



Anderson COMPASS

2020



PROGRESSING

智慧化進階

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根據心理學家研究，若一個人的心態是屬於較封閉的人 (Fixed mindset)，經常會想在既有的框架中“證明自己”的傾向；若是有成長心態的人 (growth mindset)，通常會以學習的心態每日提升自己、精進自己，而不是在證明自己有多棒！在這數位化時代中，IoT、5G、AI、block chain、big data、cloud computing 這些技術，使得許多科幻片中的技術都變為可能，近 5 年來這些技術的成熟與進步使得這社會變得更快、更複雜、也更模糊，如何在這十倍數變化的時代中，掌握先機，我們每位恩德的員工都要有 growth mindset，不用證明自己、但你非要天天進步不可，才能提早一步為我們客戶預做規劃、解決痛點，比客戶更了解客戶，真正做到以客為尊，這也是我們恩德所研發的設備都備受客戶肯定的原因！

黃逸嫻 總經理

Don't prove yourself, just improve yourself !

According to psychological research, persons with fixed mindset tend to "prove themselves" inside their inherent frames of mind; alternatively, persons with growth mindset would usually level up and improve themselves daily with a learning attitude, rather than prove how excellent they are. With the emergence of the technologies such as IoT, 5G, AI, Block-chain, Big Data, and Cloud Computing in this digital age, many technologies depicted in science fiction films have been rendered possible. The maturity and progress of those technologies in the past five years have made our society become fast-changing, more complex, and more ambiguous. How to grasp opportunities ahead of others in today's fast-paced times has become a significant issue that requires members of Anderson to cultivate their growth mindsets. You don't have to prove yourself, but instead make you own progress every day, so as to plan ahead of time for our customers, solve their pain points, and understand them better than they do in an authentically customer-oriented manner, which explains why the equipment developed by Anderson is highly praised by our customers!

general manager Daphne Huang

複合材料 加工應用概覽

Processing and Application Overview of Composite Materials Foreword

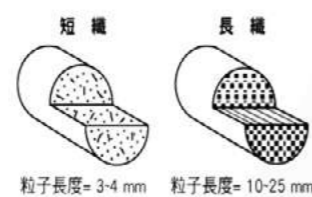
©李 明哲 Tommy Lee

由於環保節能意識在各個領域不斷提高，如何使用更輕的材料但卻能達成原本或更強的功能是各種產品生產者追求的，複合材料因具有質輕、密度低、剛性好和強度高的優良特性，所以已經在不同領域成為大家想使用的先進材料，也已在許多場合取代金屬材料而獲得廣泛的應用。目前尤其在汽車產業、交通運輸業、船舶、航太業、運動產業更是蓬勃發展。而如何有效且快速的加工複合材料亦是許多人關注的重點，恩德科技身為銑削設備的供應者，也在此提出我們的方案。

複合材料簡介

首先進入加工主題前，先快速瀏覽一下什麼是複合材料？複合材料直觀的解釋，是由兩種或兩種以上的材料所構成，構成的方式為基材 (matrix) 及補強材 (reinforcements)。其中基材是連續的材質，補強材為材料的強度的主要來源，兩者組成之後，成為一種不同於原先材料，呈現另一種新特質的材料。但由於複合材料範圍廣泛，所以下述先聚焦在纖維型式的複合材料。

纖維複合材料基本的組成是高分子基材及纖維補強材。纖維是決定最終複合材料機械性質的主要因素，用以承受主要負載。高分子基材一般分為熱塑性樹脂及熱固性樹脂兩大類。



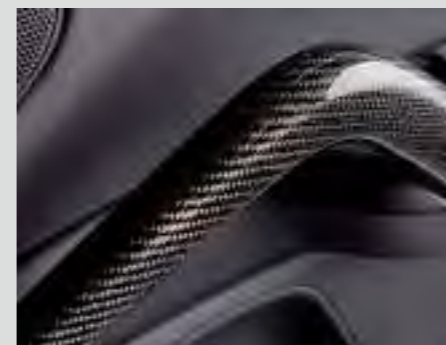
纖維則有不同的材料及型式，常用的有玻璃纖維、碳纖維、克維拉纖維等，型式上常用的有短纖維、長纖維、纖維編織物等。在航太工業的應用上，通常以連續長纖維為主，以達成高材料強度的要求。尤其碳纖維複合材料的應用更是在各種領域快速展開。

纖維複合材料加工難處

由於纖維複合材料具有硬度高、強度大、導熱性差的特質，屬於難加工材料。與金屬材料加工不同，纖維複合材料中的增強纖維是切削過程中的主要磨損要素，常會導致製品出現纖維拔出、內部脫粘、分層、毛邊等缺點，另外加工時所產生的切削粉塵亦會對身體健康產生危害。由於補強材如碳纖維、玻璃纖維等均屬硬脆材料，不易加工且對工具的磨損嚴重，也使加工成本增高，所以這些均是加工必須重視的重點。



As the environmental protection and energy conservation awareness is continuously enhanced in various fields, how to use lighter materials to achieve original or stronger functions is pursued by various product manufacturers. Due to its excellent characteristics, such as lightweight, low density, good rigidity and high strength, the composite material has become the advanced materials that everyone wants to use in different fields, and has been widely used in many fields in place of metal materials. At present, such application is significantly booming in automobile, transportation, ship, aerospace and sports industries. How to effectively and quickly process the composite material is also the focus of many people. As Anderson Industrial Corp. is a supplier of milling equipment, we will propose our solutions below.



Introduction to Composite Materials

Before talking about the processing theme, let's take a quick look at what a composite material is. Intuitively, the composite material is made from two or more kinds of materials, and is composed of matrix and reinforcements. The matrix is a continuous material, and the reinforcing material is the main source of the strength of the material. After the two components are combined, the formed material is different from the original ones, and shows new characteristics. However, due to the wide range of composite materials, we focus on fiber-type composite materials below.

The basic composition of fiber composite materials is the polymer matrix and the reinforced fiber. The fiber is the primary factor determining the mechanical properties of the final composite, and is used to bear the main load. The polymer matrix is generally classified into two categories: thermoplastic resins and thermosetting resins. The fibers are available in different materials and types. Glass fibers, carbon fibers, Kevlar fibers, etc. are commonly used. As for the types, the short and long fibers and woven fabrics are commonly used. For the application in aerospace industry, continuous long fibers are usually used to achieve the high material strength requirements. In particular, the application of carbon fiber composite materials is rapidly expanding in various fields.

Difficulties in Processing Fiber Composite Materials

The fiber composite materials are difficult to process because of their high hardness, high strength and poor thermal conductivity. Unlike the processing of metal materials, the reinforced fiber in the fiber composite material is the main wear factor in the cutting process, which often leads to defects such as fiber pull-out, internal de-bonding, delamination, and burrs. In addition, the cutting dust generated during processing is also harmful to your health. Since the reinforcements such as carbon fiber and glass fiber are hard and brittle materials, which are difficult to process and seriously wear the tools, this also increases the processing cost, and these are the key points that must be paid attention to in processing.

設備要點

恩德科技針對上述複合材料加工需求提供從各面向的技術解決方案如下。

主軸部分

由於傳統的內藏高速主軸只能使用於高轉速的場合，低轉速扭力不足。而恩德所開發的向量式永磁主軸，從低轉速至高轉速均能提供有效的切削扭力可以滿足不同加工應用。

刀具超音波輔助加工

超音波輔助加工是在傳統加工中，對刀具或工件加超音波震動，以輔助加工，該技術引入可以使切削力降低，加工面品質提高，並減少裂痕產生；同時降低刀具與工件的摩擦力，降低切削熱，減少刀具磨損，延長刀具壽命。恩德引進超音波技術期待能幫助客戶解決更多加工上面臨的挑戰。

Essentials of Equipment

Anderson Industrial Corp. offers the following technical solutions for the above composite processing demands.

Spindle

The conventional built-in high-speed spindle can only be used in high-speed applications; the low-speed torque is insufficient. However, the vector permanent magnet spindle developed by Anderson can provide effective cutting torque from low speed to high speed to meet the requirements of different processing applications.



HSK63F Spindle	
Maximum Speed	24,000rpm
Motor Type	PM
Power(S1)	20kw
Torque Nm(S1)	8Nm
Tool Interface	HSK-63F
Bearing Lubrication	Grease
Spindle Cooling	Liquid



Ultrasonic assisted machining for tools

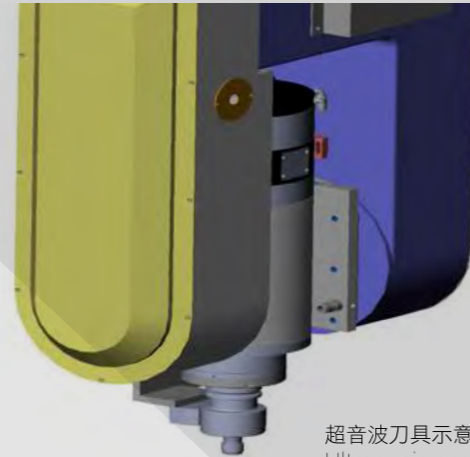
Ultrasonic assisted machining is the process of applying ultrasonic vibration to the tool or workpiece in the traditional machining process to assist the machining. The introduction of this technology can reduce the cutting force, improve the quality of the machined surface, and reduce the occurrence of cracks; at the same time, it can reduce the friction between the tool and the workpiece, reduce the cutting heat, reduce tool wear and extend the service life of tool. Anderson has introduced the ultrasonic technology to help customers solve more processing challenges.

