

全球沖床製造大廠－協易 攜手 Beckhoff 打造智慧機械 助攻電動汽車金屬沖壓高效生產

Beckhoff supports the leading press equipment manufacturer, SEYI to achieve smart machinery

Reach high-performance pressing production line for electric vehicles

文 Beckhoff 倍福自動化

協易機械為全球沖床設備製造的市場領導者，提供 25 噸到 2400 噸的沖床產品，近期協易機械導入德商 Beckhoff- 倍福自動化解決方案，採用 PC-based 控制並結合 EtherCAT 改善系統效率，實現智慧機械。該解決方案可助協易伺服沖床應用於傳統與電動汽車廠及其主力配件廠客戶，提供更安全、可靠與快速的生產程序；亦大幅提高了生產效率。

SEYI is a leading global manufacturer of middle to large tonnage mechanical and servo presses. To reach smart manufacturing, SEYI integrated Beckhoff Automation Solution into its machinery with PC-based controller and EtherCAT to improve operating efficiency. Beckhoff Automation Solution helps SEYI offer a safer, faster, and more reliable production procedures for clients from traditional and electric vehicle manufacturers, and significantly improves productivity.

協易機械已成功獲得知名美系電動車龍頭及德國高級汽車品牌的認可，並且在全球各地都有不同應用的具體實績。但在詭辯的市場環境中，協易亦面臨許多不同挑戰，此次選用 Beckhoff 系統，更能打造客戶所需的尖端產品，讓協易穩定立足於全球市場。

SEYI not only provides products for major automobile plants and electronics industry, but also enters aerospace and medical industry. SEYI products have been sold to more than 50 countries worldwide. In the competitive market, SEYI faces different challenges. Use of Beckhoff system helps SEYI create the cutting-edge products required by clients and gain a stable foothold in the global market.

協易伺服技術發展部許貴彰資深經理表示：「我們重視新的技術與研發，舉例來說，如何與周圍的設備互相連動，同時控制沖床、材料進入與成品程序，且產線只有一個控制但卻能同時控制到所有東西。我們必須跟其他設備做連結，控制其他設備的資訊量，做出最正確的判斷，並還要能加快機台的開發速度，是一大挑戰」。

K.C. Hsu, Senior Manager of Servo Technology Dept. at SEYI: "We value the new technology and development. For example, How to interoperate and connect with surrounding equipment, and simultaneously control servo press, material entry and finish product procedures, while the production line has only one control system to control everything at the same time. We have to connect with other equipment, control the amount of information



協易伺服沖床導入 Beckhoff 系統，協易伺服技術發展部 許貴彰資深經理與設備合影。

K.C. Hsu, Senior Manager of Servo Technology Development at SEYI with its servo presses.

of other equipment, and make the correct decision, which is a big challenge."

另外，隨著工業技術的進步，汽車廠對於伺服沖床設備要求更高且更多元化。設備除了能夠快速操作更需具「安全」基準，當緊急危險狀況時，機台要能立即停機。此外，「生產效率」是製造業的核心，如何提升效率與減少生產浪費都對客戶非常重要。因此設備要能快



採用 Beckhoff 15 吋觸控面板，輕鬆操控沖床設定。

The Beckhoff 15-inch touch panel is used to easily control the servo press.

速操作，當發生異常時，按鈕操作次數最少，才能簡化步驟提高效率。在這些挑戰之下，協易以打造安全、快速操作並能兼具生產管理與效率的設備為目標。

Besides, with more improvement of technology, automakers have higher and more different requirement for servo presses. Servo presses must operate quickly and meet safety standard. For example, in the emergency situation, the machine must be able to shut down immediately to avoid accidents. Since productivity is the core value of the manufacturing, how to improve efficiency and reduce cost is important to clients.

Therefore, the machine must be able to operate quickly, and when there is abnormal condition, the fewer times of operating buttons are the key to simplify steps and increase efficiency. Under these challenges, SEYI aims to develop equipment that is safe, fast to operate, efficient, and easy to manage production.

如此一來，舊有的系統將遇到許多限制與瓶頸，且無法快速傳輸與紀錄，也有資訊容量問題。此外，要追加感測器或額外硬體設備做資料收集時，無法整合到既有控制器，沒有合適介面可以使用，要很多次轉換程序。許貴彰經理表示：「經過評估後，我們下一代系統決定選擇採用 Beckhoff 自動化解決方案，因

為 Beckhoff 幾乎可以直接支援市場上所有共通的通訊格式與介面，幾乎是大部分設備慣用的，且大量資料都有對應模組與區塊可以選用，Beckhoff 並具備可靠性與高性能」。

The limitation of the old system SEYI faced includes slow transmission, unable to record and capacity issue. When using additional sensors or hardware devices for data collection, it is difficult to integrate additional devices into the existing controller. Besides integration issue, finding a suitable interface to use is another challenge faced by engineers; therefore, the data need to be converted multiple times. K.C. Hsu said: "After evaluation, we decided to adopt the Beckhoff Automation Solution in our next generation system, because Beckhoff's corresponding modules can directly support most common communication protocol and interface which are used by most machines. In addition to this, Beckhoff system is reliable and provides high performance."

