



## 外曲肘射出機

Outward Toggle Injection Molding Machine

**SA SERIES**

# SA Series

高效率 - 生產效率提升15~20%  
高性能 - 射出速度提升20%以上

**High Efficiency** - Increasing production efficiency 15~20%.

**High Performance** - Improving injection speed by 20% ↑.

FCS五十年技術結晶與積累，創造了多樣性的產品及穩定的性能品質，同時也針對各行業不同產品特性，提供差異化技術整合與服務。**SA系列**為FCS全新發表之外曲肘射出機，不僅規格升級，設計也更加優化，外觀造型仍堅持美學與人因工程兼備之要求，更整合高階電控系統優勢，可充分結合FCS工業4.0解決方案，是一款集性能、效能與智能於一體的智能化射出成型機，可廣泛應用於家用民生、文具、汽車、3C等產業，鞏固客戶競爭優勢。

With 50 years of technological developments and innovations, FCS offers a new and optimized design with increased performance and reliability for a wide variety of industries.

The new **SA Series** delivers unmatched efficiency with its Outward toggle system. The clamp and injection unit specifications have also been increased to allow our customers more flexibility in the range of molds they can run in the machine. The outside appearance of the machine was developed with friendly ergonomics to make working in and around the machine easy, comfortable and safe for the operator. The KEBA control now offers an enhanced capability to integrate the FCS IMF 4.0 system to assist in making your facility a Smart Injection Molding Machine Plant. Overall, these new enhancements to the SA Series will help our customers increase their competitiveness in the industry and propel them to the next stage in new machine technology.



家用五金製品  
Housewares

建築管件  
PVC fittings

# 展合優翼 風生水起



## Thriving and Flexible



電子產品外殼  
Electronic product casings

厚件容器  
Thick-wall



汽車部件  
Automotive parts



# 精準的射出單元 Accurate Injection Unit

高混練螺桿  
High mixing screw

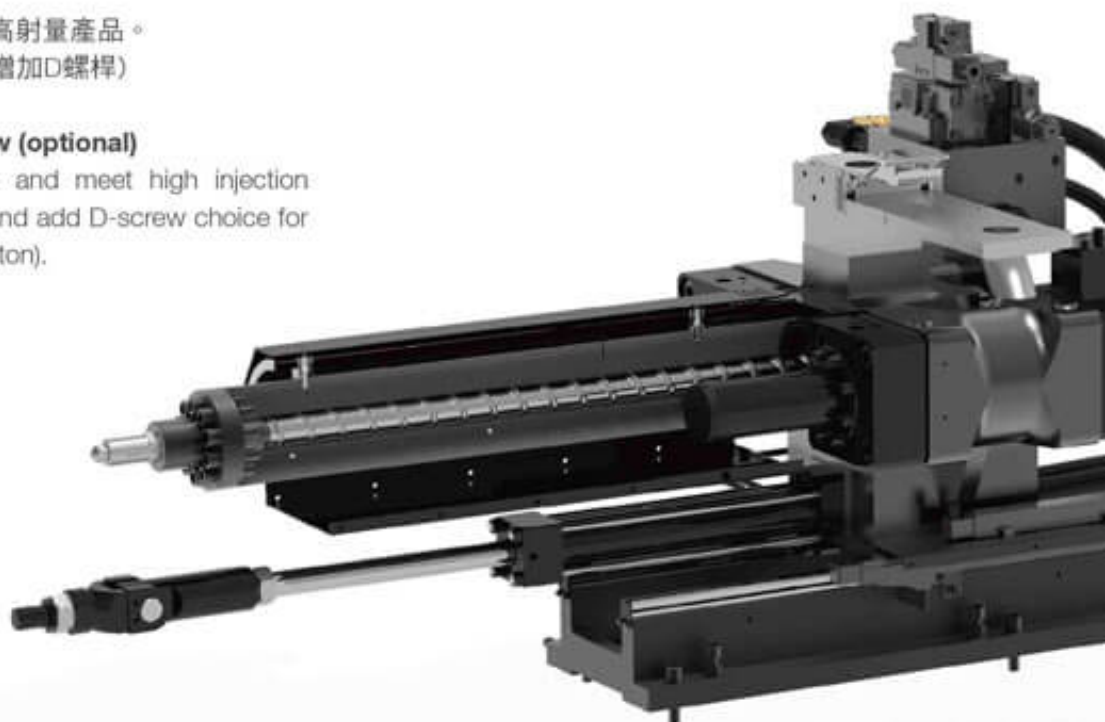


## 高混練螺桿 (選配)

提升L/D比，滿足高射量產品。  
(250 ton以上機型增加D螺桿)

