

42 years

富強鑫多組分成型技術42周年
Multi-Component IMM—Since 1984

FCS
— Since 1974



FB-R 轉盤式

FB-T 轉軸式

FB-C 夾層混色式

多組分・夾層混色射出機

Multi-Component Injection Molding Machine

FB 160-550
SERIES

產品定位 Product Position

本公司為業界最早研發生產雙色機之廠商，技術先進且經驗豐富，可滿足客戶各類之成型需求！

富強鑫雙色機具有轉盤、轉軸、夾層混色多種設計，目前已廣泛運用在手機業、製筆業、汽車業、手工具業及日用品業等，最大銷模力可達4000噸。

FCS is the first company which researched & developed the two-component injection molding in Taiwan, which is the most experienced and full of advanced technology to offer the customer needs.

With designs of Rotary Table, Rotary Shaft, Sandwich/Interval and the maximum mold clamping force of 4000 tons, FCS two-component machine has been widely applied to cell phones, pen-making, automobiles, handworking tools and commodities, etc.



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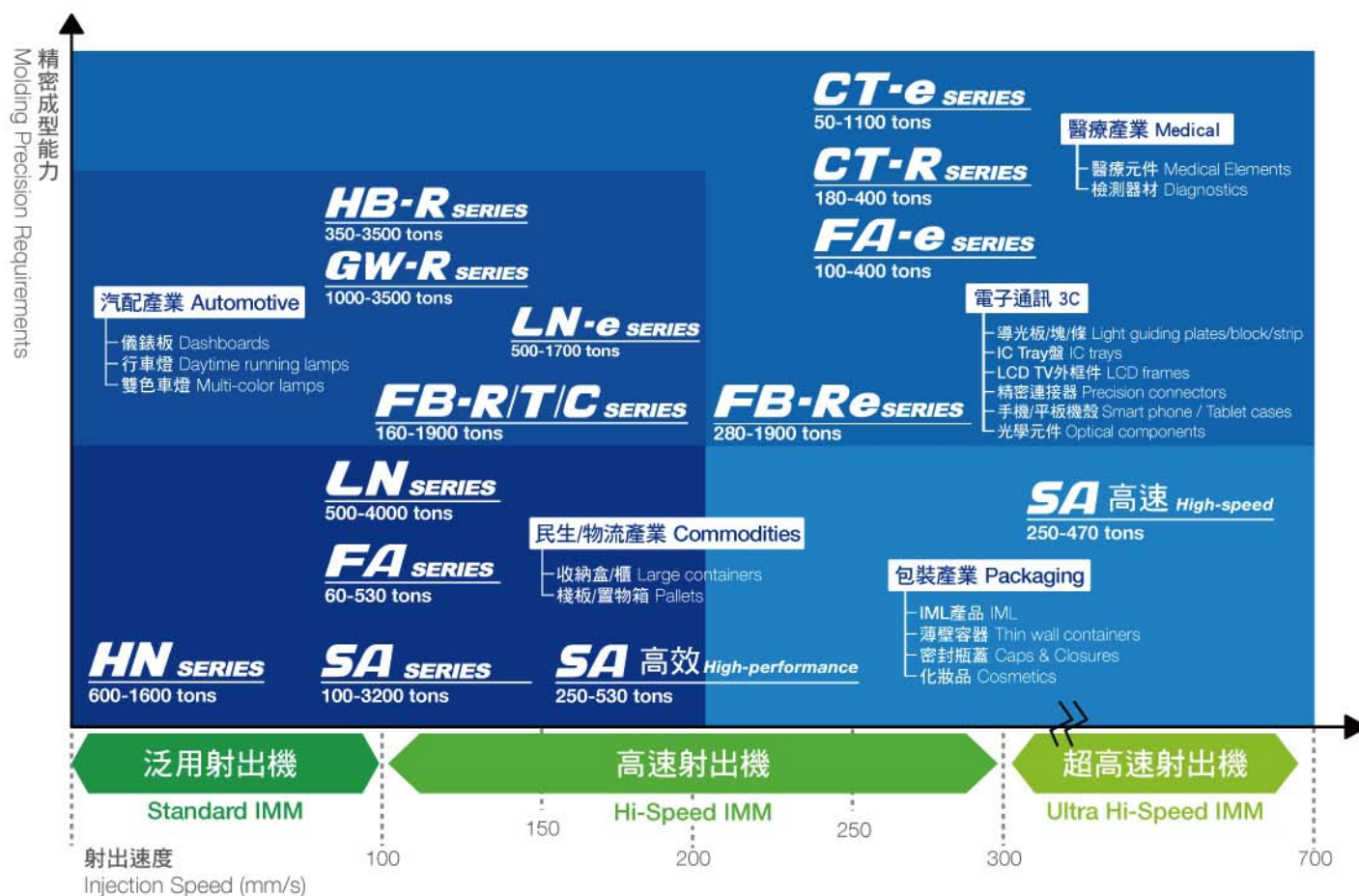
高品質高新技術產品
High-quality and High-
tech Products Certifi-
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ISO品質管制體系認證
ISO9001:2015
Certification



CE 認證 CE Mark



FCS多組分射出機射出形式

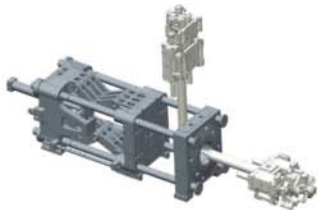
FCS Multi-Component IMM Injection Unit Combination



- 組合式結構的射出單元，與單射機體積相同，節省佔地空間，且可滿足更小中心距的需求。
- 配置開關模定位裝置，頂出採比例控制（精度達0.1mm），可滿足機械手生產的精度要求。
- 此類型雙色機產品採用特殊方式移位，不需轉盤，因此本機也可以當成標準單色機使用。
- 模組化射出單元設計，生產、備料更精簡，可按客製化要求生產。
- 高精度、低壓、低流量域的重複再現性為 $\pm 0.5\%$ 。成型產品重量誤差越控制0.4%-0.7%，接近半閉迴路控制的水平。
- Barrel sets are special arranged, it takes the same space as single-component machine in horizontal direction. This structure can save space and can suit the mold on which the two gates are extremely close.
- Machine adopts mold open-close positioning device, and equip proportion control on ejector (accurate to 0.1mm), which can totally meet the demand of robot.
- This type of two-component machine use special way to achieve overmolding, without rotary table. It could also be used as single-component machine.
- Modularized injection unit is easy for production and material preparation, which can be easily customized accordingly.
- Precise control of low pressure & low flow, repeating precision is less than 0.5%. Weight error of the products is 0.4%-0.7%, with semi-close loop system nearly.

FCS多組分射出機射出形式

FCS Multi-Component IMM Injection Unit Combination

類型 Item	射出型式 Describe	代號 Type	圖示 Drawing
雙射出 (2K)	1 平行雙射 Parallel 平行雙射出 Parallel double inj.	P型	
	2 直角雙射 Right angle- Horizontal 單射出 + 水平直角射出 Side inj. + Back inj.	L型	
	3 天側雙射 Right angle- Vertical 單射出 + 垂直直角射出 Side inj. + Top inj.	V型	
	4 背式雙射 Piggyback 斜背式雙射出 Side inj. + Oblique inj.	W型	
	5 對向雙射 Opposite 對向雙射出 Opposite double inj.	H型	
三射出 (3K)	6 平行三射 Parallel 平行三射出 Parallel triple inj.	P型	
	7 直角三射 Right angle- Horizontal 平行雙射出 + 水平直角射出 Parallel double inj. + Back inj.	L型	

備註1：2K在此指雙色或雙料(源德文2 komponente)之簡稱，依此類推。
Note1：2K here means 2 component (from German "2 komponente").