Beckhoff 的開放性與靈活性為全球客戶需求的首選
Beckhoff provides openness and flexibility as top choice for global clients

許多自動化大廠都會侷限於封閉性的問題，協易的客戶遍及歐、美、日，要求多元且完

整，更需要一個全球可以通用的系統。再加上智慧化，要公開標準格式，並要吻合全世界的發展趨勢。許貴彰經理更表示：「Beckhoff 的開放性與靈活性，無庸置疑是我們唯一首選的選擇關鍵，且所有的功能 Beckhoff 應該都可以提供」。

Many automation manufacturers are limited to the closed system. SEYI's clients come from Europe, the United States and Japan, and they need a universal system with diverse and complete functions. Moreover, the system must be intelligent, standard and in line with global trend. K.C. Hsu said: "Beckhoff offers an open and flexible system which is fully in line with our expectations. This is the key factor that we decided to use Beckhoff, and we believed that Beckhoff offers most functions we need in the production."

金屬加工設備會隨著產品種類的不斷增多，需要極大的靈活性。Beckhoff PC-based 控制技術具有高性能、高速度等特點，憑藉其靈活、可升級的解決方案，在應對這一需求方面具有極強的競爭優勢。

Metal machining equipment needs great flexibility since the product portfolio will continue to expand. Beckhoff PC-based control technology is high-performance and high-speed, and it offers flexibility and ready-to-upgrade solution, which helps to increase competitive advantage in metalworking industry.



倍福 EPC 可直接整合 Safety 與 I/O 接口，並可擴展模組化選項。
Beckhoff Embedded PC can integrate Safety and I/O interface, and offer modular extension options.

PC-based 解決方案為智慧機械帶來新契機 PC-based solution for smart machinery

倍福 (Beckhoff) 這次針對全球伺服沖床大廠 - 協易機械，提供了整合性的解決方案，不用改硬體就能達到汽車客戶需求，也可以自己規畫不同的沖床設備。此方案將運動控制、噸位控制器、安全模組、HMI 等整合到倍福的工業電腦 EPC 中，並搭配 EtherCAT、分散式 IO 與 TwinCAT3 自動化軟體，可以整合更多元的控制，並能夠大幅度地提升機械的生產效率和靈活性，具有極強的競爭優勢。PC-based 控制技術具有較高的處理器能力，能夠毫不費力地處理最為複雜的控制運算，因此不再需要那些靈活度有限的複雜、昂貴的專用控制器和 PLC。

Beckhoff offers an integrated solution for SEYI, the leading global manufacturer of servo presses, to meet the need of automakers without changing the hardware, and also to arrange different servo presses by themselves based on production need. This solution integrated the motion control, tonnage control, safety module and HMI into Embedded PCs which were equipped with EtherCAT, I/O system and automation software – TwinCAT; therefore, SEYI significantly increases efficiency and agility in the machinery production. The use of Beckhoff offers SEYI stronger competitive advantage, because the PC-based control technology has higher ability of processor which can process the most complicated control operations effortlessly. Thus, there is no need for those complicated, expensive, and inflexible controllers and PLCs.

另外，許貴彰經理更表示：「主系統採用 PC-based 與原本電腦的使用習慣很像，資料的管理與反應的速度都比以往的 PLC-based 高很多，可高達 10 倍以上，在我們處理比較高速的檔案時非常有用。以前處理取樣頻率較高的 data 時，無法直接用 PLC 處理，需要購買特殊專用的電路板與模組，現在可以完全整合到 Beckhoff 系統中。為了分擔系統負擔，可以使用獨立模組，但都是 Beckhoff 模組 1 與模組 2 可對應不同功能，不需擔憂沒有足夠的介面可以使用，硬體與軟體資源都充沛下，我們完全可以更準確地配合客戶的需求客製化來開發」。

According to K.C. Hsu: "The use of PC-

based system is very similar to the use of computers. When dealing with data management and response, the speed are about ten times higher than PLC-based system. PC-based system is very useful for us to process high-speed files. In the past, we had to purchase special circuits boards and modules to process data in high frequency, because PLC-based system could not process it. But now, everything is fully integrated into PC-based system. We also use independent modules to shoulder the burden of the system, such as Beckhoff module 1 and module 2 for different functions. Thus, we do not need to worry about interfaces are not enough to use. With sufficient hardware and software, we can customize products that meet requirements from clients."