## High mixing screw (optional)

Improve L/D ratio and meet high injection volume products (and add D-screw choice for models above 250 ton).



## 射座線性滑軌

- 負荷輕、減少磨耗，射出控制精準穩定。
- 儲料背壓阻力低，減少熔膠溢流。

## Linear guide for the injection carriage

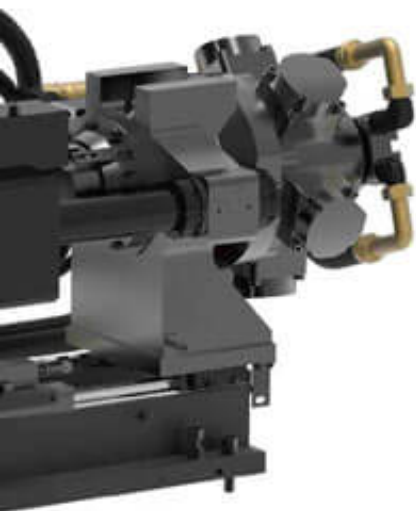
- Lighter load and less abrasion which ensures precise and stable injection.
- Basic charging back pressure to reduce the melt overflow.

### 系統壓力提升

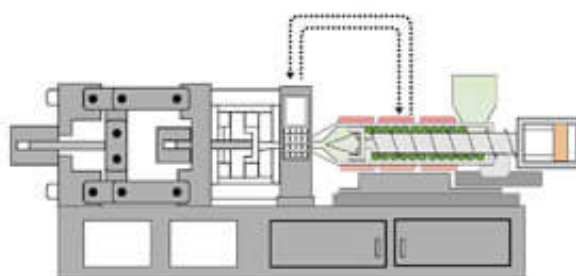
射出油路板與油缸整合優化，提升射出響應速度，擴大產品應用範圍。

### System pressure improvement

The integrated and optimized hydraulic manifold and cylinder, improve the injection response, and expand the product application range.



### 全閉迴路系統 Closed-loop system



回授螺桿位置於控制器  
Screw position feedback to the controller.

### 伺服射出全閉迴路

精準控制每模射速，射出時間穩定性 >99.9%，成型品重量穩定性佳。

### Servo injection closed-loop system

Accurately controls the injection speed, injection time and shot weight.

### 座進缸前拉設計

減少機架受力，降低變形量，保持穩定射出力。

### Injection carriage forward pull design

Reduce the frame deflection, and maintain a stable injection force.

### 模組化規格選型

提供高速款規格，彈性化滿足食品包裝、薄壁容器等產業需求。

### Optional modular specification

High-speed option is available for food packaging industry and thin-walled product molding requirements.