全機密閉系統

纖維複合材料加工時會產生粉塵，此粉塵對人體有傷害性，所以如何把粉塵控制在一個封閉的空間，盡量不要讓其飄逸到工作空間，是一個很重要的議題，恩德的機台設計提供一個密閉的空間並與集塵系統結合，提供操作者更多的保護。

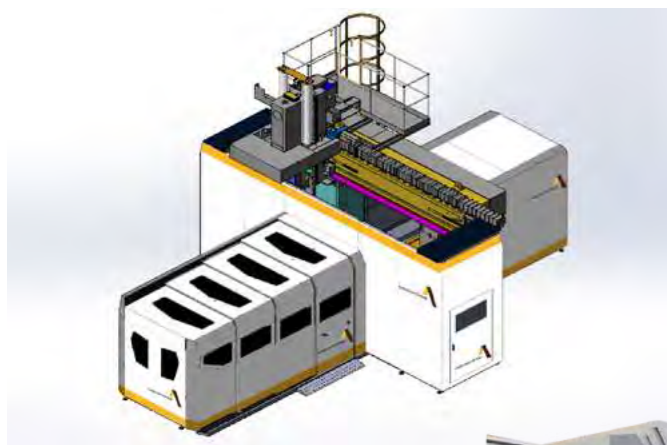
客製化設計

針對加工件大小及加工件特性，恩德可提供不同的機械型式，並可依客戶的不同的加工需求，進行不同程度的機台客製，以求符合客戶的想法。



超音波刀具示意
Ultrasonic assisted
machining for tools

MAXXIS series Moving table type
動檯面式：MAXXIS 系列



恩德科技長期在數值控制機械領域耕耘，自主研發、設計、製造 CNC 精密加工機械，在機台結構、電控控制、軟體開發和核心加工主軸均是自有技術。面對工業 4.0 的世界，設備需朝智慧化發展，在未來恩德將繼續整合集團內外資源，以期提供客戶在效率、服務與品質領先群倫的產品。

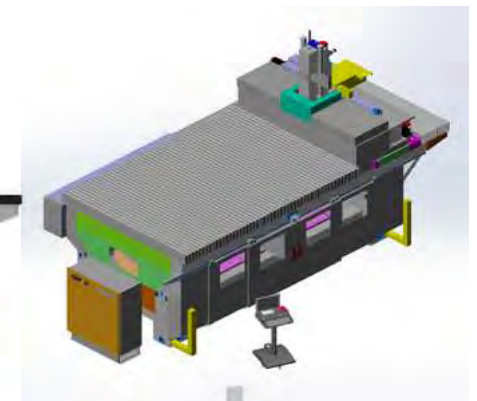
Fully-enclosed system

During the processing of the fiber composite material, it will generate dust which is harmful to the human body. Therefore, how to control the dust in a closed space and try not to let it float into the working space is an important issue. Anderson's machine design provides an enclosed space which is combined with the dust collection system to provide more protection for the operators.

Customized design

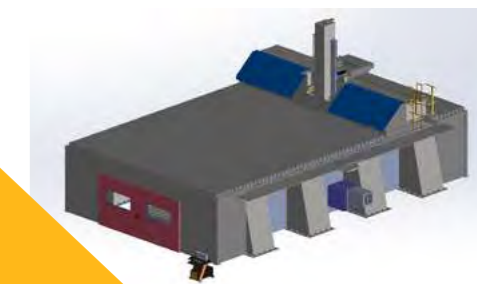
With regards to the size and characteristics of the workpiece, Anderson can provide different machine types, and can also carry out different levels of customization according to the customers' different processing needs, so as to meet the customers' ideas.

Anderson Industrial Corp. has long been engaged in the field of CNC machinery, and has independently researched & developed, designed and manufactured CNC precision processing machinery. The machine structure, electronic control, software development and core machining spindle we adopt are our own technologies. Facing the era of Industry 4.0, the equipment needs to develop towards intelligentization. In the future, Anderson will continue to integrate the resources inside and outside the Corporation, so as to provide our customers with the products leading in efficiency, service and quality.



ASTRIX series
Moving column type
(small-sized workpiece):
動柱式（小工件）：

MASS series
Moving column type (big
sized workpiece):
動柱式（大工件）：



銑削流程的 完全控制法

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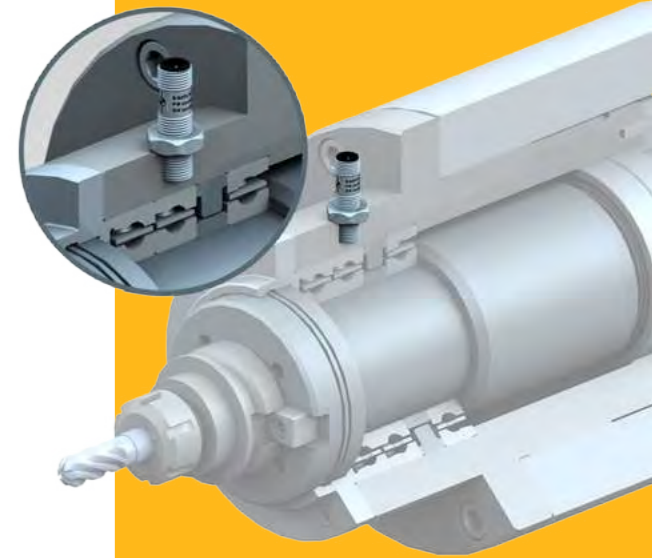
This is how we have full control of the milling process

Configurable system for continuous monitoring and protection of spindles and machine tools

Spindle is one of the most critical elements of CNC machines like ours. The woodworking depends mainly on the performance of this unit, and the full control of vibration and temperature of its components, primarily the bearings, is key for a reliable machine. B-Safe sensor is the revolutionary idea for spindle monitoring. It reduces machine downtimes, controls the warranty calls, and increases safety. Main features include:

- Collision detection → E-Stop in 0.001s
- Machining control → Continuous monitoring at 2,000Hz
- Black box → Vibration and temperature memorizing up to 4 years
- Predictive maintenance → Spindle residual-lifetime monitoring in real-time
- Easy to integrate → small sensor Ø12mm, length 32mm

B-Safe sensor is not a simple sensor but a microcomputer. In fact, besides the sensitive elements (vibration, direction, and temperature), the small housing includes a CPU and a memory. In this way, it can work independently as a stand-alone system, no matter if the machine computer is not operating or if the power grid is down (5-day back-up battery integrated). The sensor is installed on the housing of our spindles so that it can detect real vibration and temperature while the machine is operating. These data are sampled continuously, and based on specific algorithms, it gives visual aids and alerts to the machine operator as well as keeps all the events in the embedded memory. It is also able to communicate directly with the CNC, including stopping the machine in 0.001s in case of any anomalies (i.e., crashes), or to dialogue to a remote laptop via the internet.



針對主軸與機台的新智能監控系統

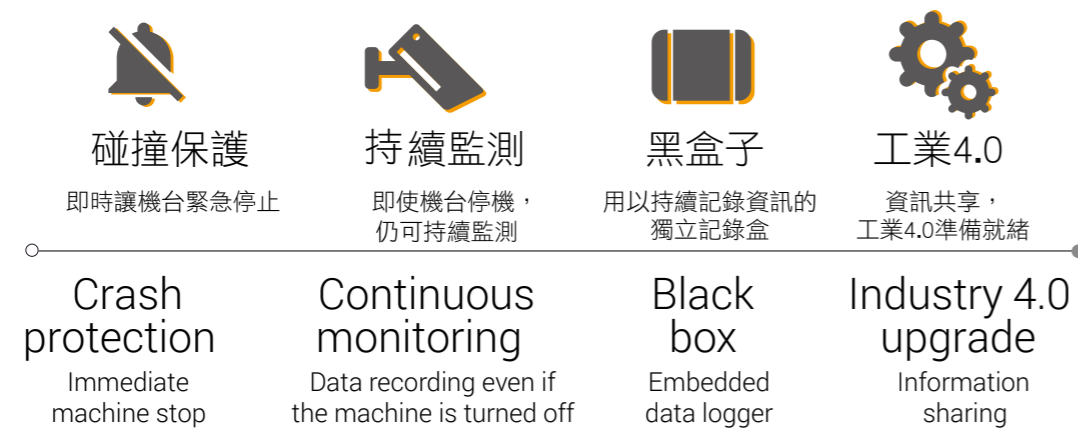
與恩德類似的 CNC 機械中最重要的元件就是主軸。木工機全仰賴此裝置的性能，而對組件（主要是軸承）振動和溫度的完全控制則關係到機器的可靠度。B-Safe 感測器提供主軸監控上的革命性概念，不僅減少了機器的停機時間、降低服務維修次數而且還提高了安全性。B-Safe 感測器主要功能包括：

- 碰撞偵測→ E-Stop 只需 0.001 秒
- 機械加工控制 →以 2,000Hz 連續監控
- 黑盒子→可儲存振動和溫度記錄長達 4 年
- 預測性維護→主軸殘餘壽命即時監控
- 易於整合→小型感測器直徑與長度分別僅有 12 公釐與 32 公釐

B-Safe 不僅只是感測器，還具備微電腦功能。事實上，除了靈敏元件外（振動、方向和溫度），小機殼內配備有 CPU 和記憶體。如此一來，無論是在機器電腦並未運轉或是停電時（內建 5 天備援電池），都能作為單機系統獨立工作。感測器裝在機器主軸的機殼上，所以可偵測出機器運轉時真正的振動和溫度。這些連續取樣並根據特定演算而來的資料，為機器操作人員提供視覺輔助和警示，並能將所有事件保存在嵌入式記憶體內。此外，還能直接與 CNC 通訊，包括異常狀況（例如當機）時，能在 0.001 秒內停止，或經由網際網路與遠端筆記型電腦對話。

B-Safe 可提供透過主軸的振動與溫度資訊，偵測並監控主軸與機台狀態分析，是為一智能監控新思維產品。其小型化體積設計，有助於直接安裝於主軸上，確保可提供即時監控運行異常情況，進一步更能預估保養、故障時機，保護您的機台，減少停機時間。

B-Safe System was invented to expand spindles and machine tools diagnostics according to vibration and temperature analysis. The miniaturised system can be installed directly on your spindle guaranteeing a real-time monitoring, as well as reducing the machine downtimes by predicting malfunctions.



