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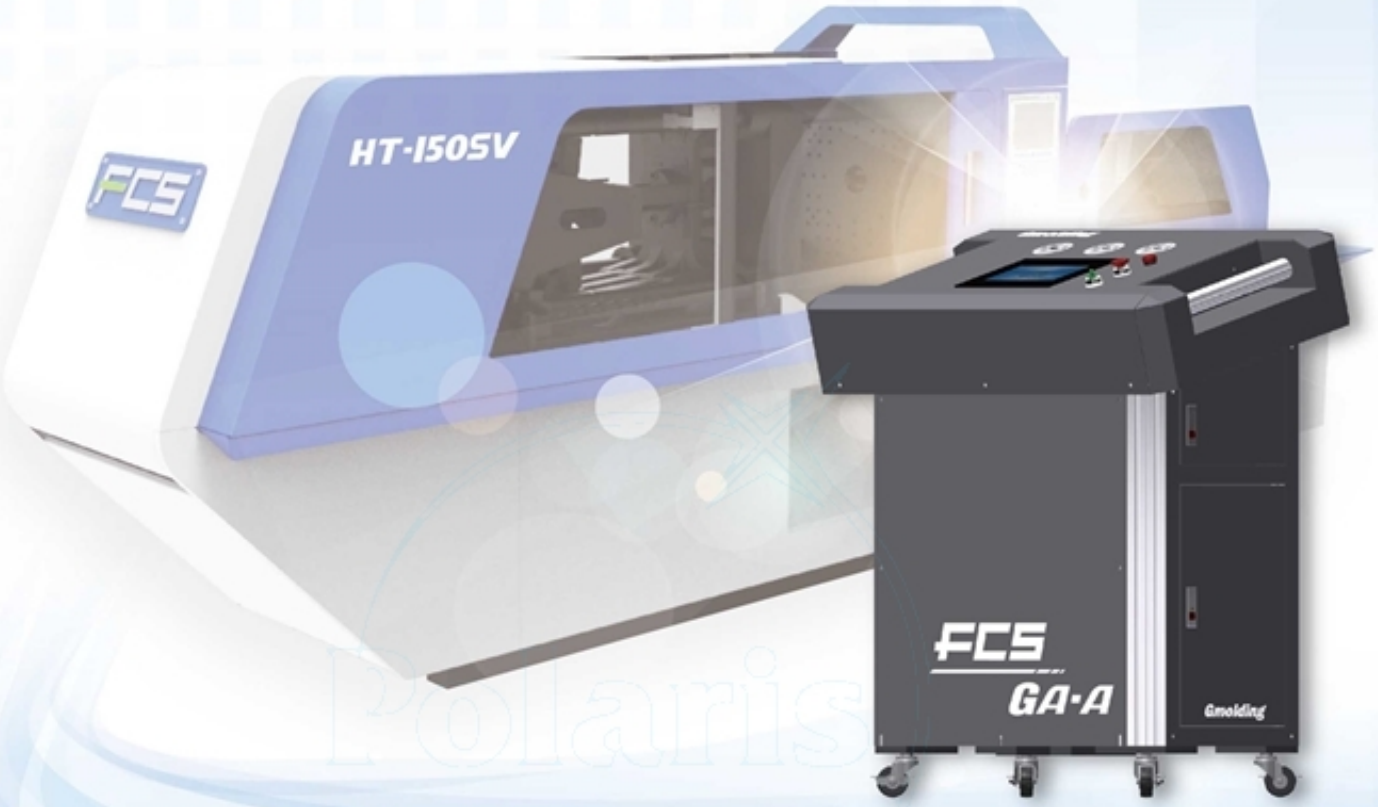


Gmolding

氣體輔助射出成型系統

Gas Assisted Injection Molding System

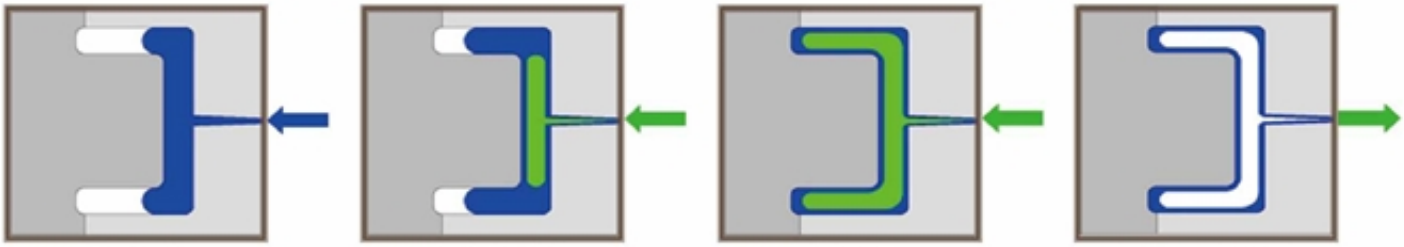
ISO Certificate No. 9AV1151

ITS VERY WELL MADE IN TAIWAN

氣體輔助射出成型 Gas Assisted Injection Molding (GAIM)