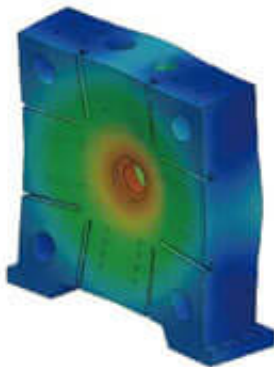
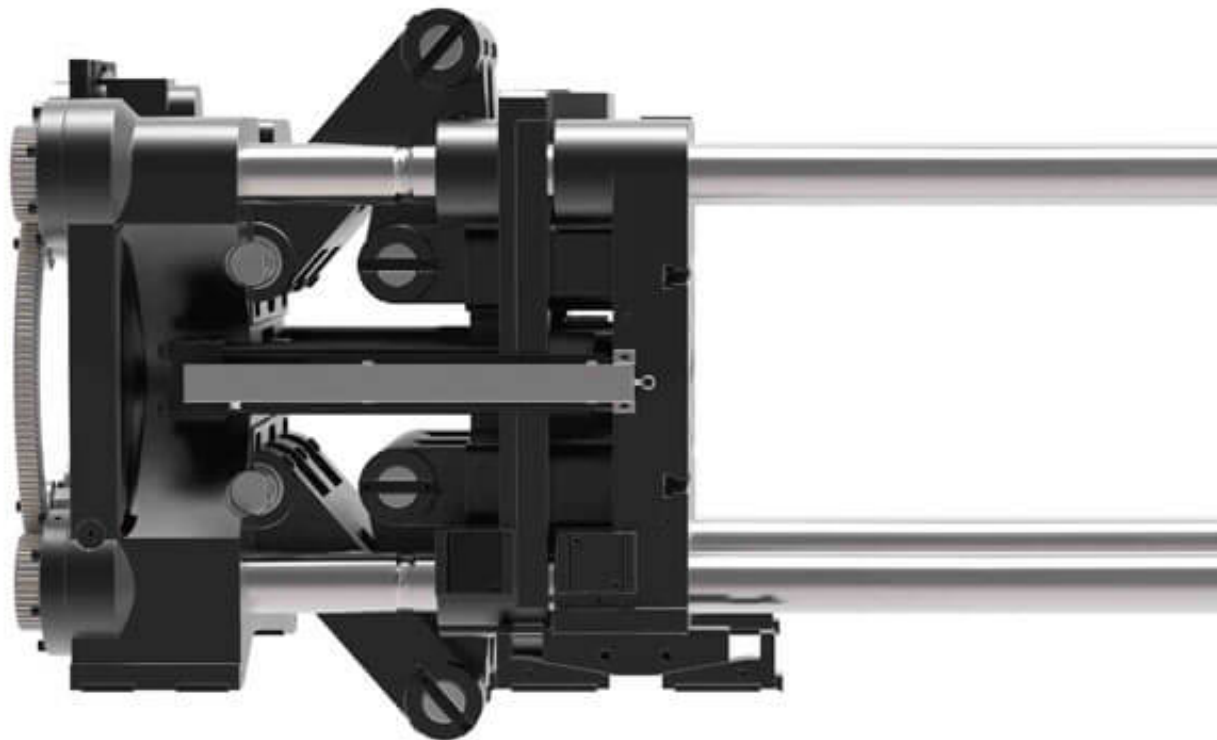
# 優化的夾模單元 Optimized Clamping Unit

## 夾模長度縮短

夾模長度縮短23%，減少占地空間，提升廠房利用率。

## Mold clamping shortened

The length of the mold clamping unit is shortened by 23% and the floor space is reduced, which could improve plant utilization.



## 模盤強度提升

剛性提升30%，模盤變形量更低，提升模具使用壽命。

## Platen strength improvement

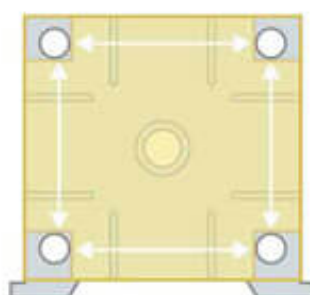
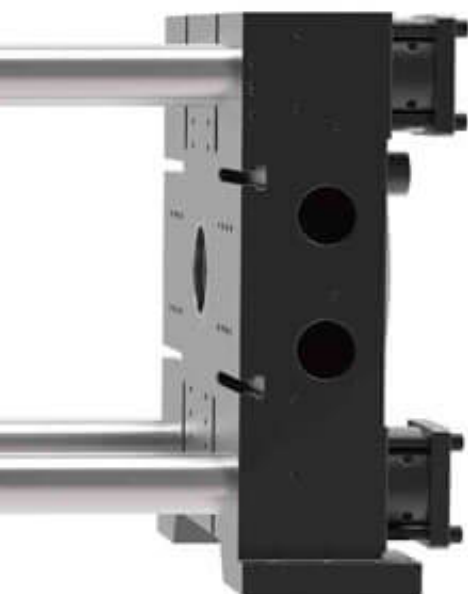
Increase rigidity by 30%, lower deflection of mold plate, and improve the mold lifetime.

