押出。中空板基重可從 250 克 / 平方米到 3000 克 / 平方米，厚度可以在 2mm 以上，產品寬度介於 1000mm 到 2000mm。搭配線上回收系統將廢料回收利用，也可線上貼合不織布，發泡材料與薄膜...等。平面的氣泡板可以直接印刷。另外，研

勝提供精準的追蹤式切斷系統與收集裝置。中空蜂巢板結構輕巧堅固；因此中空板可以廣泛應用於天花板、牆板、門板、隔板、木頭保護、地板保護、牆壁裝飾板、包裝與汽車內飾板。



HC-258B 旋轉式橡膠射出成型機台

鴻綺機械研發的 HC-258B 旋轉式橡膠射出成型機台，圓盤結構設計，機台可同時進行多項動作，單人操作，節省人力，備料簡單容易，不須秤重或考慮產品外型，螺桿特殊設計，有效縮短硫化時間，提升生產效率，搭配模具之設計射出定量控制，減少廢料產生及無效毛邊，節省成本及工時，搭配周邊設備：自動開關模、自動取料及快速換模系統，讓生產全自動化，達到事半功倍之效。





在臺灣，關於海龜或是鯨豚被各種漁具纏身或是吸管、塑膠叉子等異物卡住氣管，甚至困在廢棄輪胎裡，幾乎已不再是「新聞」了。然而，一次性餐具和塑膠吸管，以及食品外包裝所造成的環境汙染及資源浪費，便成為許多創新公司設計來良益社會的最佳方式，並且許諾人類有更好的未來。

由紐約新創公司 **LOLIWARE** 所設計的 **LOLISTRAW**，號稱是全球第一個可以吃的吸管，喝完飲料的同時就可以把吸管吃掉。「我們並非告訴消費者別使用吸管，而是提供他們另一個更好玩的選項，同時還能解決塑膠吸管的危機」。**LOLIWARE** 共同創辦人 **Chelsea Briganti** 說道。

超級「食」用，把餐具吃下肚

其實 **LOLIWARE** 在 2015 年就推出第一個「可以吃的杯子」，以食用海藻製成，還有多種顏色可以選擇，五顏六色的外觀下是取自不同水果或蔬菜染色而來的。而今 **LOLISTRAW** 同樣也以食用海藻為主，打造繽紛色彩的吸管；使用吸管後，若不想吃進去也沒關係，**LOLISTRAW** 能輕易被分解，不需經過特殊處理，就算此吸管流入海洋，也能夠自然溶解。

印度則有發明家 **Narayan Peesapaty** 用小米、米飯和麵粉等天然食材做成各種湯匙、筷子，讓人用餐完後，可以把餐具一起吃掉。目前印度已經有超過 1 千 5 百萬人開始使用了，他的目標是要擴展到刀叉、碗盤及更多的免洗餐具，無疑是開創一種全新的飲食風潮。

波蘭農夫 **Jerzy Wysocki** 更不遑多讓，他發現麥麩與水溶合並加熱加壓後，會成為輕盈、結實的材質，於是他推出可食用的麥麩餐盤。目前已規模化生產，每年平均可製作 1500 萬件不同樣式

的碗盤組，並成功拓展 12 個歐美國家的通路，他期許未來能用麥麩取代一次性餐具，共創無垃圾環境。

近十年來，國際上的塑膠加工與材料技術在許多應用領域裡一直推陳出新，可以整理出 5 個重要的技術面向，從 **Green--** 綠色環保、**Recycle--** 回收再利用、**Advance--** 精進創新、**Smart--** 智能設計、**Safe--** 安全永續。這些技術發展可以創造出許多高值產品，甚至也會影響我們未來的生活方式與品質。當海洋垃圾變少，陸地資源共享，地球才能永續成長。