類型 Item	射出型式 Describe	代號 Type	圖示 Drawing	
三射出 (3K)	8 天側三射 Right angle- Vertical	平行雙射出+垂直直角射出 Parallel double inj. + Top inj.	V型	
	9 背式三射 Piggyback- Parallel	斜背式雙射出+平行射出 Piggyback inj. + Parallel inj.	PW型	
	10 背式三射 Piggyback- Horizontal	斜背式雙射出+水平直角射出 Piggyback inj. + Back inj.	LW型	
	11 背式三射 Piggyback- Vertical	斜背式雙射出+垂直直角射出 Piggyback inj. + Top inj.	VW型	
	12 獨立三射 Isolated Triple	單射出+水平直角射出+ 垂直直角射出 Side inj.+ Back inj.+ Top inj.	LV型	
	13 對射直角三射 Opposite & Horizontal	對向雙射出+水平直角射出 Opposite double inj. + Back inj.	HL型	
	14 對射天側三射 Opposite & Vertical	對向雙射出+垂直直角射出 Opposite double inj. + Top inj.	HV型	

備註2：對射機型請參閱HB-R目錄

Note2 : Opposite Molding Machine Specifications, please refer to HB-R

FCS多組分射出機射出形式

FCS Multi-Component IMM Injection Unit Combination

類型 Item	射出型式 Describe	代號 Type	圖示 Drawing
三射出 (3K)	15 對射背式三射 Opposite & Piggyback 對向雙射出 + 斜背式射出 Opposite double inj. + Oblique inj.	HW型	
	16 對射平行三射 Opposite & Parallel 對向雙射出 + 平行射出 Opposite double inj. + Parallel inj.	HP型	
四射出 (4K)	17 直角四射 Right angel-Horizontal 平行三射出 + 水平直角射出 Parallel triple inj. + Back inj.	L型	
	18 天側四射 Right angel-Vertical 平行三射出 + 垂直直角射出 Parallel triple inj. + Top inj.	V型	
	19 直角天側四射 Parallel & Right Angel 平行雙射出 + 水平直角射出 + 垂直直角射出 Parallel double inj. + Back inj. + Top inj.	LV型	
	20 背式四射 Piggyback & Right Angle 斜背式雙射出 + 水平直角射出 + 垂直直角射出 Piggyback inj. + Back inj. + Top inj.	LVW型	
	21 四角四射 Square 平行四射出呈四角形排列 Parallel quartet inj.	X型	
	22 背式四射 Parallel & Piggyback 平行雙射出 + 斜背式雙射出 Parallel double inj. + Piggyback inj.	W型	

備註1：2K在此指雙色或雙料(源德文2 komponente)之簡稱，依此類推。
Note1：2K here means 2 component (from German "2 komponente").

類型 Item		射出型式 Describe	代號 Type	圖示 Drawing
四射出 (4K)	23 雙背式四射 Double Piggyback	兩組斜背式雙射出呈直角排列 Piggyback inj.+ Piggyback inj.	WW型	
	24 對射天側四射 Opposite : Vertical	對向三射出+垂直直角射出 Opposite triple inj.+ Top inj.	HPV型	
	25 對射背式四射 Opposite: Piggyback-Vertical	對向雙射出+垂直直角射出+斜背式射出 Opposite double inj. + Top inj. + Oblique inj.	HVV型	
五射出 (5K)	26 直角天側五射 Parallel & Right Angle	平行三射出+水平直角射出+垂直直角射出 Parallel triple inj. + Back inj. + Top inj.	LV型	
	27 背式五射 Parallel & Piggyback	平行三射出+斜背式雙射出 Parallel triple inj. + Piggyback inj.	W型	
六射出 (6K)	28 直角天側六射 Parallel & Right Angle	平行三射出+水平直角雙射出+垂直直角射出 Parallel triple inj. + Parallel Back inj. + Top inj.	LV型	
	29 背式六射 Parallel & Piggyback & Vertical	平行三射出+斜背式雙射出+垂直直角射出 Parallel triple inj. + Piggyback inj. + Top inj.	VW型	

備註2：對射機型請參閱HB-R目錄

Note2 : Opposite Molding Machine Specifications, please refer to HB-R

多組分射出機-轉盤式(FB-R)

Multi-Component Injection Molding Machine-Rotary Table

精密安全的轉盤設計

轉盤上兩組中子裝置及模具冷卻裝置領先業界，轉盤轉動時與模盤不接觸，避免磨耗造成故障，轉盤轉動後機械本身做自檢，準確後再關模，確保避免模具損傷。獨特精準的轉盤定位系統及專利夾具，採用專利節能伺服配置，射出成型產品精密穩定。

Precise and Safety Rotary Table

With two sets of core equipment on the rotary table and cooling system in the mold, being the best option in the industry nowadays. Rotary table wouldn't touch the platen thus the damage could be reduced. Besides, the accurate confirmation of the rotation position could protect the molds themselves. Precise rotary table positioning system and the patented clips can stabilize the injection molding process and products.



配備多重保護裝置

配備多重安全保護裝置，滑腳加長且調整螺絲加大，增加活動壁運動時的導向作用，可根據模具大小重量調整滑腳高度，防止因模具重量而導致轉盤下垂，確保模具180°精準定位，保護模具。

Protection Devices

Applying multiple protection devices. Enlarged skates and adjustable screws help guide the moving platen and ensure the mold position to be precise, to protect the molds.



優異的夾模機構

採用PRO/ENGINEER實體模型電腦輔助設計之鎖模系統，運用寬模板設計，其開模行程及大柱內距均特別加大，運用範圍廣泛。

Highly Rigid Clamping Unit

By PRO/ENGINEER computer aid designed clamping system, the clamp stroke and distance between tie bars have been enlarged for versatile usage.





高速轉盤控制(選配)

採用伺服馬達控制轉盤動作，提升轉盤轉速30%-50%，縮短成型週期，速度切換快速平穩，定位精準。

High-Speed Rotation Control (Optional)

Rotary table controlled by servo motor could increase rotary speed by up to 30% - 50% which could shorten cycle time, make switch speed more stable and positioning more precise.



高端控制器

採用網路注塑機專用系統，人性化操作介面，系統反應速度高達1ms，精度更高、操作方便，擴展性更好。

Hight-End Controller

Applying network control system capacitate with user friendly operation interface and high speed central processor, which offers high response and easy extending.

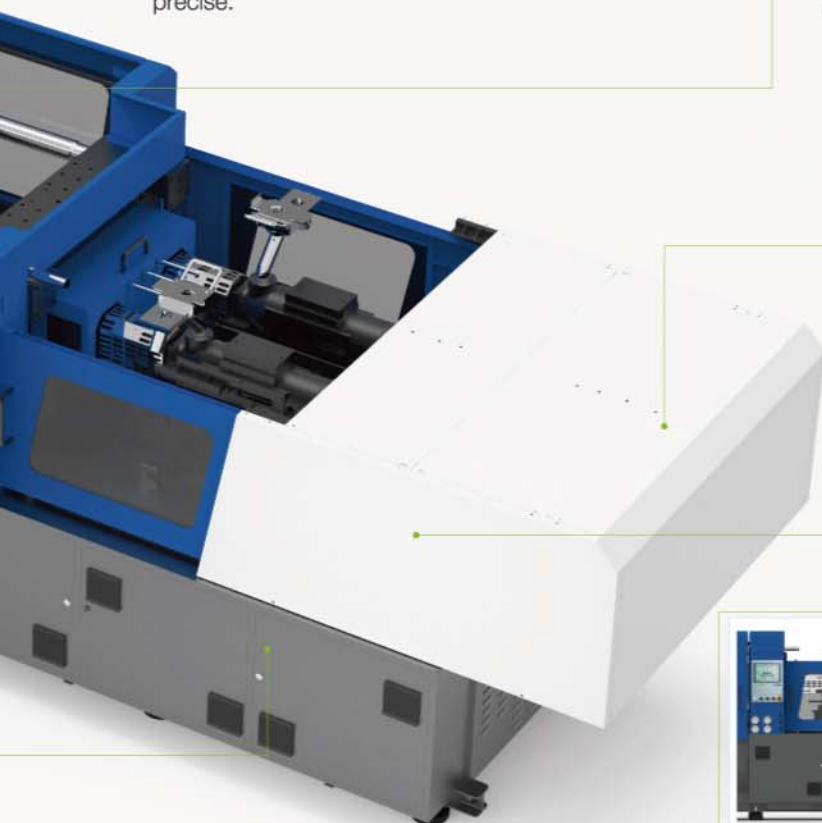


緊湊高效的射出單元

射出部分有兩組獨立料管組，同步做射出動作，大幅縮短成型週期。螺桿及料管採用國外特殊合金鋼材，經離子淡化處理，耐腐蝕、耐磨性和耐高溫。採用PID溫度控制，具螺桿冷間啟動限制，斷線偵測功能，並控制溫度在 $\pm 1^{\circ}\text{C}$ 。

Compacet and Hight Efficiency Injection Unit

Two isolated barrel sets can inject at the same time to reduce the cycle time to get more profit. With finest steel and most innovative ino-nitriding process, the hardness of screw and barrel reaches above HV950, to ensure high wear-resistance. Using PID temperature control, with a cold start between the screw limite, breakage detection, and control the temperature at $\pm 1^{\circ}\text{C}$.