### 開模行程增加

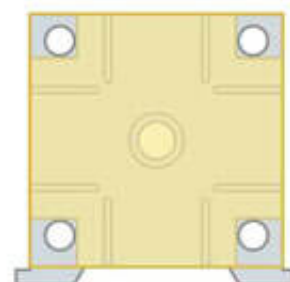
開模行程增加16%，適合成型深度較大產品。

### Opening stroke improvement

Increase the mold opening stroke by 16% and suitable for molding plastic products with deep depth.



SA Series



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柱內距加大  
模具應用彈性高。

### Tie bar spacing increase

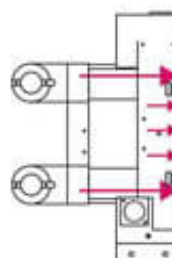
More flexible choices for mold application.

### 活動壁設計優化

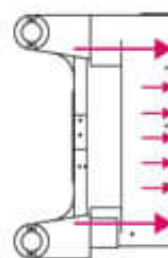
- 力流線朝模盤中心集中，可減少模具變形。
- 具強制頂針退回設計功能，滿足模具產品特殊需求。

### Moving platen optimization

- The clamping force flows through the center of the moving platen to help reduce mold wear.
- With mandatory ejector retracting design which meets the needs for special products.



SA Series



HT Series

# 智能的電控單元 Intelligent Control Unit

## 直覺式操作介面

- 全新設計畫面風格與圖示，操作更為便利。
- 具多階密碼保護功能，記錄與限制各階使用者參數修改。
- 提供統計製程控制及射出波形圖，提高生產品質與效率。
- USB資料存取介面，模具參數、顯示畫面存取便利。
- 採多重通訊介面  
(USB、串行接口、Ethernet、EtherCAT、Sercos III)。
- 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。
- 多種語言可供客戶選擇。

## Intuitive HMI

- New control is designed for easy operator interface.
- The multi-level password protection function is used to record and limit the parameters modification from various levels of users.
- Provide statistical process control and injection waveforms to improve production quality and efficiency.
- Convenient access to USB data, mold parameters and display screens.
- Multiple communication interfaces (USB, serial interface, Ethernet, EtherCAT, Sercos III).
- Control supports OPC protocol and has a modular design to easily maintain the software and hardware.
- Multiple languages are available for users.

## 控制精度

- 加熱控制精度 $0.1^{\circ}\text{C}$ 並有效分段控制，以提升塑化能力。
- 位置控制精度 $0.1\text{mm}$ ，可準確控制動作行程。