AOI與CNN技術如何應用於製鞋產業

製鞋業由於產品製造特性，多半外移至低工資勞動力密集的國家，但近幾年由於勞動人口驟減、工資成本不斷攀升，一再壓縮企業的獲利能力及增加企業經營的困難度。在這樣的環境氛圍下，企業亟需有效且快速的導入自動化、智慧化製造技術來因應。也因而帶動鞋機設備商不斷的嘗試引入新元素來強化設計能量，自動光學檢測（**Automated Optical Inspection : AOI**）便是其中一項應用，目前的應用有大底膠水噴塗的路徑自動生成，結幫成型的尺寸級放（**Automatic size-grading in the Lasting Machine**）和各工段的品質監控，例如：溢膠、鞋底紋路的瑕疵檢測和尺碼是否正確的識別。儘管如此，**AOI** 仍存在著急待克服的瓶頸，例如：**1. 檢出正確率無法**

符合使用者期望 **2. 高檢出正確率 = 近 0 漏檢率（Leakage）+ 近 0 誤殺率（Overkill）**，兩者為衝突 **3. 無止盡提高光學解析度亦無法提高檢出正確率**，導入成本昂貴不切實際。此時更需要加入新的元素克服瓶頸，而結合人工智慧（**Artificial Intelligence : AI**）便成為解決的方案之一，其理由是：**1. 更多的識別與分類能力 2. 期望能兼顧超低漏檢率及超低誤殺率 3. 合理的成本導入**，極大化檢出正確率。因此 **AOI** 結合 **AI** 的技術嘗試已經逐漸在製鞋業中慢慢擴散，其方法是利用現有 **AOI** 設備的檢測能量並導入 **AI** 的自主學習能力，進而強化整體的檢測能量。舉例而言，可以利用卷積神經網路（**Convolutional Neural Network : CNN**）強大的圖像識別與分類能力輔助 **AOI** 進行

鞋品瑕疵檢測與識別，當 **AOI** 判斷為 **NG** 時可透過 **CNN** 進一步分析瑕疵總類，並適時回饋給前段製程，尋找瑕疵發生的可能原因及解決方案。

由於鞋品市場變化快速，消費者的購買習慣丕變，加上品牌商不遺餘力的積極進行自動化和智能化製鞋推廣，國內企業為了爭取顧客訂單，勢必在自動化、智慧化製鞋技術上精進提升，本文僅以 **AOI** 與 **AI** 技術如何應用於製鞋產業稍加簡述，提升製鞋產業的能量是多元的，例如：更環保的材料和更精實的生產技術及生命週期考量的設計都是不可或缺的一環。

文：財團法人鞋類暨運動休閒科技研發中心
陳義吉博士

東亞國家啟動無廢物計劃



全文請見
(QR code)

根據 2015 年環境報告，亞洲是發展中經濟體的增長點，同時也是世界最大的海洋垃圾違法者的所在地。這意味著在未來的幾年，當地的垃圾處理將成為主要挑戰之一。

日本：以再循環，能源回收方式先拔頭籌

根據世界銀行（**WB**）的全球 **MWS** 產生量數據，日本每天製造 14 萬 4 千 466 噸 **MWS**；到 2025 年，預計此數字將增加到每天 14 萬 6 千 982 噸。儘管如此，該國嘗試通過多種形式來解決廢物管理處置問題，包括回收利用、能源回收等。

中國：通過禁止和焚燒解決垃圾問題

從 2018 年 1 月起，該國不接受可回收廢物的運輸，其中包括 24 種廢料。隨後，中國推出多項措施，以推動本身的廢物管理計劃和當地的回收行業。在中國北京，家庭進行垃圾分類可獲得分數獎勵，以

換取洗漱用品和其他小型家庭用品等獎品。

臺灣：回收和燃燒廢物的例子

臺灣環境保護署表示，正確的垃圾處理率已經達到 100%，垃圾焚燒率則達 99.23%。在臺灣境內實施並被發現有效的其他措施還包括廚餘垃圾回收、垃圾收集袋收費政策，垃圾量減少將近 67%，資源回收率減少將近 48%。

韓國：遏制使用塑料及轉換垃圾掩埋場

受到中國廢物禁令的影響，韓國正加大回收力度，此後，商業零售商減少提供塑料袋作為包裝，改用可降解和可堆肥的材料，如紙杯和可重複使用的容器。2018 年 5 月份開始，首爾已經開始杜絕一次性塑料袋。隨著韓國繼續對打擊廢物增加力度，其東亞鄰國正積極地採取行動，以實現零廢物目標。