高效節能伺服動力系統

配置高性能伺服電機可節能約30% - 70%。

High Efficiency Servo Power System

Adopting AC/PM synchronous servo motor. Energy-saving can reach up to 30% - 70%.



簡約優化的管路設計

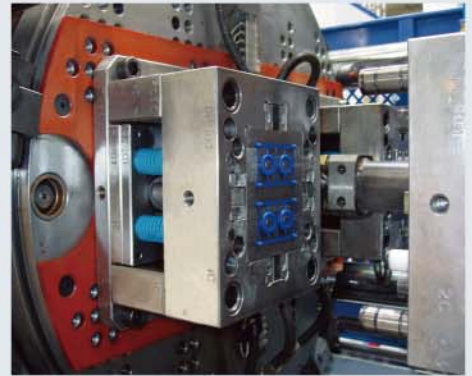
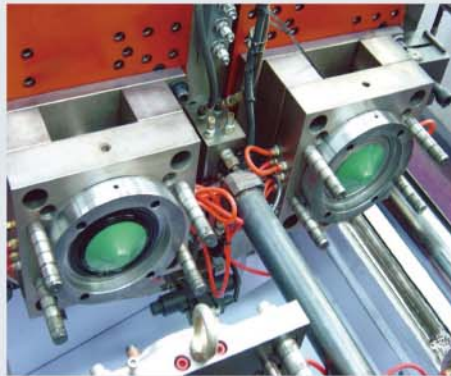
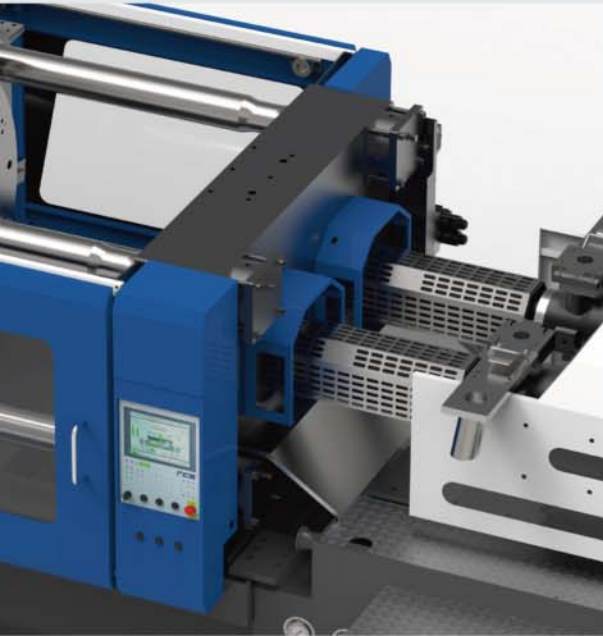
主油路管直線布置，油路壓力損失小，更為合理美觀，安裝維護更為方便。

Piping Design Improvement

The straight main piping declines the oil pressure and makes installation and maintainence more effective.

多組分射出機-轉盤式(FB-R)

Multi-Component Injection Molding Machine-Rotary Table



- 本機型於活動車壁上有往復180°旋轉之轉盤，可置放兩副模具，生產雙色分明之產品。
- 射出兩組及夾模均採用線性電位計，可準確控制開關模及射出行程，準度可達0.1mm。
- 可選購轉盤轉軸共用裝置。

- This type of machine equipped the 180° degree rotary table which may put two molds to produce two component products.
- With an accuracy reaching 0.1mm, liner potentiometers are used in the two injection sets and clamping molds to accurately control mold closing and opening and the injection process.
- Optional rotary table & rotary shaft to share the device.





- 射出部分有兩組獨立之料管組，同步做射出動作，雙色一次成型，可大幅縮短成型週期，增加經營利潤。
- 螺桿及料管採用國外特殊合金鋼材，經離子氮化處理，耐腐蝕且耐磨性特高。
- 優良油壓迴路設計，能使油管壓力降低，加上幫浦與馬達精密結合；使機器噪音小於70分貝。
- 採用高扭力、效率佳之油壓馬達，直接驅動螺桿，可縮短塑化時間，節省能源。

- Two isolated barrel sets inject the same time to reduce the cycle time to get more profit.
- With finest steel and most innovatory ion-nitriding process, the hardness of screw and barrel reaches above HV950 to ensure high wear resistance.
- Superior hydraulic design system ensures the decrease of tube pressure. Assembled with pump and motor, it can lower the machine's noise to 70dB below.
- High torque and excellent performance of hydraulic motor can drive screw directly and shorten plasticizing time so that saves energy.