介面和跨平台軟體提供了能在任何地方、隨時隨地全面掌握機台資訊的能力。其適用於工業電腦、筆記型電腦、平板電腦與智慧型手機。

The always-connected interface and the multi-platform software, allow having the full control anywhere thus obtaining the maximum results from your machine.

Your safety solution



HMI B-Safe HMI 介面的開發，旨在確保簡單與直觀，以便在安裝時能插即用，此系統提供了多項傳感器交互混和分析能力，以促使對機台監控更全面。

這款獨特的系統是由義大利 Balance Systems 公司所開發。採用現今奈米科技以及主軸振動大數據。Balance Systems 自 1975 年來即專營工具機，並從其對旋轉組件振動的經驗，為研磨 OEM 廠商提供包括自動主軸平衡在內的流程控制系統。

如需了解有關 B-Safe 感測器的其他資訊，請參閱

<http://b-safesensor.balancesystems.com/>

B-Safe HMI was developed to guarantee simplicity and intuitiveness in order to get all the information at a glance. The system allows interaction with multiple sensors at the same time.

This is a one-of-a-kind system, invented by the Italian firm Balance Systems. They used the nanotechnologies available today and their big data on the vibration of spindles. Balance Systems operates in the machine tools industry since 1975, providing to grinding OEMs the process-control-systems including the automatic spindle balancing - from which their experience in the vibration of rotating components.

To find out more about the B-Safe sensor, visit the website

<http://b-safesensor.balancesystems.com/>



成型機感測數值建立 與 IoT 控制訊號應用

Molding Machine Sensing Data Building Up and IoT Control Signal Application

© 蔡政龍 Cheng-Lung Tsai

當市場颯起工業 4.0 旋風時，總格精密已經在 2018 年投入設備資料鏈收集與後端資料處理的相關研發人力。總格精密從接單、設計、打樣、生產、組裝、測試都一手包辦，也因這項優勢在設計與打樣可靈活調整出符合市場需求的設備。由研發技術處與德國 CNC 控制大廠技術合作，經由網路進行遠端監控設備狀態與遠端控制等相關技術；遠端收集回來的加工訊息或機台現有狀態，可提供用戶端後台數據管理以利提升生產步調與製成的效率。

When the craze of Industry started to become widespread in the market, SOGOTEC Precision Co., Ltd. has invested in teaming up the R/D manpower relevant to the data chain acquisition of equipment and its back-end data processing since 2018. For every business case, SOGOTEC Precision controls exclusively every key steps all the way from order, design, sample making, production, assembly down to testing, by which the superiority in design and sample making is established to flexibly provide the equipment that meets the market demand. Our technology related to remote monitoring equipment status and remote control technology through network comes from the achievements of the technological cooperation between our R/D technology department and a major German CNC controller corporation; the machining information collected from the remote end or the existing status of the machine can provide back-end data management for the client to improve the production steps and process efficiency.



圖一 設備連接 [2,3]
Figure 1 Equipment connection [2,3]



圖二 物聯網模組
Figure 2 IoT Module

1. 傳輸協定

IoT (Internet of Things) 物聯網的核心價值在於整合所有資訊聯網並運用其資料提升效率或是有價值的參考依據。

因工業使用上的環境都較為嚴苛故以 MQTT 協議作為資料傳輸方案，而 MQTT[1] 是由 IBM 所開發的即時通訊協定，可在低帶寬或不可靠網路狀態下進行有效的傳輸。

將感測器處理後的資料與控制訊號透過 MQTT 通訊方式傳送至主機端 (Broker)，由主機端針對用戶端 (Client) 提出的需求來提供相對應的訂閱資訊，可達到多對多的資料傳輸方式如圖一 設備連接。

MQTT 協定在多數的平台都可支援應用，如手機、電腦、雲端、物聯網模組 (圖二 物聯網模組) 等在後續的擴充可直接做資料的交換與溝通。

1. Transfer Protocol

The core value of IoT (Internet of Things) lies in the integration of all information networking and the use of their data to improve efficiency or serve as valuable reference.

MQTT protocol is adopted as the data transmission scheme due to the often harsh environment of industrial use. MQTT[1] is an instant communication protocol developed by IBM, which can carry out effective transmission in low bandwidth or even unreliable network conditions.

The processed sensing data and the control signals are transmitted to the broker through MQTT communication protocol, and the broker provides corresponding subscription information according to the clients' request, wherein the many-to-many data transmission mode can be achieved as shown in Figure 1.

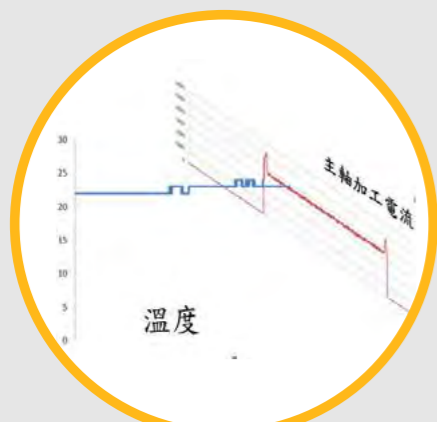
MQTT protocol can support applications in most platforms such as mobile phone, computer, cloud, Internet of things module (Figure 2 Internet of things module) subsequently expanded for direct data exchange and communication.



圖三 負壓感測器
Figure 3 Negative Pressure Sensor



圖四 遠端監控介面
Figure 4 Remote monitoring interface



圖六 監控數值
Figure 6 The monitored values

2 感測器數值

資料數值來源是透過感測器讀取相對應訊號，因市售的產品多為廠家特規模式需綁定相對應模組才能有效溝通，總格精密身為設備製造廠在因應市場趨勢由設備資料數據收集延伸到感測器數值收集；感測器在選用上是一門學問，需要經過功能測試、功能驗證、數值校正都符合需求才可在設備上進行測試，感測器與設備合併測試過程中也可能產生新的問題，在多方的組合下找出符合功能且實用的感測器。

感測器的功能驗證完成後並確認數值符合需求，再透過網路方式將數值資料傳送至主機端派送給訂閱用戶端，感測器能輸出的加工設備訊息如負壓數值（圖三 負壓感測器）、正壓數值、溫度狀況、電流值、電壓值等數值。

傳送出來的數值資料都是依照相對應功能的演算法處理，可再透過經驗法則判斷式轉換成可閱讀模式，例如壓力目前是否符合正常值、溫度有無異常溫升、目前加工的消耗功率及電壓值是否為設定的工作電壓。

3. 控制訊息

以前 CNC 控制器訊息可以提供預計工作時間、當前加工刀具、主軸控制轉速等資訊，相當多的加工訊息或資料都侷限在單一設備運行無法分享相關訊息。CNC 控制器廠也因應市場趨勢推出網路連結各別控制器來實現資訊分享的相關應用如圖四 遠端監控介面。

圖形化的介面操作是目前市場主流的趨勢，而自由化的編排方式可依照用戶端的實際廠內配置做調整，直覺式的編排方式可輕易地同時掌握廠內多台設備狀態如圖五 多台設備監控。

4. 整合新應用

因雲端大數據的快速發展透過與 CNC 控制器廠緊密合作，在感測器與控制器資料整合可更快速準確。

感測器直接獲得主軸當前的電流並了解目前控制端的轉速是否相符、加工中的電流值是否為正常加工狀態（圖六 監控數值）、加工中的溫升狀態是否為該加工正常區間等資訊。

當多個資料與感測器碰撞在一起產生下一個結果或資訊，再透過經驗法則給予相對應處理方案。提前排除可能的錯誤事件與提升製造過程中的順暢，生產中所產生的數據與資料經由雲端主機的資料庫儲存亦可提供用戶端有效的利用。

- 參考資料 (Reference)

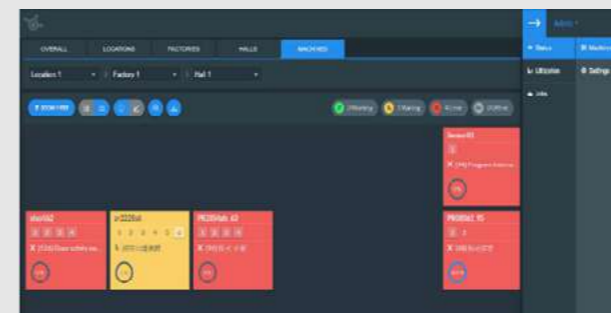
1. MQTT <http://mqtt.org/>
2. Sogotec Precision Co., Ltd. PCB Routing Machine.
3. SIEB & MEYER SM LineManager 4.0

2. Sensing Data

The data source come from the sensors' reading corresponding signals. Since most sensor products sold in the market are with different special specifications of their own, they are required to be bundled with corresponding modules to effectively communicate. As a equipment manufacturer, SOGOTEC Precision has to cope with the market trend extending from equipment data collection to sensor data collection; sensor selection is a kind of expertise, which can only be tested on the equipment after the sensors' functional testing, functional verification and numerical calibration are in line with the requirements. New problems may also arise during sensor and equipment integration testing, so it is necessary to find a sensor that conforms to the functional requirements and is practical under the multiple combinations.

After the functional verification of sensor is completed and the numerical data are confirmed to meet the requirements, the numerical data can then be transmitted to the broker, which sends out to the subscribed client through the network. The machining equipment messages that the sensor can output are those such as the negative pressure value (Figure 3 Negative Pressure Sensor), positive pressure value, temperature condition, current value, voltage value, etc.

The transmitted numerical data are processed according to the algorithm of the corresponding functions and can be converted into readable mode through the judgment of empirical rules such as whether the pressure is currently in normal value, whether the temperature is in abnormal temperature rise, the power consumption of the current machining, and whether the voltage value is at the right setting.