## Control Precision

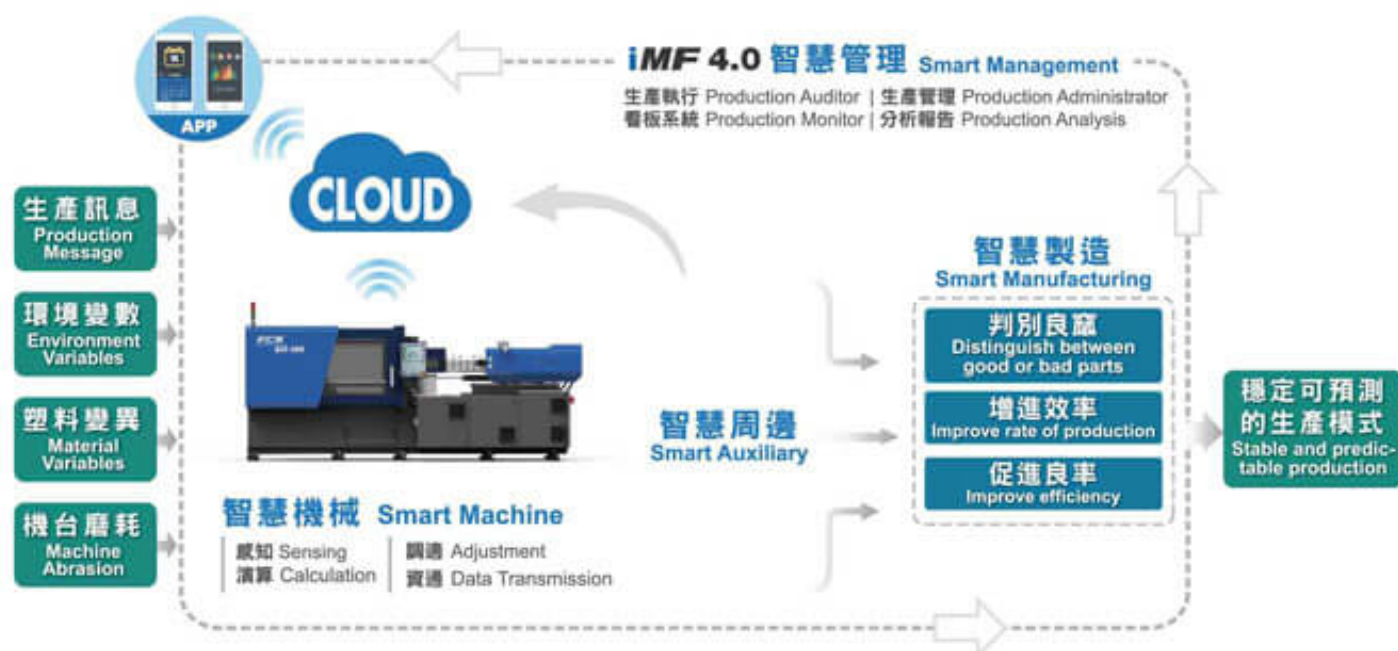
- Barrel heat zones are accurate to  $0.1$  degree C to ensure stable material plasticizing.
- Screw position is controlled with in  $0.1\text{mm}$  to precisely control shot size and cushion position.



# 智慧製造工廠 iMF 4.0

## iMF 4.0 智慧製造工廠

Intelligent ManuFactory



### 遠端監控&工業4.0

- 生產品質記錄。
- 模具資料上傳及下載。
- 機台稼動率及產能統計。
- 機台停機狀態顯示及記錄。
- 可將資訊匯出以進行看板管理。(選配)

### Remote Control & Industry 4.0

- Production quality recording.
- Mold information upload and download.
- Machine utilization rate and production capacity statistics.
- Machine downtime status display and recording.
- Information can be exported for visual management. (Optional)

| 控制器<br>Control           | FCS 6500S                       | FCS 6500<br>(Optional)                      |
|--------------------------|---------------------------------|---------------------------------------------|
| 螢幕尺寸<br>Screen Size      | 10"                             | 12"                                         |
| 操作方式<br>Operation Method | 按鍵<br>Button                    | 按鍵&觸控<br>Button & Touch                     |
| 反應時間<br>Reaction Time    | 2ms                             | 1ms                                         |
| 螢幕顯示<br>Screen Display   | • 800x600 像素<br>• 800x600 pixel | • 1600 萬色真彩顯示<br>• 16 million color palette |