FCS-6500 ▲

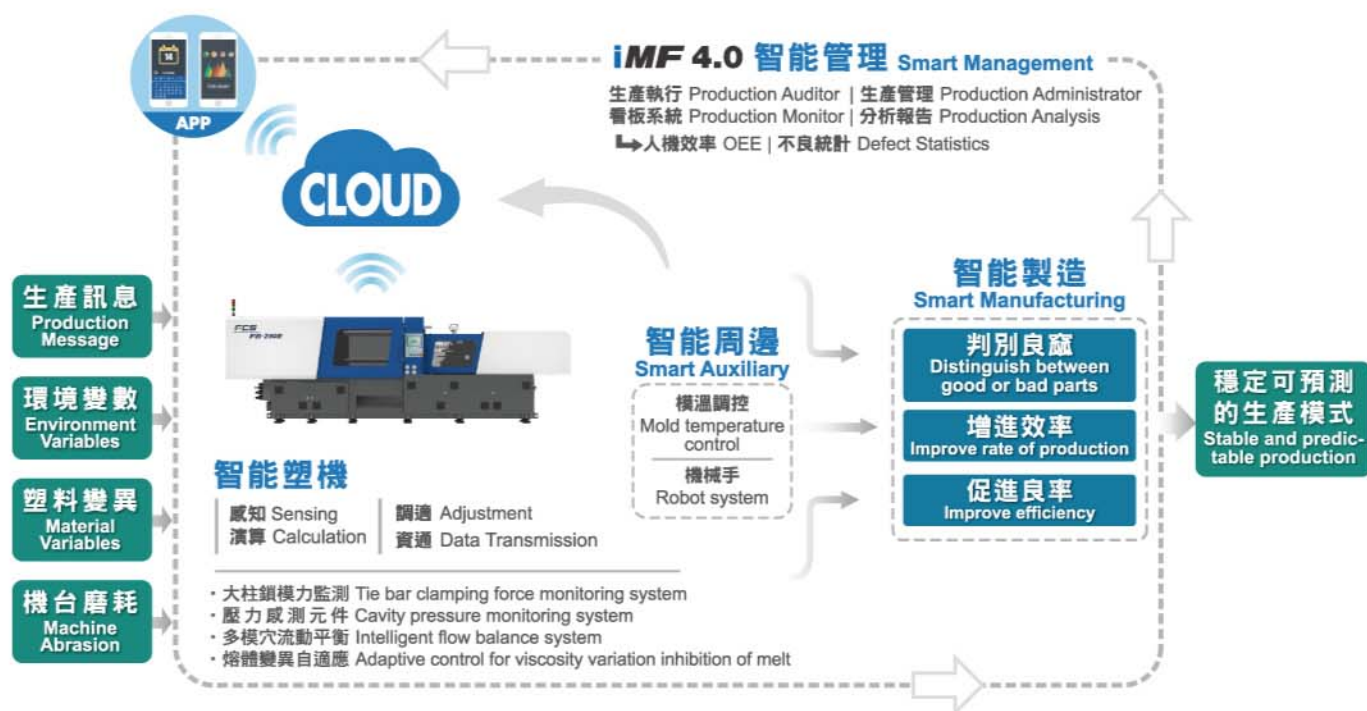
產品特點

- 12吋超大TFT顯示螢幕、1600萬色真彩顯示及800x600像素分辨率，觸控式操作面板，為一操作簡易的控制器。
- 採用功能強大的CPU其時脈為1.1~1.6GHz，系統反應時間至快可達1ms。
- 採多重通訊介面(USB、串行接口、Ethernet Ether CAT、Sercos III)。
- 所有程序都儲存在CF卡，更換控制器及程式均相當便利。
- 該控制器支援OPC協定，且依據IEC-61131設計，其特點為模組化並易於軟硬體維護。
- 共有多種語言可供客戶選擇。
- 十二段PID料溫控制，採用SSR無接點溫控，精確度達 $\pm 0.1^{\circ}\text{C}$ ，並具溫度異常斷線警報及上下限設定功能，可精確掌控料溫。
- 具多階密碼保護功能、可依不同的授權等級更改設定，及資料硬體鎖功能，可防止成型參數被任意更改。
- 提供統計製程控制及射出波形圖，使成品有高效的品質保證以及提高生產效率。
- 模組化控制器，可快速擴充軟、硬體模組以連接更多週邊設備(如:閥澆口、快速換模系統...等)。

Specific Features

- A 12" TFT LCD screen display, with 16 million color palettes, 800x600 pixel resolution and a touchscreen panel ; User Friendly controller.
- Equipped with a powerful CPU (1.1GHz~1.6GHz). System reaction rate of 1ms promotes sensibility and stability of motion.
- Multiple communication interfaces (e.g. USB, RS232, Ethernet, EtherCAT, Sercos III)
- All software is stored on an exchangeable compact flash driver (CF Card), reducing downtime and providing ease of service.
- This controller also supports the open industry standard OPC. The controller was designed according to IEC-6113, featured together with a module, thus saving maintenance time.
- Multiple optional operation languages available for customers to choose from.
- The PID barrel temperature control, SSR temperature controller can reach precise levels with margins of $\pm 0.1^{\circ}\text{C}$. It has an irregular temperature detector, wiring disconnection alarm function, and a limit value setup function to control the barrel temperature accurately.
- A multi-level authorization with password protection to prevent anyone from randomly changing parameters.
- The operating system contains integrated softwares such as statistic process control (SPC) and injection graphs for efficient quality assurance and increased productivity.
- With modular controllers design, rapid expansion of software and hardware modules to connect more peripherals (valve gate quick mold change system...etc.)

iMF 4.0 智能製造工廠 intelligent ManuFactory



智能製造工廠

- 智能塑機 — 運用外加感測器，掌握因環境、塑料、設備磨耗的微量變異，提升射出機自適應調控能力。
- 智能周邊 — 透過標準通訊協定，達到設備運轉、互聯及調控之目的。
- 智能製造 — 由熔體變異或模穴壓力感測，即時線上監控品質，並搭配機械手臂檢出不良品，有效降低品檢人力。
- 智能管理 — 透過智能管理系統收集關鍵熔體變異數據。

Intelligent ManuFactory

- **Smart Machine -**
Applying additional sensors to monitor and meet the slight fluctuations caused by the environment, material, or machine abrasion, and to improve the adaptive control of injection molding machines.
- **Smart Auxiliary -**
The IMM and auxiliaries could operate, communicate with each other through the standard communication protocol, to be adjusted and controlled.
- **Smart Manufacturing -**
Real-time online quality monitoring through the sensors of viscosity variation of melt, or cavity pressure, and detecting the defectives with automations, to effectively reduce the inspection manpower.
- **Smart Management -**
Using intelligent managing system to collect the key data of viscosity variation of melt.

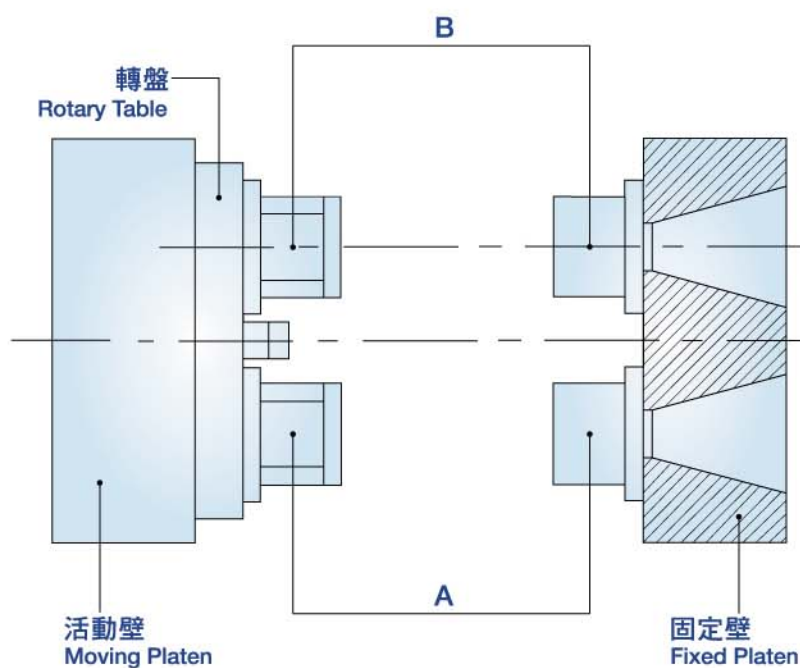
FB-R標準與選購配備 FB-R Standard & Optional Accessories

配備項目	ITEM
夾模模板形成：窄(N)/寬(W)	Mold platen:Narrow(N)/Wide(W)
PVC、PC、壓克力、尼龍專用螺桿組	Special Screw for PC/PMMA/PA/PVC
雙合金螺桿、料管	Bi-alloy Screw/Barrel
拖拉式落料裝置	Sliding material feeding device
多段數位背壓 (螢幕設定)	Multi-stage back pressure control (Screen set up)
多段數位背壓/射出壓力螢幕顯示	Multi-stage back pressure/Injection pressure display on screen
射出閉迴路 (伺服閥)	Close-loop control for injection pressure & speed (servo valve)
射出比例閥	Proportional valve for injection unit
射嘴獨立溫控	Temperature control of injection nozzle
落料口溫度顯示	Temperature display of feeding gate
落料口溫度控制	Temperature control of feeding gate
射出電阻尺	L/P for injection unit
曲手：套鋼	Steel bearing (Toggle)
開關模比例閥控制	Proportional valve for mould open and close
電預塑裝置	Electric Plastification device
模壁T型槽	T-slot platen
模壁T型墊板	T-slot board
隔熱墊板	Insulator sheets
活動式模定位圈	Check ring of mold (Replaceable)
固定式模定位圈	Check ring of mold (Non-replaceable)
安全踏板	Security Pad
曲手電動注油器(1組)	Auto lubrication system for toggle(1 set)
曲手電動注油器(2組)	Auto lubrication system for toggle(2 set)
車壁潤滑：手動注油器	Manual lubrication system (platen)
車壁潤滑：電動注油器	Auto lubrication system (platen)
雙托模	Double ejector
單中子	Single core pull device
雙中子(二公)	Double core pull device
四中子(二公二母)	Four core pull device
轉牙裝置(計時/計次)	Unscrew device by timer or counter
比例閥轉盤控制裝置	Proportional valve control for rotary table
伺服馬達轉盤驅動裝置	Servo motor drive for rotary table
夾模電阻尺	L/P for clamping unit
拖模電阻尺	L/P for ejection unit
兩個風托(兩公)	Air ejector sets
成品落下口	Article Collecting Channel
電動安全門	Automatic safety gate (Electric type)
水流分佈器8入8出(銅製)	Water manifold - 8 in & 8 out (copper)
水流分佈器10入10出(銅製)	Water manifold - 10 in & 10 out (copper)
雙回路(開模與托模同動)	Double loops system (mould open - ejector start)
伺服節能系統	Servo power-saving system
電眼檢出	Photo cell drop-out checking device
油溫顯示	Oil temperature display for hydraulic system
油溫省水閥控制	Water valve for hydraulic oil temperature control
油溫預熱功能	Oil temperature preheating function
FCS-6500微電腦控制器(彩色觸控:KEBA)	FCS-6500 controller (color & touch screen:KEBA)
資料保護鎖(硬體鎖)	Data lock function (key)
機械手電氣接口(歐規12)	Robot electrical interface (EUROMAP 12)
機械手電氣接口(歐規67)	Robot electrical interface (EUROMAP 67)
電控穩壓器	Power stabilizer
三色警示燈	Three colors alarm light
CE安全插座	Outgoing Socket
主電源斷路器	Main power breaker
24H料管自動定時預熱	24 hours Auto-preheat
油壓、電氣雙重保護裝置	Dual safety device: hydraulic and electrical
機械安全桿保護裝置	Mechanical Safety bar Protection device
不銹鋼漏斗	Stainless hopper
乾燥機	Hopper dryer
抽料機	Auto loader
落地式送料裝置(乾燥機/抽料機/L型腳架/吸料盒)	Loading set (Dryer, Auto Loader, L-Frame, Suction Box)
模溫機	Mold temperature controller
乾燥機磁鐵	Magnet for hopper dryer
吊桿組	Mold lifting hanger set
避震器	Anti-vibration mounting pad
工具箱組	Tool box set
電氣及其他附件	Accessory for electrical and others