資料來源：PRA 2018 June-July/Recycling



Pöyry 在其報告中表示，廢物處理將是未來幾年亞洲地區面臨的主要挑戰之一。



中國已將外國廢物禁令擴大到包括 24 種可回收材料。

對於Taipei PLAS & ShoeTech Taipei 回饋

廠商

佰龍

佰龍不僅提供完整的研發服務，更成立佰龍創新實驗室，以嶄新方法打造與眾不同的鞋面針織機。此次佰龍在臺灣以鞋機廠商身分參加台北國際製鞋機械展 (ShoeTech Taipei 2018)，是個相當好的開端，也期待未來鞋機展的周邊廠商也都能一起加入，更提昇展覽豐富度。



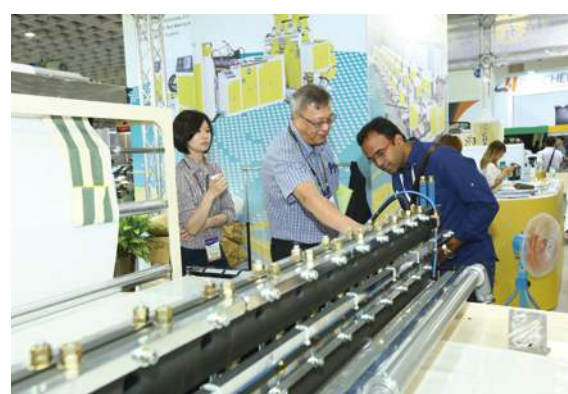
喬福

順應永續發展議題，喬福此屆展出環保材料的農地膜，現場詢問度高。喬福提及替代原料尚在起步階段，且開發與研究較耗時，雖然目前政府的禁塑令對喬福有助益，還是會以外銷為主，喬福也提及今年 4 月的上海展從人潮、參展商都相當龐大，期盼下屆展覽規模更甚以往。



一億

今年政府開始推廣實施減少使用一次性塑膠產品，計畫於明年正式禁用，因此國內市場可能會影響購買意願，而國外或東南亞市場較無此問題。多年來塑橡膠產業以外銷居多，一億的新產品持續推出，不斷改善生產流程與效率，期盼未來國外買主人數能創新高，讓臺灣主場的 Taipei PLAS 能更優質。



富強鑫

開展前富強鑫就開始醞釀國外訂單，邀請國外客戶來臺看展，成功於展覽首日簽下訂單。FCS 提到從第一屆開始參展以來，市場瞬息萬變，因應工業 4.0，富強鑫不斷提升，於今年拿下「研究發展創新產品」最大特優獎，開發射出機工業 4.0 解決方案，希望此展未來能三年辦一次，並錯開國外大展，藉此提高買主來臺參觀洽談意願，也期待臺灣的主場會越來越鴻展。

買主

土耳其 / Tarik Özdemir

我此趟目的是尋找 PP 與 PE 原材料。這是我第一次到 Taipei PLAS，看到很多機械廠商，希望未來 Taipei PLAS 能有更多原料廠商。

阿拉伯聯合大公國 / Hitesh

我司主要提供 PE、PP、PS 原料到中東地區，每年產值約 5-700 萬美元。以前我們買過中國製機械，但是品質不符要求，所以我們第一次來臺灣參觀鞋機展就是希望找到品質好的製鞋機械，雖然目前談的價格相對比較高，但我們還是會依品質與產品能提供的附加價值下去衡量。

羅馬尼亞 / Adrian Georgescu & Maria Desmirean

之前我們已經採購過 3 台臺灣製的機械，現在我們要找吹膜機與製袋機，用來製作購物袋、建築用膜與農地用膜，並供應到歐洲市場，目前已接洽 6-7 家臺灣供應商，我們規劃後續再討論相關細節。

俄羅斯 / Svetlana Glotko

我想要找 PP、PE 原料供應到俄羅斯市場，拓展我們的產品廣度。我們是俄羅斯的貿易商且已經代理一些國際品牌如 DAELIM 等，雖然這屆沒有很多原料供應商，我們已找了 5 家供應商，會研究未來合作的可能性。