▶ 氣體輔助射出成型是利用氮氣輔助融膠充填與後段保壓工作，可使塑膠成品具有局部中空效果並提升成品外觀品質。實現此一成型工法之關鍵在於模具氣道設計與氣輔設備的整合。

By utilizing GAIM to assist filling and packing, products are able to have partial hollow design and better quality of appearance. The key point of this injection technique is the integration of air channels in the mold and gas assisted equipment's abilities.



融膠充填
Fill in melted plastic

氮氣輔助充填
Filling is assisted by N_2

氮氣保壓
Pack with N_2

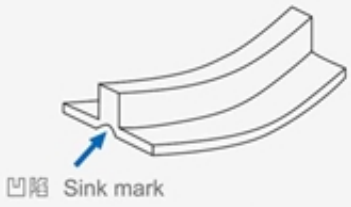
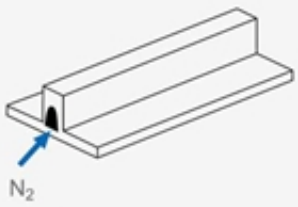
氮氣洩放，充填完成
N_2 release, filling completion

氣輔射出成型系統優點 Benefits of GAIM

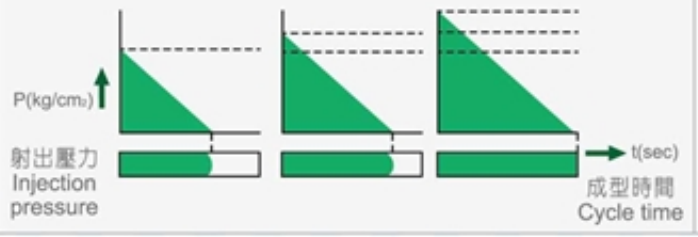
▶ 減重省料，降低生產成本　Material saving, keep the cost down

一般而言：成品減重率約10～30%。從材料費用減少與生產效率提升來看，長期生產成本可低減20%以上。
In general, weight reduction rate is about 10~30%. Long-term cost of production can be decreased at least 20%.