- 機台模壁若加裝T型墊板或隔熱墊板，會使模厚及頂出行程的規格改變。
- If clamping unit adopting T-slot board or insulator sheets, the "mould thickness" & "ejector stroke" dimensions will be different.

● 標準配備 Standard ○ 選購配備 Option ▲ 選附配備 Free Option - 無 N/A

FB-R系列可承受模具重量 Max Mold Weight: FB-R Series



機 種	轉盤側 Rotary Table		固定側 Fixed Platen	
	A	B	A	B
FB-160R	500	500	1000	1000
FB-200R	500	500	1000	1000
FB-230R	1000	1000	2000	2000
FB-280R	1200	1200	2400	2400
FB-400R	1500	1500	3000	3000
FB-550R	2000	2000	4000	4000

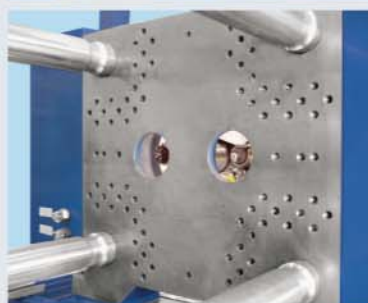
單位 Unit: kg

應用圖例 Examples of FB-R



多組分射出機-轉軸式(FB-T)

Multi-Component Injection Molding Machine-Rotary Shaft



- 活動車壁中心有180°之轉動機構，帶動模具旋轉板轉動，來生產雙色分明產品。
- 射出部分有兩支獨立料管組，可同時作射出成型產品。
- 機器動作可同時依產品需求，作頂出再轉動模具旋轉板，或先轉動模具旋轉板再頂出之彈性操作。
- 本機適合生產按鍵、把手、握柄……等產品。

- A rotary shaft is located at the center of moveable platen, which could drive mold move around to produce individual two-component products.
- There are two independent barrel sets at injection unit; each of them could do unit injection simultaneously.
- According to the request of product, the machine with flexibility could do ejection then turn the rotary table or turn rotary table first then do the ejection action as well.
- This series machine is suitable for producing keyboard, handle bar, and hanger..... etc.



FB-T標準與選購配備 FB-T Standard & Optional Accessories

● 標準配備 Standard ○ 選購配備 Option ▲ 選附配備 Free Option — 無 N/A

配備項目	ITEM	FB-220T	FB-250T	FB-160T	FB-280T	FB-400T
夾模模板形成：窄(N)/寬(W)	Mold platen:Narrow(N)/Wide(W)	N	N	W	W	W
PVC、PC、壓克力、尼龍專用螺桿組	Special Screw for PC/PMMA/PA/PVC	○	○	○	○	○
雙合金螺桿、料管	Bi-alloy Screw/Barrel	○	○	○	○	○
拖拉式落料裝置	Sliding material feeding device	●	●	●	●	●
多段數位背壓(螢幕設定)	Multi-stage back pressure control (Screen set up)	●	●	●	●	●
多段數位背壓/射出壓力螢幕顯示	Multi-stage back pressure/Injection pressure display on screen	○	○	○	○	○
射出閉迴路(伺服閥)	Close-loop control for injection pressure & speed (servo valve)	○	○	○	○	○
射出比例閥	Proportional valve for injection unit	○	○	○	○	○
射嘴獨立溫控	Temperature control of injection nozzle	●	●	●	●	●
落料口溫度顯示	Temperature display of feeding gate	●	●	●	●	●
落料口溫度控制	Temperature control of feeding gate	○	○	○	○	○
射出電阻尺	L/P for injection unit	●	●	●	●	●
曲手：套鋼	Steel bearing (Toggle)	●	●	●	●	●
開關模比例閥控制	Proportional valve for mould open and close	○	○	○	○	○
電預塑裝置	Electric plastification device	○	○	○	○	○
模壁T型槽	T-slot platen	—	—	—	—	—
模壁T型墊板	T-slot board	—	—	—	—	—
隔熱墊板	Insulator sheets	○	○	○	○	○
活動式模定位圈	Check ring of mold (Replaceable)	—	—	●	●	●
固定式模定位圈	Check ring of mold (Non-replaceable)	●	●	—	—	—
安全踏板	Security Pad	—	—	—	—	—
曲手電動注油器(1組)	Auto lubrication system for toggle(1 set)	●	●	●	●	●
曲手電動注油器(2組)	Auto lubrication system for toggle(2 set)	—	—	—	—	—
車壁潤滑：手動注油器	Manual lubrication system (platen)	●	●	●	●	●
車壁潤滑：電動注油器	Auto lubrication system (platen)	○	○	○	○	○
單托模	Single ejector	—	—	—	—	—
雙托模	Double ejector	●	●	●	●	●
雙中子(二公)	Double core pull device	●	●	●	●	●
四中子(二公二母)	Four core pull device	○	○	○	○	○
轉牙裝置(計時/計次)	Unscrew device by timer or counter	—	—	—	—	—
伺服馬達轉盤驅動裝置	Servo motor drive for rotary table	●	●	●	●	●
夾模電阻尺	L/P for clamping unit	●	●	●	●	●
托模電阻尺	L/P for ejection unit	●	●	●	●	●
兩個風托(一公一母)	Air ejector sets	○	○	○	○	○
成品落口	Article Collecting Channel	●	●	●	●	●
電動安全門	Automatic safety gate (Electric type)	—	—	—	—	—
水流分佈器8入8出(銅製)	Water manifold - 8 in & 8 out (copper)	●	●	●	●	●
水流分佈器10入10出(銅製)	Water manifold - 10 in & 10 out (copper)	○	○	○	○	○
雙回路(開模與托模同動)	Double loops system (mould open - ejector start)	—	—	—	—	—
伺服節能系統	Servo power-saving system	●	●	●	●	●
電眼檢出	Photo cell drop-out checking device	○	○	○	○	○
油溫顯示	Oil temperature display for hydraulic system	●	●	●	●	●
油溫省水閥控制	Water valve for hydraulic oil temperature control	○	○	○	○	○
油溫預熱功能	Oil temperature preheating function	○	○	○	○	○
FCS-6500微電腦控制器(彩色觸控:KEBA)	FCS-6500 controller (color & touch screen:KEBA)	●	●	●	●	●
資料保護鎖(硬體鎖)	Data lock function (key)	●	●	●	●	●
機械手電氣接口(歐規12)	Robot electrical interface (EUROMAP 12)	●	●	●	●	●
機械手電氣接口(歐規67)	Robot electrical interface (EUROMAP 67)	○	○	○	○	○
電控穩壓器	Power stabilizer	○	○	○	○	○
三色警示燈	Three colors alam light	●	●	●	●	●
CE安全插座	Outgoing Socket	●	●	●	●	●
主電源斷路器	Main power breaker	●	●	●	●	●
24H料管自動定時預熱	24 hours Auto-preheat	●	●	●	●	●
油壓、電氣雙重保護裝置	Dual safety device: hydraulic and electrical	●	●	●	●	●
機械安全桿保護裝置	Mechanical Saty bar Protection device	○	○	○	○	○
不銹鋼漏斗	Stainless hopper	▲	▲	▲	▲	▲
乾燥機	Hopper dryer	○	○	○	○	○
抽料機	Auto loader	○	○	○	○	○
落地式送料裝置(乾燥機/抽料機/L型腳架/吸料盒)	Loading set (Dryer, Auto Loader, L-Frame, Suction Box)	○	○	○	○	○
模溫機	Mold temperature controller	○	○	○	○	○
乾燥機磁鐵	Magnet for hopper dryer	○	○	○	○	○
吊桿組	Mold lifting hanger set	—	—	—	—	—
避震器	Anti-vibration mounting pad	●	●	●	●	●
工具箱組	Tool box set	●	●	●	●	●
電氣及其他附件	Accessory for electrical and others	●	●	●	●	●