高分子加工新形態

3D列印智慧製造新趨勢及塑膠產品快速開發試製

文、圖：財團法人塑膠工業技術發展中心

不同於市售高價的 3D 列印設備，不因材料硬度較高而侷限開發的產品別，財團法人塑膠工業技術發展中心研發團隊整合機聯網系統模組與新式列印設備，並研發彈性材料 TPEE、SEBS 等高分子積層列印線材，拓展產品開發範圍，提供產業界智慧製造選擇新方案。

單型態多機聯網系統模組，透過單一系統操作介面，控制分屬異地的列印設備，將不同列印部件，同時派工至不同的列印設備、同時列印。此外，透過研發高分子積層列印彈性線材，具備可

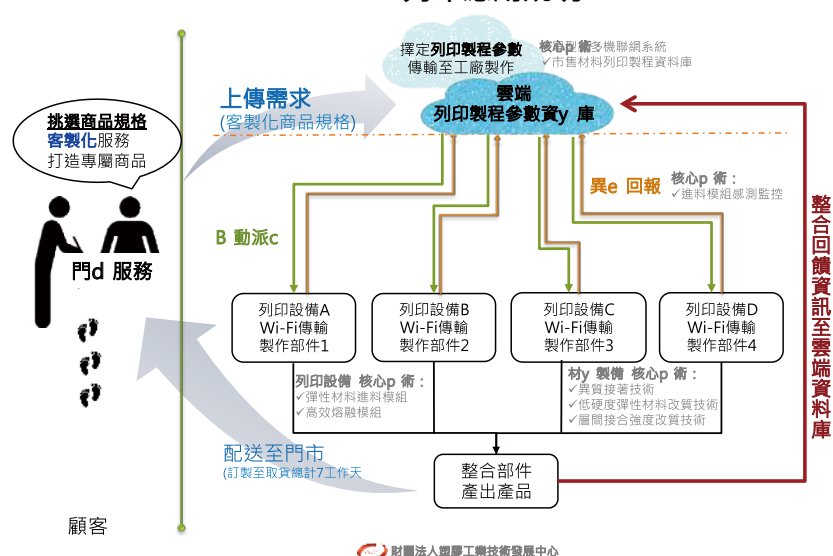
與異質材料緊密接著、列印成品的層間強度強化等特性，搭配擴充列印設備功能，使使彈性線材穩定出料、具 Wi-Fi 連網及監控功能，加快列印速度與成品品質。

未來研發階段展開將串聯不同類型的設備，經鏈結廠區的不同設備，發展「異型態多機聯網系統模組」，並強化列印設備，使列印速度更快，帶動產業朝智慧製造應用發展。

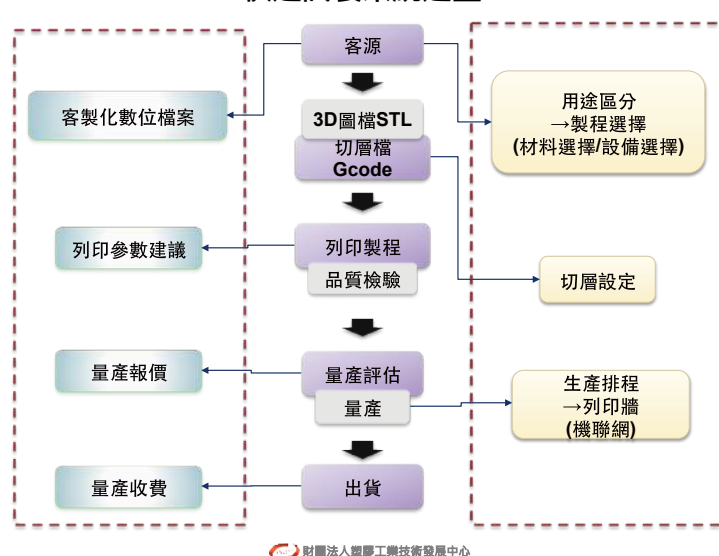
而塑膠產品快速開發試製技術主要是結合 3D 列印的快速試製 (Rapid Prototype, RP) 與快速