# 標準與選購配備 Standard & Optional Accessories

| 配備項目                      | ITEM                                                                        |
|---------------------------|-----------------------------------------------------------------------------|
| 射出安全護罩                    | Safety cover for injection                                                  |
| 射出止逆裝置                    | Shot-off Nozzle                                                             |
| 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                                                       |
| 托拉式落料裝置                   | Sliding material feeding device                                             |
| 曲手：無給油軸承                  | Oilless bearing (Toggle)                                                    |
| 曲手：套鋼                     | Steel bearing (Toggle)                                                      |
| 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)                                            |
| 成品落下口                     | Article Collecting Channel                                                  |
| 電動安全門                     | Automatic safety gate (Electric type)                                       |
| 機械安全桿保護裝置                 | Mechanical Safety bar Protection device                                     |
| 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)                                    |
| 水流分佈器20入20出(銅製)           | Water manifold - 20 in & 20 out (copper)                                    |
| *全罩式飯金(射出)                | Whole machine housing (Injection)                                           |
| *全罩式飯金(夾模)                | Whole machine housing (Clamping)                                            |
| 強制托退                      | Ejector pull back                                                           |
| 電眼檢出                      | Photo cell drop-out checking device                                         |
| 成品落下板                     | Finished drop board                                                         |
| 車壁潤滑：電動注油器                | Auto Manual lubrication(platen)                                             |
| 開關模比例閥控制                  | Proportional valve for mould open and close                                 |
| 多段數位背壓(螢幕設定及顯示)           | Multi-stage back pressure control(Screen display)                           |
| 多段數位背壓(螢幕設定)              | Multi-stage back pressure control(Screen set up )                           |
| 射出閉迴路(伺服閥)                | Closed-loop control for injection(servo valve)                              |
| 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)                                  |
| 單中子+止逆(一公)                | Single core pulling device                                                  |
| 雙中子+止逆(一公一母)              | Double core pulling device                                                  |
| 四中子+止逆(二公二母)              | Double core pulling device                                                  |
| 轉牙裝置(計時/計次)               | Unscrew device by timer or counter                                          |
| 自封式磁性吸油過濾器                | With check valve magnetic suction filter                                    |
| 雙迴路(開模與托模同動)              | Double loops system(mold open - ejector start)                              |
| 雙迴路(開模與加料同動)              | Double loops system(mold open - screw charge start)                         |
| 三迴路(開模、托模與加料同動)           | Parallel movement for material charging & mold ejecting during mold opening |
| 伺服節能系統                    | Servo power-saving system                                                   |
| 托模止逆閥                     | Non-return valve for ejector                                                |
| 射出壓力螢幕顯示                  | Injection pressure display on screen                                        |
| 射嘴獨立溫控                    | Temperature control of injection nozzle                                     |
| 落料口溫度顯示                   | Temperature display of material feeding section                             |
| 落料口溫度控制                   | Temperature control of material feeding section                             |
| 射出電阻尺                     | Linear potentiometer for injection                                          |
| 射座電阻尺                     | Linear potentiometer for injection carriage                                 |
| 夾模電阻尺                     | Linear potentiometer for clamping                                           |
| 托模電阻尺                     | Linear potentiometer for ejection                                           |
| 兩個風托(一公一母)                | Air ejector sets                                                            |
| 油溫顯示                      | Oil temperature display for hydraulic system                                |
| 油溫顯示及控制                   | Oil temperature display & control                                           |
| FCS-6500S微電腦控制器(彩色：KEBA)  | FCS-6500S controller(color& key screen:KEBA)                                |
| FCS-6500微電腦控制器(彩色觸控：KEBA) | FCS-6500 controller(color & touch screen:KEBA)                              |
| 電控穩壓器                     | Power stabilizer for controller                                             |
| 資料保護鎖(硬體鎖)                | Data lock function(key)                                                     |
| 三色警示燈                     | Three-color alarm lamp                                                      |
| CE安全插座                    | CE safty socket                                                             |
| 電源插座(110V/220V)           | Power socket (110V/220V)                                                    |
| 主電源斷路器                    | Main power breaker                                                          |
| 24H料管自動定時預熱               | 24 hours auto-preheat for barrel sets                                       |
| 氣壓式閥道口控制閥                 | Pneumatic type Valve Gate                                                   |
| 機械手電氣接口                   | Robot electrical interface                                                  |
| 不銹鋼漏斗                     | Stainless hopper                                                            |
| 乾燥機                       | Hopper dryer                                                                |
| 抽料機                       | Auto loader                                                                 |
| 模溫機                       | Mold temperature controller                                                 |
| 乾燥機磁鐵                     | Magnet of hopper dryer                                                      |
| 門式吊桿                      | Frame hanger                                                                |
| 吊桿組                       | Hanger set for lifting molds                                                |
| 避震器                       | Anti-vibration mounting pad                                                 |
| 填料台                       | Filling material stand                                                      |
| 工具箱組                      | Tool box                                                                    |
| 標準出車附件                    | Spare parts                                                                 |
| 外銷出車附件                    | Export accessories                                                          |

[illegible]



70 Global Service Centers

## 富強鑫集團 FCS Group

**FCS**  
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