圖五 多台設備監控 Figure 5 Monitoring of multiple equipment

with network connection ability to realize related applications of information sharing, as shown in Figure 4 Remote monitoring interface. Graphical interface operation is the mainstream in the current market trend, while the free layout can be adjusted according to the actual configuration of the client in the factory, and the intuitive layout can easily grasp the status of multiple equipment in the factory simultaneously as shown in Figure 5 Monitoring of multiple equipment.

4. Integration of New Applications

With the rapid development of big cloud data, the integration of sensors and controller data can be more rapid and accurate through the close cooperation with CNC controller corporations.

The sensor can directly obtain the information such as the spindle current at present, and know whether the RPM of the control end is currently consistent, whether the current value during machining is in the normal machining state (Figure 6 The monitored values), and whether the temperature rise state during machining is within the normal machining range.

When multiple data interact with sensors to produce the next result or information, the corresponding processing scheme is further given through empirical rules, which can eliminate possible error events in advance and improve the manufacturing fluency, and the data generated in production can be stored in the database of the cloud broker and can be effectively utilized by the clients.

PVC 門板高 值噴印

◎ 劉 俊宏 Jim Liu



Plastic Form Door 高值噴印

隨著住宅裝修訂製個人化的趨勢轉變，設計師們無不竭心盡力展現設計才華來滿足業主的期望與需求。在全屋訂製的概念下，位於空間進出中介與分隔的房間門的優化設計更是能獲得畫龍點睛的效果。

Plastic Form Door 長期以來主要用在浴廁或有防水需求的處所，除了材料成本的優勢以外，更具有防潮、防水、防蟲、低吸水率、低導熱及高絕緣性的特性，再加上 SPC、WPC 等更加環保材質的開發，擴展 Plastic Form Door 的應用範圍更是各家嘗試與探索的方向

恩德 UV 數位噴繪機所搭配的環保高密著硬質墨水、特殊且彈性快速的噴印模式與穩定高品質的噴印效果，使得 Plastic Form Door 不僅在設計美感突破創新，也解決了許多傳統加工限制，提高 Plastic Form Door 的附加價值，開拓浴廁及房間門訂製市場，並為住宅裝修再添一分色彩

High Value Jet Printing for Plastic Form Door

With the trend toward customized and personalized home renovation, designers are trying their very best to show their design talent to meet the expectations and needs of the owners. Under the concept of the whole house customization, the optimized design of the room door as an access intermediary and a partition of a living space can even make the finishing point more.

Plastic form doors have mainly been used for a long time in bathrooms or places with waterproof requirements. In addition to having the material cost advantage, plastic form doors have even damp-proof, waterproof, insect-resistant, low water absorption, low thermal conductivity and high insulation characteristics. Combining with the developments of more environmentally friendly materials such as SPC and WPC, expanding the application range of plastic form doors shows even more a direction for all manufacturers attempting to explore.

Anderson's UV digital jet printer, having the environmentally friendly high-density hard ink, special and flexible rapid jet printing mode and stable and high quality jet printing effect, allows plastic form doors not only to have breakthrough and innovation in design aesthetics, but also to resolve many constraints on its traditional processing, thus increasing plastic form doors' added value, developing tailor-made bathroom and bedroom door market, and making house renovation even more colorful.



省人工 低耗材

市場上原有的 Plastic Form Door 如果要提高附加價值，一般是使用原木皮料或 PVC 印刷皮料拼花貼合加工製成，需承受大量皮料庫存及大量的人工拼貼工時，導入恩德 UV 數位噴繪機後，這些問題迎刃而解。全數位化圖像的作業，不須多種皮料樣式的庫存，也無須耗費人力拼貼，除了平面圖像輸出外，還提供充分發揮觸感紋理噴印效果，大幅降低生產工時與耗材庫存

Lowering labor cost and reducing consumables

If the existing plastic form doors on the market wants to increase its added value, it is generally made by piecing together and veneering the raw wood leather or PVC printing leather; doing so often needs to bear a large amount of leather inventory and a large number of manual piecing and veneering time. After the introduction of Anderson's UV digital jet printer, these problems are readily resolved. With the said digital printer's fully digital image operation, there is neither a need for a variety of leather style inventory nor one to spend manpower on piecing together and veneering the leather. Moreover, the digital printer not only provides the plane image output, but also provides the printing effect giving full play to tactile texture, thus greatly reducing production hours and supplies inventory.

高性价比多功能的恩德 UV 數位噴繪機

Anderson's UV Digital Jet Printer- Highly Cost- effective and Versatile

以尺寸 2100 x 835mm(82.67x32.87inch) 的門片為例，恩德 CoJet Plus 系列 UV 噴繪機提供穩定的噴印輸出，雙面平面彩繪每小時 6~12 片及立體紋理效果雙面噴印 6 片的產能，是投入 Plastic Form Door 創新應用最具有性價比競爭力的利器。

Taking the door plate with the size of 2100 x 835 mm (82.67 x 32.87 inch) as an example, Anderson's CoJet Plus series UV jet printer provides stable printing output, wherein the production capacity of double-sided plane color painting reaches 6-12 pieces of door plate per hour and that of double-sided printing with three-dimensional texture effect 6 pieces of door plate per hour, and thus is the most cost-effective and competitive tool for the innovative application of plastic form doors.

恩德 UV 數位噴繪機		現有設備製程
皮料	全數位化圖像的作業，花色任意變化	花色種類固定，花色變化需訂製大基本量，成本高
	不須皮料庫存，皮料零庫存成本	需備存多種皮料花色，承擔皮料庫存變質的浪費風險
生產	不須皮料儲存空間	須準備大型皮料儲存空間與儲存空間的環境設施
	彈性生產，無成品庫存	必須計畫性生產，產生多餘的成品庫存
訂單	依訂單彈性生產無限制，交貨期短	只適合大批量訂單，交貨期長短不一，無法接受少量多樣訂單
	拼花式花樣訂單，直接數位軟體處理，無額外人工	拼花式花樣訂單，需額外人工拼貼，耗時耗工

Anderson's UV Digital Jet Printer		Existing Equipment Process
Leather	Fully digital image operation; rich colors up for grab.	The color types are fixed; large MOQ is required for any color change, and therefore high cost is expected.
	No leather inventory is required, and therefore zero leather inventory cost is expected.	Need to keep a variety of leather colors, and a risk of leather inventory deterioration waste is expected to be borne.
Production	No leather storage space is required.	Large leather storage space and environmental facilities for storage space shall be prepared.
	Flexible production without finished goods inventory	Planned production is required, leading to generate excess inventory of finished products.
Order	Flexible production according to the order, and thus short delivery time is expected.	Suitable only for large quantities of orders, with different delivery time; a small number of diverse orders cannot be accepted.
	No additional labor for Mosaic pattern orders due to the digital printer's direct digital software processing.	Additional labor for Mosaic pattern orders is required, which time and labor consuming.

無限設計創意 Unlimited Design Creativity

傳統的平面 Plastic Form Door 圖像印刷工序必須有印刷模板，只適合單一樣式的大批量訂單，在現今客製化的潮流下，成本上已經很難滿足需求。導入恩德 UV 數位噴繪機後，打破傳統基本量的生產限制，一片也可客製生產，雙面可以不同設計，使看似單純的門板加工變得獨具創新，無限設計創意。

Traditional plane plastic form door image printing process requires a printing stencil, which only suits for large quantity orders of one style and whose cost is difficult to meet the demand under the current trend of customization. After the introduction of Anderson's UV digital jet printer, the seemingly simple door plate process becomes uniquely innovative and endlessly design creative for the said digital jet printer has broken the traditional constraint on the production with MOQ, where even one piece of door plate with different designs on sides can also be custom-made.

環保防水耐溶劑抗 酸鹼的優質墨水

Environmentally
Friendly Quality Ink,
Waterproof, Solvent
Resistant and Acid and
Alkali Resistant

恩德 UV 數位噴繪機搭配符合 ROHS 及 REACH 規範的環保墨水，具有防水、耐溶劑、抗酸鹼的優異特性，墨水固化後表面硬度高達 3H，噴印完成已經是完成品。

Anderson's UV digital jet printer goes with the environmentally friendly quality ink complying with ROHS and REACH standards, having the excellent waterproof, solvent resistant and acid and alkali resistant characteristics. Once the printing is completed, a finished product is ready immediately as the surface hardness of ink after solidification is up to 3H.

自動批次集印 功能

Auto Batch Printing

自動批次集印功能將數位印刷工序進一步整合，降低無效工時，提升良率及產能，即使是複雜的噴印工序，每一個單面的印刷，只要”單一按鍵”就可輕鬆操作，一位操作人員甚至可以同時控管兩台以上的恩德 UV 數位噴繪機，節約人工費用。

The digital printer's auto batch printing function further integrates digital printing steps, reducing the invalid working hours and increasing yield and production capacity. Even for those complex jet printing steps of every single-sided printing, by pressing only "single button", the operator can easily operate the printing process; an operator can even at the same time control at least two Anderson's UV digital jet printer to save labor cost.

成本概估

以下是墨水耗材與產能的試算案例

Cost Estimation

The following is the trial calculation case of ink consumables and capacity

	雙面平面彩繪	立體紋理效果	
雙面噴印	備註		
噴印面積	2100x835 mm		
82.67x32.87 inch	2100x835 mm		
82.67x32.87 inch			
噴印時間	7 分 48 秒	8 分 26 秒	
每小時產能 (片)	6.5	6	含上下料估算時間
墨水消耗量 (ml)	48	140	
墨水成本 (USD)	5.28	15.4	0.11 USD/ml

	Double-sided plane color painting	Double-sided printing with three-dimensional texture effect	Remark
Printing area	2100x835 mm		
82.67x32.87 inch	2100x835 mm		
82.67x32.87 inch			
Printing time	7 minutes 48 seconds	8 minutes 26 seconds	
Capacity per hour (plate)	6.5	6	Estimated time including loading and unloading
Ink consumption (ml)	48	140	
Ink cost (USD)	5.28	15.4	0.11 USD/ml

The cost of general plastic form doors can be roughly divided into:

- (1) The cost of door plate (2150x850mm) NTD 26
- (2) Double-sided door plate piecing and veneering (including work and materials) NTD 17
- (3) Post-processing of door plate (plate cutting, edge sealing, handle opening) NTD 20

As can be seen from the above table, regardless of whether there is three-dimensional texture effect, the cost of two-sided painting or printing is lower than the cost of piecing and veneering. It can be seen that the introduction of Anderson's UV digital jet printer will not increase the cost and may even reduce the cost.