● 機台模壁若加裝T型墊板或隔熱墊板，會使模厚及頂出行程的規格改變。

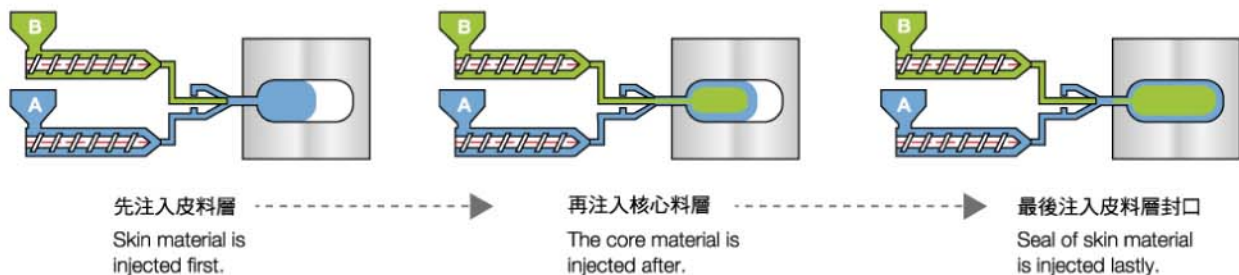
● If clamping unit adopting T-slot board or insulator sheets, the "mould thickness" & "ejector stroke" dimensions will be different.

夾層混色射出機(FB-C) Sandwich/Interval Injection Molding Machine

夾層射出成型是新近發展的創新射出成型加工技術，其操作方法是：在傳統塑膠射出成型機上增加一組複合式射嘴及料管組形成獨立的雙料管，在射出的過程中可以同時或間隔方式將兩種熔膠，透過共同射嘴射入模穴中達成雙料共射，其中外層的熔膠稱為皮料層，內層的熔膠稱為核心料。

塑膠加工廠在市場競爭壓力下，如何產生附加價值較高產品及降低成本，以維持廠商生存和發展為重要課題，富強鑫為協助廠商產業轉型及升級，經過多年之努力和研發，領先業界成功開發夾層混色射出成型機。

Sandwich injection molding is one of the newly developed injection molding methods. To accomplish such a molding method, an additional barrel is added to a traditional plastic injection molding machine to form an independent double barrel with special design nozzle, during the injection process, this double barrel can concurrently inject two types of molten plastic, via the same nozzle into the mold to achieve double material simultaneous injection. The outer layer of the mixed molten plastic is called the skin material, while the inner layer is called the core material.



本機型搭配特殊設計之複合射嘴，在使用原有模具下，即可產生特殊花紋及多層次顏色，直接提升產品之附加價值，再造就模具的第二春創造額外利潤。

By matched with special design nozzle, sandwich injection molding machine might produce the special flowered & multilevel colors, thus to create high values-added products while keeping the costs down and creating the additional profit.

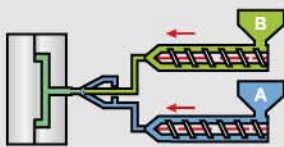
夾層射出成型比起傳統的射出成型具有如下特色：

Sandwich injection molding has the following advantages over traditional injection molding:

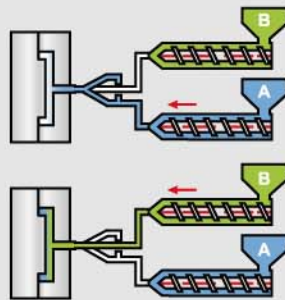
- 對內外層不同塑料之產品，可取代二次加工改為一次成型。
- 由於同顏色組合，可賦予舊品(模具)新生命。
- 核心料可使用低黏度之原料，降低射出壓力。
- 本機型亦可用於生產單色產品，一機兩用，提供多元化功能及全方位服務。
- 核心料可使用回收之廢料或低品質原料來降低成本。
- 皮層料可採用優質具特殊表面性質或防電磁波干擾等材料，以增加產品功能性。
- 適當的皮層料與核心料配合可以減少殘餘應力，增加產品強度。
- For products with different outer and inner layer materials, the traditional two-step insert molding becomes one-step.
- The different color combinations give old products(molds) new life.
- Low-viscous materials can be used as core materials to reduce injection pressure.
- Sandwich injection molding machine can also produce single color which provides a multi-function and flexible molding method, increasing the processor's capability to produce high-quality and low-cost products.
- Recycled and low-quality materials can be used as core materials to reduce production costs.
- High-quality materials with anti-magnetic interference properties and high surface quality can be used as skin materials to increase product utility.
- Appropriate core and skin material combinations can reduce the residual stress and increase product hardness.

夾層混色射出機(FB-C) Sandwich/Interval Injection Molding Machine

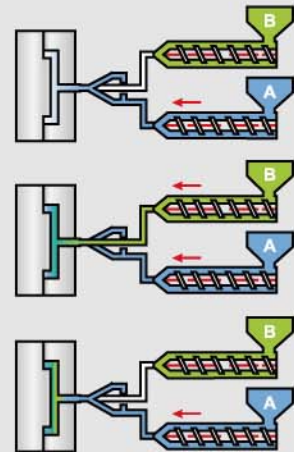
- A組B組一起射出
Unit A & unit B inject at the same time.



- 先A組射出→B組射出
Unit A inject first and then unit B injects after.



- 先A組射出→A組及B組同時射出
→A組射出
Unit A injects and then unit A & B both inject at the same time and then unit A injects again.