模具技術 (Rapid Toolings, RT) 開發，達到快速、低風險成本及客製化之特點做產品的先期試樣以及量產評估。此技術相對於傳統模具製造之最大優點在於客製化商品開模製程上，可依各家開發的產品不同而選擇不同樹脂材料特性，其所製做的模具可達數十至數百模次，甚至是上千模次的製樣量，滿足業者小批量生產的需求。目前透過塑膠中心的快速開發試製技術可達成客戶需求的應用領域有 3C 產業、鞋業、手工業、貴重金屬飾件、醫療輔助器材、以及裝飾模應用市場。

3D列印應用說明



快速試製系統建置



2018年 台北國際塑橡膠工業展 研討會 / 活動日程表

如有修正，以現場實際狀況為準，不另通知。

8/18
(Sat.)

時間	活動內容／講題	主持人／主講人	主辦單位	地點	備註
08:30 11:30	塑膠成形之長纖維技術運用	長岡猛 教授 (博士)	昆信機械工業股份有限公司	台北南港展覽館 1 館 503 會議室	張孟修先生 +886-3-3289035 #310
10:00 10:50	設備聯網與智能管理解決方案	研華股份有限公司 王玫心 經理			
10:50 11:40	塑橡膠機台加熱主機之頻率相位偵測技術	財團法人精密機械研究發展中心 沈信穎 工程師			
13:00 13:50	機械雲服務	財團法人資訊工業策進會 蒙以亨 副所長			
13:50 14:30	射出成型智慧製造工廠整合方案	財團法人精密機械研究發展中心 王勇勝 工程師			
14:30 15:10	AOI 與 CNN 技術如何應用於製鞋產業	財團法人鞋類暨運動休閒科技研發中心 陳義吉 博士	外貿協會 機械公會	台北南港展覽館 1 館 402bc 會議室	張家蓁小姐 +886-2-23494666 #682
15:20 16:00	整合工業 4.0 邁向雲端製造服務化	益模管理技術股份有限公司 宋發章 總經理			
16:00 16:40	射出成型工廠工業 4.0 解決方案	弘訊科技股份有限公司 馬仁宏 博士 / 董事長特助			
16:40 17:20	複合材料製程 CAE 模擬案例分享 - 雙螺桿材料混練分析、含纖維加勁效應的熱壓成形分析、 塗佈製程分析、複合材料結構強度分析 與熱成後殘餘應力預測	虎門科技股份有限公司 江柏璋 技術經理			
17:20 18:00	應用於成型機械之感應加熱驅動技術	財團法人精密機械研究發展中心 周明慶 工程師			



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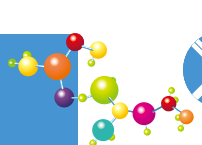
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展覽快訊

累積參觀人數 (國內+ 國外總計)

12,639

第4&5日



塑造未來 - 共同推出產業升級

外貿協會 (TAITRA) 與機械公會 (TAMI) 共同主辦的第 16 屆「台北國際塑橡膠工業展 (Taipei PLAS)」及首屆「台北國際製鞋機械展 (ShoeTech Taipei)」即將進入尾聲，展覽期間展示塑橡膠產業的最新發展趨勢；而「台北國際製鞋機械展」來訪買主人數成果豐碩，其中包含 Nike、UA、豐泰與寶成等品牌商與鞋廠。因應製鞋業快速多變且高度客製化的市場趨勢，展示最新自動化、智慧化機械與整廠規劃方案。

第一日舉行的採購洽談會，共計 90 場，提供買主與廠商快速媒合的平台；展覽期間舉辦 30 場研討會，呈現 Taipei PLAS 的豐碩成果。臺灣塑橡膠機械產業發展迄今已有 50 餘年，長期深受國內外買主的重視及喜愛，且因業者積極投入研發並積極拓銷海內外市場，成為全球第六大塑橡膠機械生產國，僅次於德國、日本、義大利、中國大陸等國，在國際市場扮演舉足輕重的角色。



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