In this era emphasizing innovation and personalization, the introduction of digital printing has become the unvaried trend consensus. Choosing Anderson's UV digital jet printer will allow you not only to enjoy those features and functions provided by Anderson's UV digital jet printer, but also to obtain the best guarantee to keep Anderson's UV digital jet printer in better utilization through Anderson Group's global sales and service sites.



一般性 Plastic Form Door 成本可以概分為：

- (1) 門片成本 (2150x850mm) NTD 26
- (2) 門片雙面貼皮 (連工帶料) NTD 17
- (3) 門片後加工 (裁版、封邊、把手開孔) NTD 20

由上表可以看出，不論有無立體紋理效果的雙面噴印成本都低於貼皮成本，由此可看出導入恩德 UV 數位噴繪機不但不會增加成本，甚至可以降低成本。

在此講求創新、個人化的時代，數位印刷的導入已是不變的趨勢與共識，選擇恩德 UV 數位噴繪機，除了享有恩德 UV 數位噴繪機提供的特色功能以外，恩德集團全球的銷售服務據點更是維持恩德 UV 數位噴繪機保持良好稼動最佳的保證。



精湛極致的工藝 - 高速內藏式主軸

© 林炯勳 Ryan Lin

伴隨集團長期耕耘於 CNC 工具機產業以及設備所需要的大量主軸需求，主軸廠從早期定位為滿足內部需求的關鍵要角，經過多年技術發展與投入高階設備，加上集團政策陸續併購海外一級工具機大廠，如德廠 Matec 與 Monfort，綜合海內外機械學理與反覆的實務驗證，發展出一系列具有高度技術特色之高速內藏式主軸產品。

有別於國內其他競爭品牌於電機技術上普遍仰賴歐系與日系的產品輸出，存在有成本較高，交期過長，以及規格變更上需要溝通的難度較高...等問題。有鑑與此，恩德主軸廠自 2011 年起即設立電機設計組，持續投入馬達相關的設計研究、製程優化、及產品驗證，以達到高完成度的機電整合，並陸續推出一系列台灣製造的主軸用定 / 轉子，目前已成功導入到 62mm 至 150mm 外徑的主軸規格品上。

恩德自製電機亦持續與德系、日系控制器具指標性廠商（如 Fanuc）合作，由控制器原廠開放參數給我廠電機，以完成自製內藏式主軸搭配其獨家系統，完成全閉迴路的控制方式。不僅於此，恩德並於 2019 年 4 月份完成了的主軸產品之歐盟 CE 認證。對於集團行銷全球化市場的佈局，更是如虎添翼。

具備充足的電機設計與製造能力，恩德自 2016 年亦成功開發並推出線性馬達產品，並藉由其優勢導入至集團內大檯面機型如 GS，子公司總格精密的 PCB 鑽孔機與成型機，以及透過代理商成功銷售至其他產業專用機以及 FA(Factory Automation) 產業，成功在關鍵零組件的設計製造上，為客戶提供了一個全新的選擇與方案整合。



Ultimately Exquisite Methodology-High Speed Built-in Spindle

Anderson
Compass

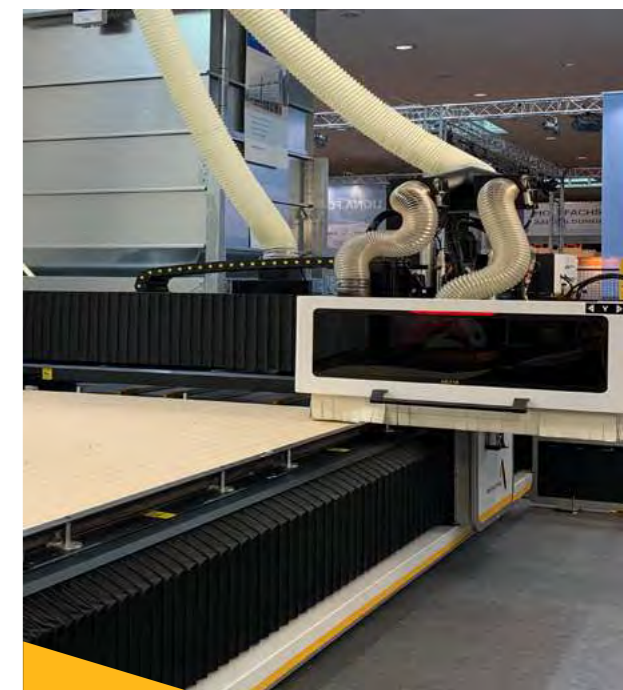
With the Group's long-term cultivation in CNC machine tool industry and the huge demand for spindles required on equipment, our spindle factory, once positioned as a key player to meet internal demand at early stages, has now developed a series of high speed built-in spindle products with high technical features through the Group's many years of technical development and investment in advanced equipment, its policy of successively acquiring overseas major first-tier machine tool manufacturers such as Matec and Monfort, and the synergy between mechanical theories and repetitive practical verification from home and abroad.

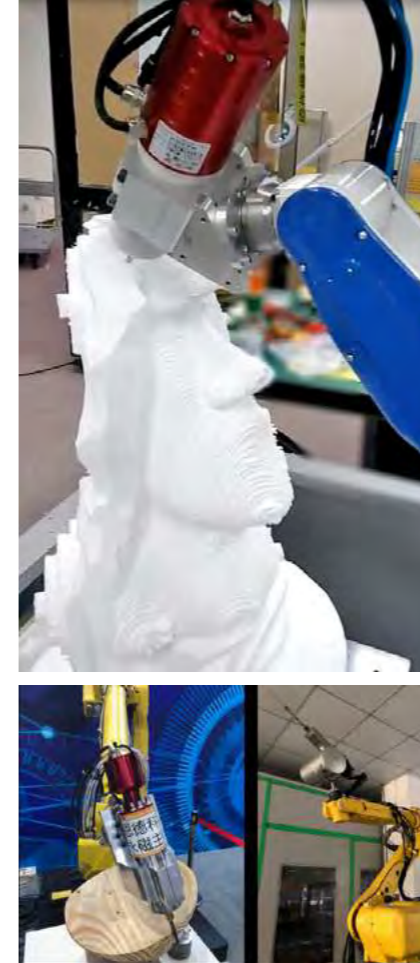
In light of the problems such as higher cost, much longer delivery time and the higher difficulty in communication required for specification changes occurring in other domestic competitive brands generally relying on the export of European and Japanese products in the electrical motor technology, Anderson's spindle factory has established an electrical motor design department since 2011, persistently putting in electrical motor related design research, process optimization and product verification to achieve a high degree of completion of electromechanical integration, and launching in succession a series of stators /rotors made in Taiwan for spindles; those stators /rotors for spindles have successfully been introduced into the standardized spindle products with outer diameter from 62 mm to 150 mm.

Anderson not only makes its own electric motors but also continues to cooperate with German and Japanese benchmark motor controller manufacturers (such as Fanuc) to complete the development of its own built-in spindles working with its exclusive system having the fully closed loop control by means of the original controller factory's opening its controller parameters to our electric motors. In addition, Anderson passed the CE certification of its own spindle products in April 2019, which aids in the group's global marketing arrangement more with might doubled.

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can perform 3D surface milling and engraving, providing a more efficient cutting and tool life improvement scheme to effectively improve the value and positioning of the group's spindle and machine products in the market.

High speed grinding spindle has always been the mainstay of Anderson's products. Depending on different industries, different materials and processing characteristics, structural configurations must be adequately adjusted based on the subtle differences therein in order to obtain the optimal parameters. For those such as automotive parts, linear guide-ways, sliding blocks, screw nuts and all kinds of inner diameter grinding, they are all within the current service range of spindle. Anderson has currently developed a special process for grinding application, which can reduce the spindle resonance, improve the electric motor's heat dissipation and insulation ability. With the high price-performance ratio of the electric motors made by the group, the said electric motor products have successfully obtained the support of a first-tier manufacturer in the domestic market, obtaining eye-catching achievements and building strategic partnership each other.

The high speed spindle is a rotating mechanism component, performing machining processing with extremely high speed operation after it holds a cutting tool. The precision, stability, tolerance coordination and support mode of the mechanism of each rotating part is especially important for the dynamic performance in the operation of each part. It is only through comprehensive design and adjustment that can achieve perfect so as to achieve high-speed stability at the extreme performance of approaching the critical point of performance, which is therefore not too much to call it the "talent industry". With the ever changing advancement of science and technology and the plethora of competitors, only through continuous improvement and progress can our feet be planted in Taiwan, but our eyes survey the world.