FB-C標準與選購配備 FB-C Standard & Optional Accessories

配備項目	ITEM	FB-160C	FB-250C	FB-350C	FB-470C
夾模模板形成：窄(N)/寬(W)	Mold platen:Narrow(N)/Wide(W)	N	N	N	N
PVC、PC、壓克力、尼龍專用螺桿組	Special Screw for PC/PMMA/PA/PVC	○	○	○	○
雙合金螺桿、料管	Bi-alloy Screw/Barrel	○	○	○	○
拖拉式落料裝置	Sliding material feeding device	●	●	●	●
多段數位背壓(螢幕設定)	Multi-stage back pressure control (Screen set up)	●	●	●	●
多段數位背壓/射出壓力螢幕顯示	Multi-stage back pressure/injection pressure display on screen	○	○	○	○
射出閉迴路(伺服閥)	Close-loop control for injection pressure & speed (servo valve)	○	○	○	○
射出比例閥	Proportional valve for injection unit	○	○	○	○
射嘴獨立溫控	Temperature control of injection nozzle	●	●	●	●
落料口溫度顯示	Temperature display of feeding gate	●	●	●	●
落料口溫度控制	Temperature control of feeding gate	○	○	○	○
射出電阻尺	L/P for injection unit	●	●	●	●
開關模比例閥控制	Proportional valve for mould open and close	○	○	○	○
模壁T型槽	T-slot platen	●	●	●	●
隔熱墊板	Insulator sheets	○	○	○	○
活動式模定位圈	Check ring of mold (Replaceable)	●	●	●	●
強制托退	Ejector pull back	○	○	○	○
安全踏板	Security Pad	—	—	—	—
曲手電動注油器	Auto lubrication system for toggle	●	●	●	●
車壁潤滑：電動注油器	Auto lubrication system (platen)	●	●	●	●
單托模	Single ejector	●	●	●	●
托模止逆閥	Non-return valve for ejector	●	●	●	●
單中子(一公)	Single core pull device	●	●	●	●
雙中子(一公一母)	Double core pull device	○	○	○	○
轉牙裝置(計時計次)	Unscrew device by timer or counter	○	○	○	○
夾模電阻尺	L/P for clamping unit	●	●	●	●
拖模電阻尺	L/P for ejection unit	●	●	●	●
兩個風托(一公一母)	Air ejector sets	○	○	○	○
成品落下口	Article Collecting Channel	●	●	●	●
水流分佈器4入4出(銅制)	Water manifold - 4 in & 4 out (copper)	●	●	—	—
水流分佈器8入8出(銅制)	Water manifold - 8 in & 8 out (copper)	○	○	●	●
水流分佈器10入10出(銅制)	Water manifold - 10 in & 10 out (copper)	○	○	○	○
雙回路(開模與托模同動)	Double loops system (mould open - ejector start)	○	○	○	○
伺服節能系統	Servo power-saving system	●	●	●	●
電眼檢出	Photo cell drop-out checking device	○	○	○	○
油溫顯示	Oil temperature display for hydraulic system	●	●	●	●
油溫控制	Oil temperature control	○	○	○	○
油溫省水閥控制	Water valve for hydraulic oil temperature control	○	○	○	○
FCS-6500微電腦控制器(彩色觸控:KEBA)	FCS-6500 controller (color & touch screen:KEBA)	●	●	●	●
資料保護鎖(硬體鎖)	Data lock function (key)	●	●	●	●
機械手電氣接口(歐規12)	Robot electrical interface (EUROMAP 12)	○	○	○	○
機械手電氣接口(歐規67)	Robot electrical interface (EUROMAP 67)	○	○	○	○
電控穩壓器	Power stabilizer	○	○	○	○
三色警示燈	Three colors alarm light	●	●	●	●
CE安全插座	Outgoing Socket	●	●	●	●
主電源斷路器	Main power breaker	●	●	●	●
24H料管自動定時預熱	24 hours Auto-preheat	●	●	●	●
不銹鋼漏斗	Stainless hopper	▲	▲	▲	▲
乾燥機	Hopper dryer	○	○	○	○
抽料機	Auto loader	○	○	○	○
落地式送料裝置(乾燥機/抽料機/L型腳架/吸料盒)	Loading set (Dryer, Auto Loader, L-Frame, Suction Box)	○	○	○	○
模溫機	Mold temperature controller	○	○	○	○
乾燥機磁鐵	Magnet for hopper dryer	○	○	○	○
吊桿組	Mold lifting hanger set	—	—	—	—
避震器	Anti-vibration mounting pad	●	●	●	●
工具箱組	Tool box set	●	●	●	●
電氣及其他附件	Accessory for electrical and others	●	●	●	●

● 標準配備 Standard ○ 選購配備 Option ▲ 選附配備 Free Option — 無 N/A

● 機台模壁若加裝T型墊板或隔熱墊板，會使模厚及頂出行程的規格改變。

● If clamping unit adopting T-slot board or insulator sheets, the "mould thickness" & "ejector stroke" dimensions will be different.

1984

FCS第一台雙色機

- ▶ 「KT-300D」

1990

推出「FB系列」

- ▶ 成為現今雙色機的代名詞

1993

- ▶ 推出夾層混色機「FB-C系列」

2001

推出大型雙色機「FB-1000R」

- ▶ 台灣最大型轉盤雙色機

2002 台灣精品獎

推出油電式雙色機「HB-250Y」

- ▶ 全閉迴路系統+高速射出

2001 Taipeiplas「優等獎」

2002 台灣精品獎

2003

- ▶ 推出製筆專用雙色機「FB-200R」

2004

- ▶ 推出手機按鍵專用雙色機「FB-140R」

2005

- ▶ 推出三色機「FB-450M」
- ▶ 雙色機首次銷往歐洲「德國電子業者」

2006

深耕中國汽配行業（車燈及內外飾）

- ▶ 中大型雙色機開始在寧波廠量產

2007

- ▶ 推出「FB三代系列伺服節能雙色機」

2009

- ▶ 推出「FB-350」斜背式無轉盤單雙色兩用機

2009 榮格技術創新獎

2010

- ▶ 推出「FB-1250R」大型四色轉盤射出機

2010 榮格技術創新獎

2012

超大型二板式水平轉盤雙色機

- ▶ 推出「HB-1900R」

2013 榮格技術創新獎

2017 台灣精品獎

- ▶ 推出醫療專用雙色機「FB-260R」

- ▶ 推出牙刷專用三色機「FB-550R」

2014

推出「FB四代系列」

- ▶ 推出大型二板雙色機「LM-3200LB」

- ▶ 薄型筆記型電腦專用雙色機

「FB-700R」、「FB-850R」

2015

- ▶ 推出超大型三工位三色機「FB-1900R」

2017

提出「多組分注塑機射出型式定義」

- ▶ 推出三色混色機「FB-250C」
- ▶ 推出多工位四色機「FB-1600R」

2018

- ▶ 與「國家塑機產品質量監督檢驗中心」共建「多組分注塑機聯合科創技術中心」
- ▶ 「FB-600T」三色機獲選「改革開放40週年—機械工業傑出產品」

2020 榮格技術創新獎

2019

- ▶ 推出大型物流專用超大型二板對射機「HB-2350D」
- ▶ 推出大型二板轉盤雙色機「GW-1600R」
- ▶ 「HB-R 系列」實現在中國本地化量產

2020

- ▶ 由富強鑫擔任第一起草單位的「多組分射出機」行業團體標準正式公佈實施
- ▶ 「HB-1900R」大型水平轉盤多組分射出機被認定為浙江省高端裝備重點領域首台套產品
- ▶ 推出「FB-1600Re」、「HB-1900Re」射出全電動及「CT-280R」全電式雙色機
開啟「雙色機電動化」新紀元

2022

- ▶ 推出超大型射出可移動多工位六射機「FB-1600RVW」將富強鑫多組分成型技術推向頂峰
- ▶ 推出超大型二板式多工位四射機「GW-1600Rp / GW-2200R」
新增X型多組分射出形式
- ▶ 「FB-550Re」電動式雙色機獲評為 2022「創新產品獎」

2023

- ▶ 推出「GW-1600Rp」大型二板式X型四射射出機

2023 榮格技術創新獎

- ▶ 推出「HB-3500R」超大型二板式水平對射射出機（中國最大型）
- ▶ 推出「SA-380h」高速雙色機，結合高速雙色及IML成型技術
- ▶ 推出「FB-1250RW」，為目前最大型斜背式雙色機
- ▶ 「GW-2200R」大型二板式X型四射射出機被認定為浙江省高端裝備重點領域首台套產品

2024 榮格技術創新獎

2024

- ▶ 推出第五代「FB-R」多組分注塑機

2025 榮格技術創新獎

- ▶ 推出「GW-3000R」超大型二板式垂直轉盤雙色機（FCS最大型）
- ▶ 推出「LN-1100T」超大型二板式轉軸雙色機（FCS最大型轉軸機）
- ▶ HB-3500R 列入寧波市「科創甬江2035」重大科研項目
- ▶ 擔任「多組分塑料注射機能耗檢測方法」行業團體標準第一起草單位

2025

雙色機累計銷售「6610 台」金額「RMB 57.2 億元」



1984

The first 2K IMM

- ▶ "KT-300D".