「使用倍福 PC-based 的介面與以前慣用的歐系介面與高階 PLC 的程式語言沒有太大差別，因此沒有轉換的問題，且使用倍福也可以減少需要維護多種語言的負擔。對工程師而言更是省時省力。」協易伺服技術發展部溫尚融工程師表示。

Wen Shang-Rong, the engineer of Technology Development at SEYI said: "Regarding the interface, the programming languages in Beckhoff PC-based system is similar with PLC system, so we can avoid conversion problem. Moreover, the use of Beckhoff system helps us eliminate the engineering effort required for maintaining multiple programming languages."



EtherCAT 可縮短更新和響應時間至少十倍，已獲得全球認可。

EtherCAT can minimize the update and response time by at least ten times.

EtherCAT 實現高性能與高速度，滿足所有客戶需求 High-speed EtherCAT for all requirements

協易的客戶遍布全球，如何以單一系統滿足所有不同需求，更需要更開放與靈活的 PC-based 控制解決方案搭配 EtherCAT 即時乙太網解決方案。與傳統的現場總線技術相比，EtherCAT 可縮短更新和響應時間至少十倍。在 PC 控制器中，除了標準的乙太網端口之外，EtherCAT 無需任何專用插卡。傳統的現場總線系統，例如 PROFIBUS 或 CANopen 可通過網關輕鬆整合到 EtherCAT I/O 系統中。簡單、可靠的連接技術可顯著減少佈線時間，從而節約成本。



Beckhoff 提供單一介面而又有完整功能，助汽車業金屬沖壓一臂之力。

Beckhoff provides a single interface with complete functions to optimize metal stamping technology in the automotive industry.

SEYI has many customers from different countries, and need to meet all different needs with a single system. They require an open and flexible PC-based control system with an EtherCAT technology. EtherCAT is a real-time Ethernet solution, compared with traditional fieldbus technology, EtherCAT can minimize the update and response time by at least ten times. In the PC controller, we provide the standard Ethernet port and no need additional dedicated cards. For example, PROFIBUS and CANopen, the traditional fieldbus system, can be easily integrated into the EtherCAT I/O system through a gateway. EtherCAT is simple and reliable connection technology reduces wiring work and cost.

EtherCAT 即時處理數據為目前最快系統，具高速、最高的精度同步節點，出色的佈線靈活性，可支持任意網絡拓撲結構，且可連接任意數量的節點優勢。EtherCAT 技術集團（ETG）為世界上最大的工業乙太網和現場總線組織，擁有達 67 個國家 / 地區，約計 6,000 多家的成員公司，能完整提供 EtherCAT 技術。

The EtherCAT system delivers the fastest real-time data processing. Regarding network topology, EtherCAT can support almost all topologies and any combinations thereof are possible with a nearly unlimited number of nodes. The Technical Committee of the EtherCAT Technology Group (ETG) is the world's largest fieldbus user

organization. With over 6,000 member companies from 67 countries, the ETG can provide complete EtherCAT Technology.

Beckhoff 助汽車業金屬沖壓一臂之力

Beckhoff optimizes metal stamping in automotive industry

「Beckhoff 能在一致的單一環境下提供需要的所有功能，不管是在硬體或軟體上，讓我們可以很有自信的去面對客戶給的新挑戰，在瞬息萬變的時代要用最短的時間跟上客戶的

要求，倍福提供單一介面而又有完整功能對我們是很重要的武器」，協易伺服技術發展部許貴彰經理表示。Beckhoff 協助協易沖床設備在大型汽車鈑件沖壓的應用十分成功，提供汽車業金屬沖壓最佳自動化解決方案。

“Beckhoff can provide all the functions we need, whether in hardware or software, so that we have confidence to face new challenges given by our customers. Moreover, Beckhoff provides a single interface and complete functions, which helps us to quickly meet customers’ requirements in this dynamic market.” said K.C. Hsu.

Beckhoff 自動化解決方案帶給客戶的效益：

- 開放性，單一系統可整合各種控制
- 共通性，支援共通的通訊與介面
- 安全性、一致性
- 提高生產效率與靈活性
- 快速，資料管理與反應速度更快
- 高可靠度與高性能

Benefits:

- Open system, combining various control systems into one system
- Universal, support common communication protocols and interfaces
- Safety and consistency
- Increase productivity and flexibility
- Faster speed of data management and respond
- High reliability and high performance