除集團內需求，對外部客戶經長期耕耘之下，成績亦逐步開花結果。除上述線性馬達產品於今年度業績翻倍成長以外，主軸產品因搭配自家製造的高階「永磁同步電機」(permanent-magnet synchronous motor)，具有高性能、低溫昇、及成本優勢。雖然今年度工具機市場景氣普遍不佳，以及因中美貿易戰導致大陸市場持續低迷之下，但恩德的高速主軸在高速銑削市場仍有不俗的表現。

高速主軸搭配機械手臂的應用於今年度需求亦增溫。內藏主軸緊湊式的設計搭配低速仍有高扭力的特性，加上恩德主力產品原先皆都設定在中小型主軸，更能夠符合機械手臂應用上高度要求的重量限制，成功獲得機械手臂整合商高度的喜愛與採用。

另恩德為因應難切削材與複合材料加工，同時也有超音波主軸的專案開發進行中，預計將可應用在航太、造船、木材…等產業，亦能用於切削非鐵金屬、蜂巢板、碳纖維、與其他複合材料等等應用。搭配集團自製的五軸加工中心機可進行 3D 曲面的銑削與雕刻，提供更有效率的切削與刀具壽命提升方案，能有效提升主軸與機台在市場上的價值與定位。

高轉速研磨主軸一直都是恩德主力產品項目。針對不同行業、不同的材料與加工特性，必須根據其中細微之差異，調適出不同的結構配置方式以獲得最佳參數。舉凡汽車零件、線軌、滑塊、螺桿螺帽、以及各式內徑研磨，皆是主軸廠目前服務的範圍。恩德目前針對研磨的應用特性，特別研發出特殊製程，可降低主軸共振、提高電機散熱、以及絕緣能力，配合電機自製的高度性價比，成功在國內市場獲得一級大廠支持，取得亮眼成績，並成為策略夥伴。

高速主軸為旋轉機構件，經夾持刀具後，以極高速運轉進行切削加工。轉動中各零件的精度、穩定性、公差配合、機構承靠方式對於運轉中的動態表現尤其重要，唯有面面俱到的設計與調適能達到完美，才能在接近性能臨界點的極致表現下，足夠達到高速下的穩定性，稱之為「達人產業」亦不為過。科技日新月異，競爭者多如牛毛，惟有不斷提升，不斷進步，才能立足台灣，放眼世界。

當 ProSys 遇見 5 軸 恩德歐洲為微機械加工與粗機械加工實施 5 軸同步製程

ProSys Meets 5-Axis
Anderson Europe implements 5-axis simultaneous processing for micro and macro-machining.

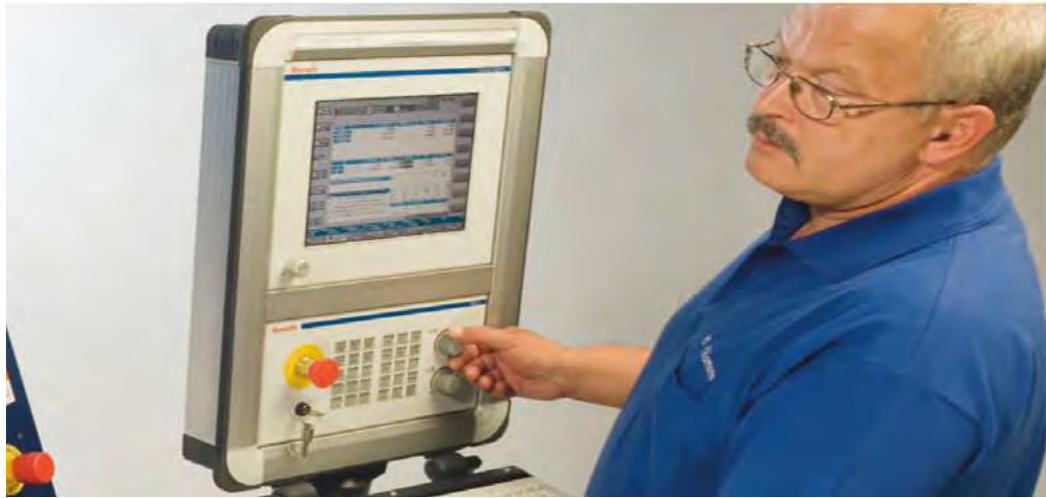
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與 3 軸機械加工相比，5 軸同步製程能在日益嚴苛的生產環境中製造出更複雜的組件。歐洲恩德推出自行開發的動態轉環式旋轉軸，在龍門設計中能做旋轉式的直接驅動。完全符合自由成型曲面與五面機械加工複雜製程的最高需求。各種幾何形組件的精密製造對靈活性的需求日益增長，許多公司都面臨生產流程最佳化的挑戰，為求充分利用現有資源，並將錯誤源消除到最小。歐洲恩德為快速回應顧客需求而提供此一創新解決方案。

藉由包含「5 軸同步製程」選項的全新 ProSys，歐洲恩德繼續在精密機械組件的微機械加工與粗機械加工領域中確立自己的地位。全部軸向都採用直接驅動技術的優點是即使在最小橫越路徑，也能達到最高的表面品質與精度。此技術可儘量減少對製程有負面影響的熱膨脹與起動轉矩，故能以最佳化的加工法對碳化物、鋁、塑膠到複合材料的各種材料進行加工。

在與 WBT 自動化公司合作後，整合出一個標準化的擴充基座，專用於處理工件及刀具的移動式機器人單元，得以支援機械加工流程自動化與日俱增的需求。靈活的「Flextray」單元能迅速部署並兼具流程可靠性與再現性，這全歸功於其卓越的移動性。這類自動化也可個別地配合顧客的流程。



Compared to 3-axis machining, 5-axis simultaneous processing makes it possible to fabricate more complex components in an increasingly demanding production environment. Anderson Europe delivers a dynamic swivel and rotation axis, developed in-house, with rotative direct drives in the gantry design. It is ideal for meeting the highest requirements in the complex processing of free-form surfaces and five-sided machining.

Due to increasing demand for flexibility in the exacting fabrication of components with various geometries, many companies are facing the challenge of optimizing production flows so that existing resources are utilized as fully as possible and error sources are minimized or eliminated.

Anderson Europe GmbH has responded to customer demand quickly and implemented this innovative solution.

With the new ProSys including the "5-axis simultaneous processing" option, Anderson Europe continues to establish itself in the field of micro and macro-machining for precision mechanic components. Using the direct drive technology for all axes makes it possible to achieve the highest surface qualities and accuracies, even with minimal traverse paths. This technology minimizes thermal expansion and breakaway torques that can negatively influence processing. Various materials from carbide, aluminum, plastics, to composites can, therefore, be machined in an optimized process.

In cooperation with WBT automation based in Spaichingen, a standardized docking station for the adaptation of a mobile robot cell for the handling of workpieces and/or tools has been integrated as well. This supports the rising demand for the increased automation of machining processes. Thanks to its mobility, the flexible cell "Flextray" can be deployed quickly with process reliability and reproducibility. This type of automation is also individually adaptable to the customer's processes.



特點

- ✓ 高級人體工學設計
- ✓ 快速而方便地改變用途
- ✓ 適用於各種夾持系統的理想接口
- ✓ 最佳可操作性

Features

- ✓ Sophisticated ergonomics
- ✓ Fast and simple change of application
- ✓ Fast setting
- ✓ Ideal interfaces for any kind of clamping system
- ✓ Best accessibility
- ✓ Well-lit working area
- ✓ Simple monitoring

MATEC

GmbH

攜手 FANUC 的 MATEC 開發專案

FANUC

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MATEC Development Project with FANUC

So far, MATEC machining centers still the ideal choice for customers who highly trust Bosch, Heidenhain or Siemens controllers. There is a strong demand for these controllers in European even worldwide markets; this is how they run deep in customer's hearts.

However, in the USA and Asia, they did believe in another popular controller "FANUC" which provided by a Japanese company and we see the potential market, this is the reason why MATEC has decided to start a special project that cooperation with FANUC; aiming at MATEC being able to offer their machining centers with a FANUC controller "31i" in different power stages, in the future.

End of July 2019, the first meeting with FANUC was held in Köngen. Other meetings followed and information on project-related data was exchanged between both companies.

After the EMO show in October, the project is to enter into the next stage. In this stage, we officially teamed-up, assigned tasks, and drew out a business plan outline; most important we examined whether a MATEC machining center can be used for the project. 12 months, we will make it happen and aims to successfully sell MATEC machining centers in the USA and Asia and provide different controller selection for various clients.

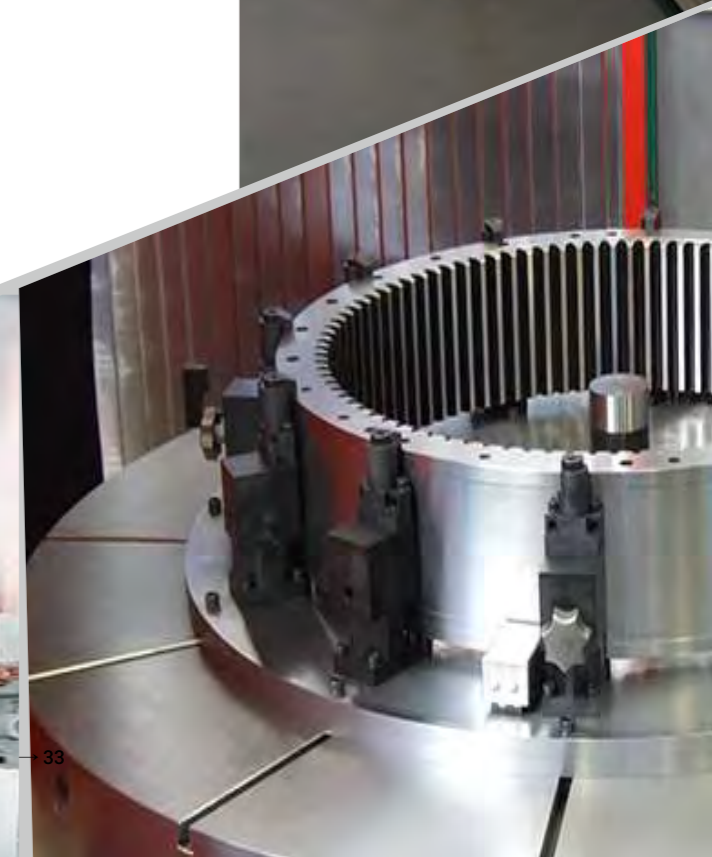
MATEC 的加工機至今仍是高度信賴博世、海德漢或西門子控制器為顧客的最佳首選。在歐洲乃至全球市場對這類控制器的強烈需求，代表其深入顧客內心的地位。