1990

Launched of the "FB Series"

- ▶ Has almost become a synonym of 2K injection molding machine.

1993

- ▶ Launched of the "FB-C Series".

2001

Launched of the "FB-1000R"

- ▶ Was the largest 2K machine in Taiwan at that time.

2002 Taiwan Excellence Award

Launched of the "HB-250Y"

- ▶ Full close-loop system and high-speed injection unit.

2001 Taipeiplas Excellence Award

2002 Taiwan Excellence Award

2003

- ▶ Launched the 2K machine for pen industry (FB-200R).

2004

- ▶ Launched the 2K machine for the mobile phone industry (FB-140R).

2005

- ▶ Launched the first 3K machine "FB-450M".
- ▶ First time FCS 2K machine sold to German electronics.

2006

Deep ploughing in China's auto parts industry

- ▶ FCS large tonnage 2K IMM was started production in Ningbo factory.

2007

- ▶ Launched the 3rd generation servo drive energy-saving 2K IMM.

2009

- ▶ Launched 2K machine (FB-350) with piggyback (W-type) injection structure.

2009 Ringier Technology Innovation Award

2010

- ▶ Launched FB-1250R large tonnage 4K injection molding machine.

2010 Ringier Technology Innovation Award

2012

Launched large tonnage two-platen horizontal rotary table 2K IMM

- ▶ Launched the "HB-1900R".

2013 Ringier Technology Innovation Award

2017 Taiwan Excellence Award

- ▶ Launched the 2K machine FB-260R for medical devices.
- ▶ Launched the 3K machine FB-550R for toothbrush handle.

2014

Launched the 4th generation of 2K IMM

- ▶ Launched the "LM-3200LB".
- ▶ Launched high-precision 2K IMM FB-700R and FB-850R for thin type notebook.

2015

- ▶ Launched the large tonnage three-station 3K IMM FB-1900R.

2017

Proposed definition of “Multi-component IMM injection unit combination”

- ▶ Launched FB-250C 3K sandwich IMM.
- ▶ Launched FB-1600R multi-station 4K IMM.

2018

- ▶ FCS established “Technology Center of Multi-component IMM”.
- ▶ FB-600T 3K IMM was awarded the “Outstanding Products of machinery Industry”.

2020 Ringier Technology Innovation Award

2019

- ▶ Launched HB-2350D large tonnage two-platen opposite type IMM.
- ▶ Launched large tonnage two-platen turntable 2K IMM: GW-1600R.
- ▶ “HB-R Series” to achieve localized mass production in China.

2020

- ▶ **The Chinese industry standard for multi-component IMM**, with FCS serving as the first drafting committee member has been officially announced.
- ▶ Large tonnage horizontal rotary table multi-component IMM (HB-1900R) awarded the “Zhejiang Province Pioneering Product” of high-end equipment manufacturing industry.
- ▶ Launched FB-1600Re, HB-1900Re electric hybrid type and CT-280R all-electric 2K IMM, **opening a new era of electrification of multi-component IMM.**

2022

- ▶ Launched of large tonnage multi-station 6K IMM (FB-1600 RVW) with movable injection unit, the FCS multi-component molding technology towards to the peak.
- ▶ Launched the large tonnage two-platen multi-station 4K IMM (GW-1600Rp / GW-2200R) with new X-type injection unit.
- ▶ 2K IMM with electric injection unit (FB-550Re) was awarded the **2022 China Injection molding Industry “Innovation Product Award”**.

2023

- ▶ Launched of the “GW-1600Rp” two-platen X-type 4K IMM.

2023 Ringier Technology Innovation Award

- ▶ Launched HB-3500R super large tonnage horizontal rotary table 2K IMM. It is currently the largest.
- ▶ Launched SA-380h high-speed 2K IMM, combined with high-speed 2K injection and IML technology.
- ▶ Launched FB-1250RW, which is the largest piggyback 2K IMM.
- ▶ Large tonnage two-platen 4K IMM with X-type injection unit (GW-2200R) awarded the **“Zhejiang Province Pioneering Product” of high-end equipment manufacturing industry.**

2024 Ringier Technology Innovation Award

2024

- ▶ Launched of the 5th generation 2K IMM.

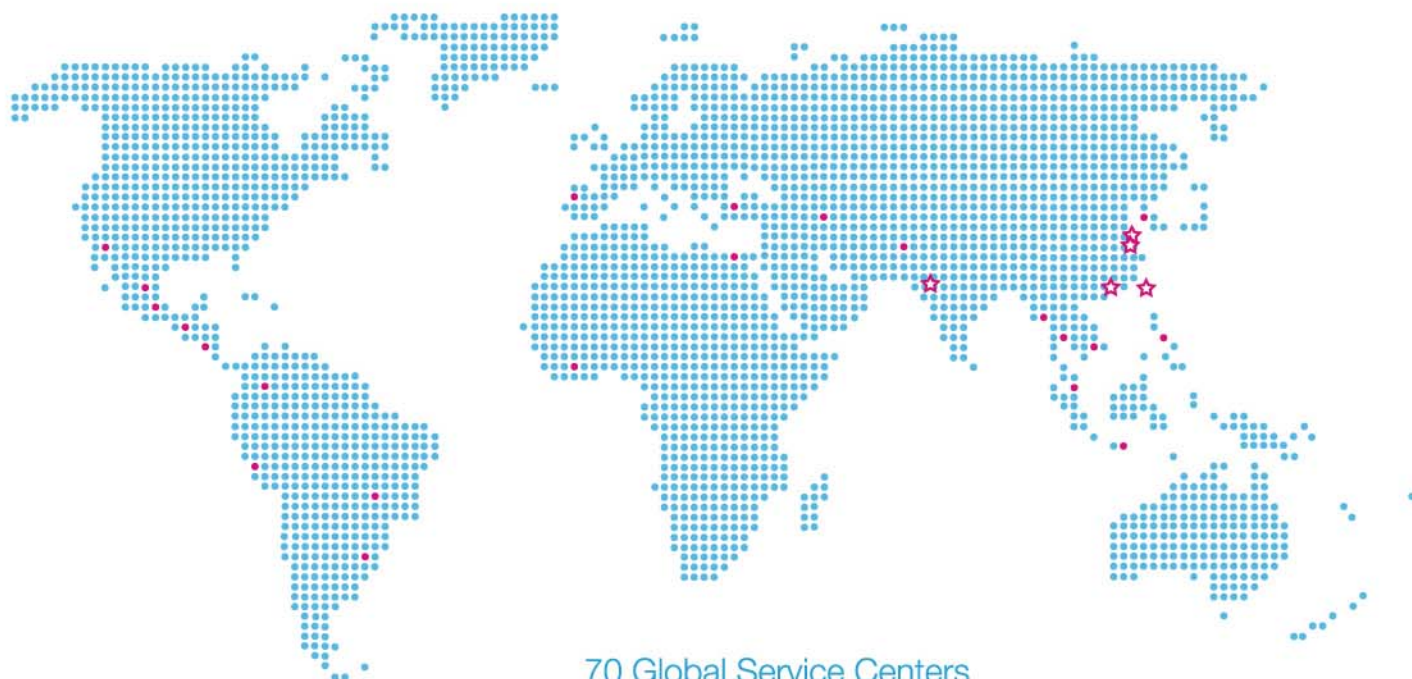
2025 Ringier Technology Innovation Award

- ▶ Launched GW-3000R super large tonnage two-platen vertical turntable 2K IMM (It is currently the largest vertical turntable 2K IMM of FCS).
- ▶ Launched LN-1100T large tonnage two-platen rotating shaft 2K IMM with W-type injection unit (It is currently the largest rotating shaft 2K IMM of FCS).
- ▶ FCS serves as the first drafting committee member for the Chinese industry standard “Testing method of energy consumption for multi-component IMM”.

2025

2K IMM Sales volume over “6610 sets”
Sales amount over “USD 805M”





70 Global Service Centers

富強鑫集團 FCS Group

富強鑫精密工業股份有限公司

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