然而，在美國與亞洲市場另一日本知名控制器公司－「發那科」也深受肯定，MATEC 發現了這個潛力十足的市場，因而 MATEC 決定與發那科合作開發一特殊專案；目標是將來的 MATEC 能為其機械加工機提供不同功率級別的發那科控制器「31i」。

2019 年七月底，在 Köngen 與發那科舉行了第一次會議。接著的多次會議，雙方就專案相關資訊進行交流。

而十月份的 EMO 展後，專案進入下一階段。在此階段，我們正式成立專案小組，分派了工作任務並規劃出業務計畫大綱；最重要的是我們檢驗了 MATEC 加工機是否能被此專案所用。

此目標將於 12 個月後實現，並在美國與亞洲致力銷售 MATEC 加工機，為各產業客戶提供不同的控制器選擇。



Customer-specific solutions

Monforts — 往日經典

© Monforts

Monforts 從未對新產品或新開發案投入過那麼多的時間與精力。Monforts 訪談過許多顧客，才真正了解客戶正在尋找的是 Monforts 在 10 年前販售過的產品。

在過去那個美好年代，Monforts 在這型機械的銷售量達 2000 台以上。歷經了 6 個月的時間與顧客、供應商與我們的 CAD 部門討論。自 2019 年 08 月 06 日起，Monforts 再次在 Moenchengladbach 擁有了我們第一台的 Monforts - KNC 500。

KNC 是循環控制式車床，是個別零件中常用的加工機，但卻具有能在程式中一個循環接著一個運行的優點。它真正的優點是讓您決定是要用做個別的零件，或是做同一零件的小量連續生產。KNC 機器可搭配西門子或發那科控制器，藉此滿足客戶的各種要求。KNC 不但可在控制或軟體上做變化，在結構工具包上也幾乎能滿足有關工件尺寸的每一項需求。KNC 可從 320 公釐的切削直徑與 750 公釐的最小長度開始，直到最大 1,020 公釐（切削直徑）與 8,000 公釐的最大長度。

另一個有關 Monforts 產品的大型專案是機器人單元。幸運的是，Monforts 歐洲母公司歐洲恩德進行了與我們相同的專案。我們採用協同作業，邀請 WBT 自動化公司的工程師加入 Monforts。在 WBT 自動化公司與 Monforts CAD 部門合作下，移動機器人專用的標準化擴充基座的研發進展神速。此一處理工件及刀具的單元可輕而易舉地整合到我們的控制器內，因而支援了機械加工流程自動化與日俱增的需求。靈活的「Flextray」單元能迅速部署並兼具流程可靠性與再現性，這全歸功於其卓越的移動性。我們已經在 2019 漢諾威 EMO 展的 RNC400 與 ProSys ADV 單元中展示了此一流程。



Monforts- back in future

Honestly, we haven't invested that much time and effort into something new or new development. We talked to our customers and realized that they are looking for a product that we sold 10 years ago.

In good old days, Monforts sold more than 2000 machines of this type. It took us 6 months to talk with customers, suppliers and our CAD-department. Since Aug. 6, we have the very first Monforts - KNC 500 in Moenchengladbach again.

The KNC is a cycle-controlled turning-machine, which is very common for individual parts but has the benefit to run one cycle after another in a program. You can decide to take it for individual parts or produce smaller series of the same parts, which is a real benefit. The KNC-machine is available with Siemens or Fanuc-controller which is meet various client's required. The variability of the KNC is not only given in the control or software, but also the construction kit allows us to satisfy almost every requirement regarding the dimension of the workpiece. KNC starts with a cutting diameter of 320 mm and a minimum length of 750 mm and reaches the top at 1,020mm (cutting diameter) and a maximum length of 8,000mm.

Another big project about our Monforts products was the implementation of a robot cell. Fortunately, our European parent company AEC, worked on the same project as we did. We used the synergy and invited the engineers from WBT Automation also to Monforts. In cooperation with WBT Automation and our CAD-Department, the standardized docking station for the adaptation of a mobile robot was established very fast. The cell for the handling of workpieces and/or tools has been integrated into our controller easily. This supports the rising demand for the increased automation of machining processes. Thanks to its mobility, the flexible cell "Flextray" can be deployed quickly with process reliability and reproducibility. We showed this process on the EMO 2019 in Hannover in a cell of a Monforts RNC400 and an AEC ProSys ADV.



Giben®

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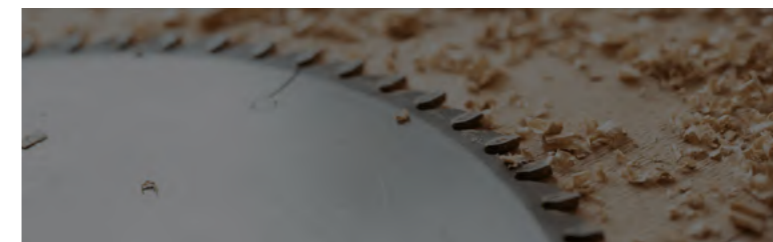
Giben 是二戰結束後 1947 年由 Gino Benuzzi 所創立。公司最早命名為 Gino Benuzzi SNC，Gino Benuzzi 在生產與銷售木工機械找到利基點。Giben Benuzzi 的創新設計與優異的品質很快地就引起全國的注意。當粒片板在 1960 年代首次出現時，Gino Benuzzi 就開發出具有頂端壓力樑活動鋸片的裁板機，能更輕鬆也更有效率地處理材料。Gino Benuzzi 的機械可說是當時機具的完全革命，贏得國際關注因而誕生了巴西 Giben 與美國 Giben 兩間公司。

美國 Giben 持續為板材製程提供品質無與倫比的創新解決方案。最近，美國 Giben 更將其產品範圍擴充至包括尺寸矯正、包邊與 CNC 的綜合產品線。現在身為 CNC 國際領導品德恩德集團的一員，美國 Giben 也進入 CNC 市場。恩德專門設計與製造各種尺寸的 CNC 鏤銑機，特別為美國 Giben 建立 CNC 鏤銑機的 NEW G 產品線，並保持著 Giben 品牌金字招牌的裁板機械最高水準 50 多年。美國 Giben 與恩德集團的夥伴關係意指可以從馳名的信賴來源，獲得領先產業的恩德品質與可靠性，進而享有革命性的設計與卓越的顧客服務。

Giben 品牌裁板機產品線已擴充至巴西 Giben 以及一家中國 ISO 9001 工廠所提供的產品。每家工廠都提供出互補的裁板機。巴西 Giben 提供了 Matic 與 Prisma3000 兩款機型，而另一家工廠則提供 Helex 與 Sonex。這兩家工廠協助 Giben 品牌涵蓋了整個裁板機的市場，機型從入門機到訂製機款的 Prisma3000。Giben 品牌從未以這種聲勢進入市場。

迅速、可靠、高效，具完整表列的標準功能。HELIX 90 SP 能以極具競爭的價格提供高階的性能。選項包括精密的深度開槽、遠端開槽鋸設置以及主鋸片上的鋸片轉速控制。

Prisma 3000 承接了 Giben 品牌許多傳承與創新。Prisma 3000 具有一些市面上最先進的選項，包括板材旋轉、分壓梁與獲獎的 XY 軸移動夾具。高度客製化的鋸子讓顧客能設計出所需的鋸子。做出 Giben 品牌產品線中最靈活的鋸子。



Giben was founded at the end of World War II, in 1947, by Gino Benuzzi. Originally named Gino Benuzzi SNC, Gino found his niche producing and selling woodworking machinery. His innovative designs and superior quality quickly gained national attention. When particleboard first appeared in the 1960s, Gino invented the panel saw with a top pressure beam and moving blades to handle the material more easily and efficiently. A complete revolution of its time, Gino's machines garnered international attention and Giben do Brazil and Giben America were born.

Giben America continues to offer innovative solutions in panel processing with unmatched quality. More recently, Giben America expanded its product range to include a comprehensive line of Sizing, Edge, and CNC. Now apart of the Anderson Group, an international leader in CNC technology, Giben America has expanded their reach into the CNC market. Anderson specializes in designing and manufacturing CNC routers of all sizes has specifically created the NEW G line of CNC routers for Giben America and has maintained the highest level of panel saw machinery true to the Giben name for more than 50 years. Giben America's partnership with Anderson Group means you get an industry-leading Anderson quality and reliability from a trusted source known for revolutionary designs and superior customer service.

The panel saw line of Giben has expanded to offerings from Giben do Brazil and an ISO 9001 factory in china. Each of the factories offers complementary panel saws. Giben do Brazil offers two models: Matic and Prisma 3000. While the other factory offers the Helex and Sonex. With both factories helping Giben reach the entire market of panel saws from the entry-level to the custom Prisma 3000. Giben has never been poised to access the market like this before. Fast, reliable, productive with a complete list of standard features. The HELIX 90 SP offers high-end performance at an extremely competitive price. Options include precise depth grooving, remote scoring saw setup and blade rotation speed control on the main blade.

The Prisma 3000 brings a lot of Giben heritage and innovation. The Prisma 3000 has some most advanced options in the market including panel rotation, split pressure beam, and award-winning XY moving grippers. The highly customizable saw allows customers to design their saw for their needs. Making for the most flexible saw in Giben's line up.



MATIC 90 SP 提供了北美顧客所需的功能，而且性能還超越產業平均值。重型的機器結構、可靠的機器設計與完整的功能表列使得機器具有強大的動能，是公司營運的重要資產。雖然結構概念已更新至最新技術，但 Giben 品牌使用的組件與材料已有 30 多年，故能確保最大的結構剛性與穩定性。

The MATIC 90 SP offers the features North American customers require, and more, with performance well above the industry average. Heavy machine construction, reliable machine design and a complete list of features make this machine very dynamic and a key asset to your company's operations. The construction concept, although updated to the latest technology, components and materials have been used by Giben for over 30 years and it guarantees the maximal structural rigidity and stability.

SONEX SPT（升降工作台後部裝載式）除具有前部裝載式裁板機的功能外，還有額外的自動後部材料裝載的優點。最大裝載容量 5 噸的液壓式後部送料升降台板，結合了動力與非動力輸送帶，使得板材 不論是從左邊還是右邊送料都極為便利。

The SONEX SPT (rear loading from lift table) offers the features of a front-loading Panel Saw with the added benefit of automatic rear material loading. Hydraulic rear feeding lift table with maximum 5-ton loading capacity, combined with powered and non-powered conveyors making it convenient to feed panels from the left or right side.



STRYKER 的直通式送料機械加工機具有優異的創新技術與超高的靈活性與生產力，而在鑽孔、開槽與鏤銑領域產生革命性的效應。以最尖端的技術基礎產生無與倫比的快速、極其可靠的機器，能在營運成本中具有強大的競爭優勢。STRYKER 有多個版本，全都注重在零件製程上。STRYKER 的每個系統都帶入一個零件，並對零件的五個面進行機械加工。而 STRYKER-6 則可對零件全部 6 個面進行機械加工。

The STRYKER through feed machining center has revolutionized the field of boring, grooving and routing thanks to its innovative technology and maximum flexibility and productivity. The result is an incredibly fast, extremely reliable machine with a strong competitive edge in operative cost based on State of the Art technology. The STRYKER has several different versions that all focus on part processing. Each one of STRYKER systems brings a part in and machines five sides of the part. While there is the STRYKER6 that can machine all 6 sides of the parts.



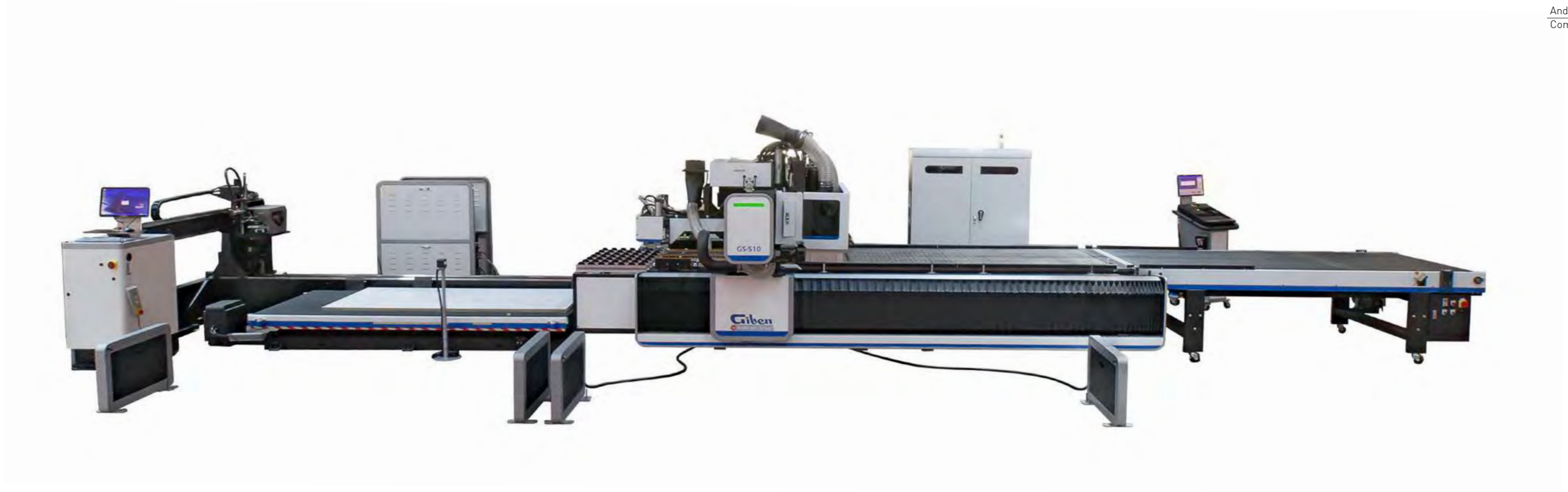
G2 是台物超所值的機械，有著大型機所具有的重量與堅固結構。這是台麻雀雖小五臟俱全的機械，專為小型工廠所設計，開啟其鏤銑機業務。當今市面上的所有成本效益的 CNC 鏤銑機中，性價比最高的就是 G2。

G4 則比 G2 稍大，效率也更高，可做為單機的鏤銑機或做開料線用。G4 開料線增加了標準 CNC 鏤銑機所沒有的裝載與卸載功能。在機械加工週期完成時，入料系統在推桿運輸的同時裝載新的板材，並同時清潔工作台表面，將完成開料的板材移出卸載區域，以便執行連續的操作流程。因此適合需要進行大規模零件處理的中型工廠及大型設施。

The G2 is a value machine with all the weight and solid construction of the larger models. It is a well-balanced machine that is designed for the smaller shops owners to start the router journey. The G2 offers the best price and quality ratio of any cost-efficient CNC router on the market today.

The G4 while being slightly larger and more efficient than the G2 comes as a stand-alone router or a nested line. The G4 Nesting Line adds the loading and off-loading to the standard CNC Router. At the completion of the machining cycle, the infeed system loads a new panel while the pusher transports, while cleaning the table surface, the completed nest of panels out of the unloading area allowing continuous flow of operation. This has allowed it to go into mid-size shops to larger facilities that need to have parts processed on a larger scale.





美國 Giben 在板材製程不僅歷史悠久而且極富盛名。恩德的鏤銑機產品線繼承了此一傳統。恩德與美國 Giben 合作設計出北美區專用板材製程的現代化鏤銑機產品線。雖然機器為藍色但卻是正港的恩德產品，具有最高水準的組件、建構的品質與可靠的性能。所做出的設計為 STRYKER、G2、G4 與 GS。

最後則是 GS，也是全球市場上獨一無二的鏤銑機。由線性馬達在 x 與 y 軸上做驅動，速度可達每分鐘 120 公尺。速度與精度兼具的 GS 跨越了傳統 CNC 鏤銑機上的開料與梁鋸上板材的裁切疊之間的差異，因而具有兩全其美的優勢。其產能為典型 CNC 鏤銑機的兩倍。GS 專為高速及大尺寸板材製程而設計，其性能遠優於競爭者。

Giben 的壓軸產品就是封邊機。這些機器是由中國一家 ISO 9001 的工廠所製造。由入門款的封邊機直到全面處理的創新型全線封邊機一應俱全。這讓 Giben 品牌不但能應付各個階層的市場，而且還具有價格優勢，並以粗壯的結構、高度的可靠性與快速的速度挑戰世界頂級的封邊機。

美國 Giben 挾其老品牌的可靠品質與創新，不斷地為顧客帶來驚喜，並為恩德集團在北美地區內建立起板材製程的專業市場。

Giben America has a proven history steeped in panel processing. This tradition has been carried over with the router line from Anderson Industrial. Anderson Industrial and Giben America came together to design a modern router line for panel processing for North America. Although the machines are blue, they are true Anderson products sharing the highest level of componentry, build quality and proven performance. The designs that were made are the STRYKER, G2, G4, and GS.

The last router is the GS, a router that stands alone in the market across the world. It is driven by linear drives on the x and y-axis that reaches speeds of 120 m/min. With speed and precision, the GS will bridge together the gap between nesting on a conventional CNC router and cutting books of panels on a beam saw. It will offer the best of both worlds. It can produce up to double the output of a typical CNC Router. The GS was designed for speed and large-scale panel processing that leaves the competition behind.

The final product Giben has to offer is edge banders. These machines are built at an ISO 9001 factory in China. The line of edge banders starts off at the entry-level to innovative full line edge banders that process all sides. This has allowed Giben to challenge the market at every level but remain with a price advantage. The heavy construction, strong reliability, and fast speeds compete against the top edge banders of the world.

With a rich history of proven quality and innovation, Giben America continues to exceed the expectations of our customers. Creating a market for the Anderson Group that specializes in panel processing inside North America.



年度展示會花絮

Trade Shows of The Year





TIMTOS
台北國際工具機展



TPCA 2019 IN TAIWAN
2019 台灣電路板展



LIGNA 2019 IN Germany
德國 LIGNA 展



AWFS 2019
美國拉斯維加斯木工機械暨家具配件展



EMO 2019 IN Germany
德國 EMO 展



自動化板式家具生產線

Automatic panel furniture production line

恩德自製裁板機

ANDERSON Beam Saw Machine

恩德自製自動貼邊機

ANDERSON Edge Bander Machine

Anderson Group

恩德集團



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全自動貼標籤機及上下料排版加工中心
Fully Automatic Nesting Processing Center



AGMVP



恩德研發智慧軟體平台

恩德最新研發AGMVP軟體，可將過往複雜的CNC操作步驟透過系統整合將之簡化，系統功能含機身保養管理、電流監控、主軸溫度監控、排鑽壽命管理、刀具壽命管理等相關參數均可對外部系統開放，協助客戶建構智慧、智能化的生產廠房。

Anderson have been developed it's own AGMVP the Human-Machine Interface, through the new system integration, the AGMVP did simplify the original complicated CNC operation steps. The new AGMVP included the maintenance of machinery, current monitoring, spindle temperature monitoring, drills life management, tool life management and other relative parameters were allowed on opening for external system, helping customers build their own smart, intelligent production facility.

鑽孔打型機

PTP CNC Drilling machining center



UV噴繪機

Hybrid UV Digital Inkjet Printer



恩德CNC加工中心

CNC Processing Center

多種客製化加工中心 Customized Products

五軸加工中心/ 重型切削加工中心/CNC鏤銑加工中心 /
經濟型板類加工中心/ 微型鑽孔機

5-axis Processing Center
Entry Level Panel Processing Center
Nesting Full Line CNC center
Entry Level Panel Processing Center
Through Feed Boring Machine



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恩德集團產品線



MONFORTS



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