▶ 增加結構強度&改善外觀品質　Structural enhancement & appearance quality improvement

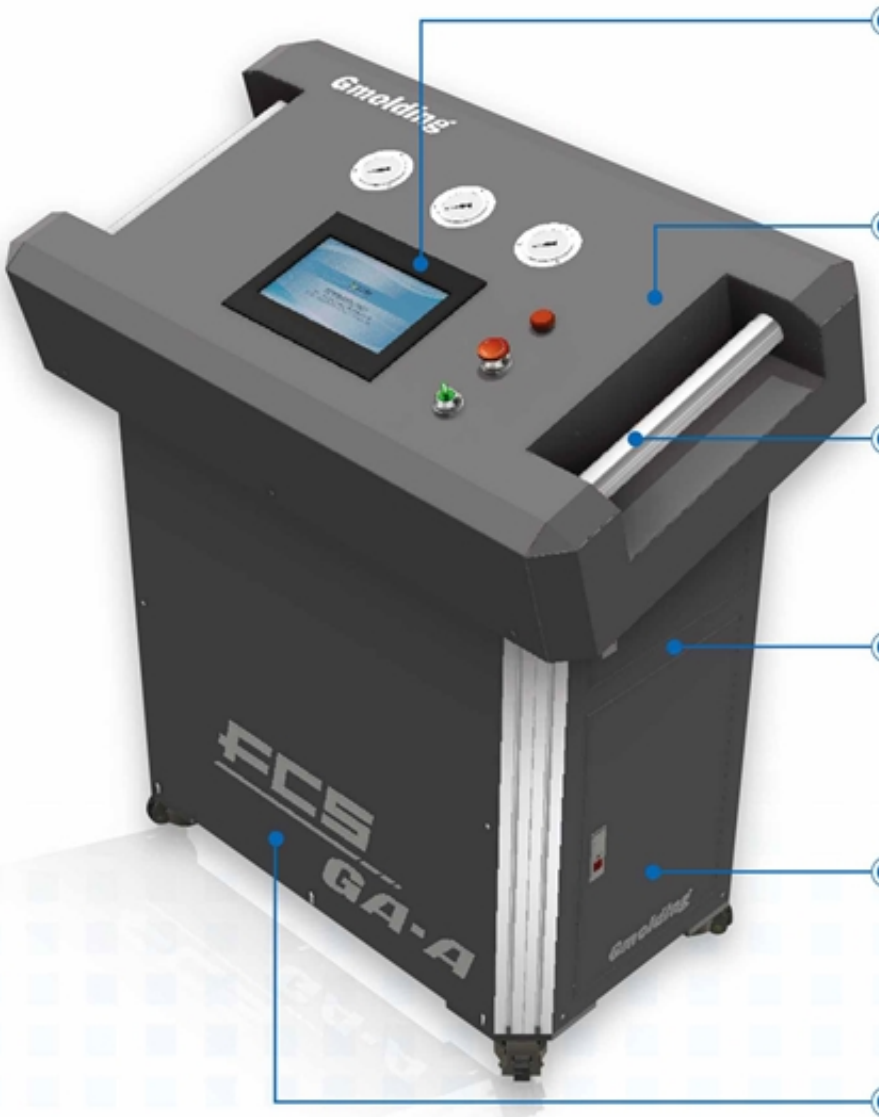
翹曲 Warpage	防止翹曲 Anti-warpage
	
凹陷 Sink mark	N_2

▶ 減少鎖模力　Reduction of clamping force

傳統射出成型　General Injection Molding	氣體輔助射出成型　GAIM
	

本機功能 Functions

- 獨立迴路，可擴增至雙迴路
  Independent loop design, system is expandable up to 2 loops
- 閉迴路壓力控制25～300 kg/cm²；響應時間小於1.5秒
  Closed loop pressure control；response time is less than 1.5 seconds for 25~300 kg/cm²
- 人機觸控介面&動態圖形監控成型壓力
  With touch panel & graphic display for monitoring pressure within the mold
- 五段氣體壓力及流量控制
  5 stages of air pressure and flow control



10吋電容式觸控人機介面
10-inch touch panel

傾斜角設計，符合人因工程
Titled design for ergonomics

兩側握把設計，移動容易
Side handles for easy transportation

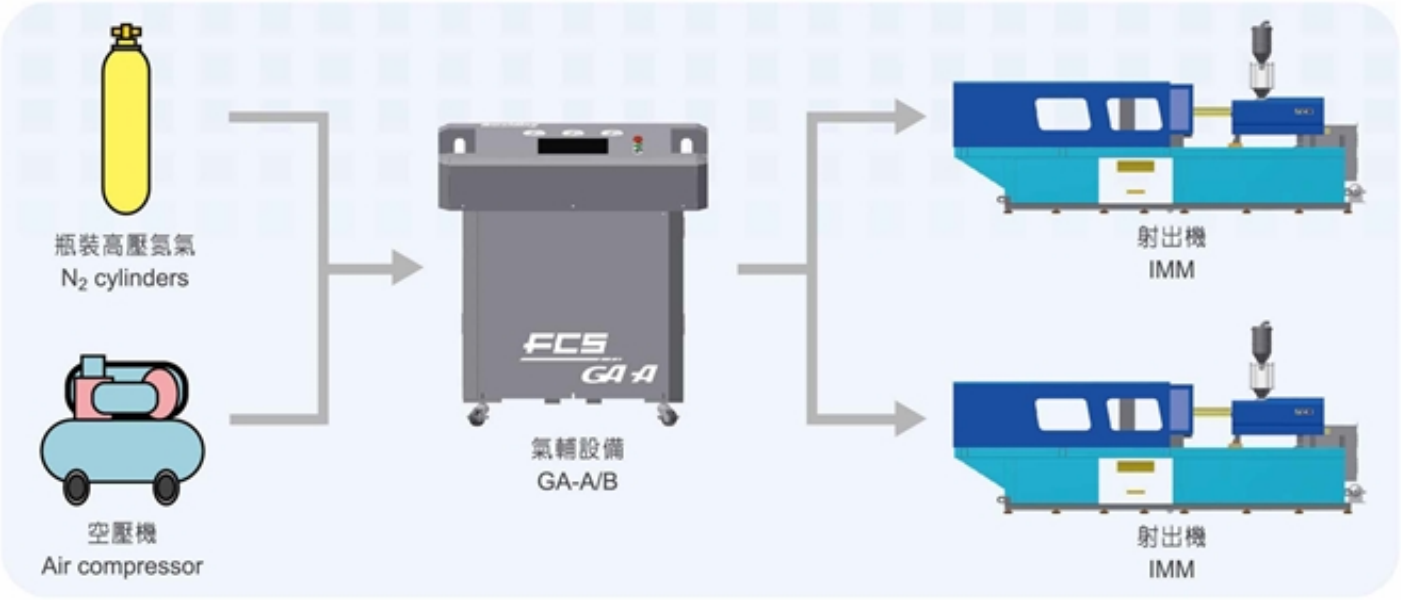
儲存空間設計，工具管件置放
Built-in storage compartment for hand tools

獨立電氣箱，兼具安全與方便
Independent electrical box for safety and convenience

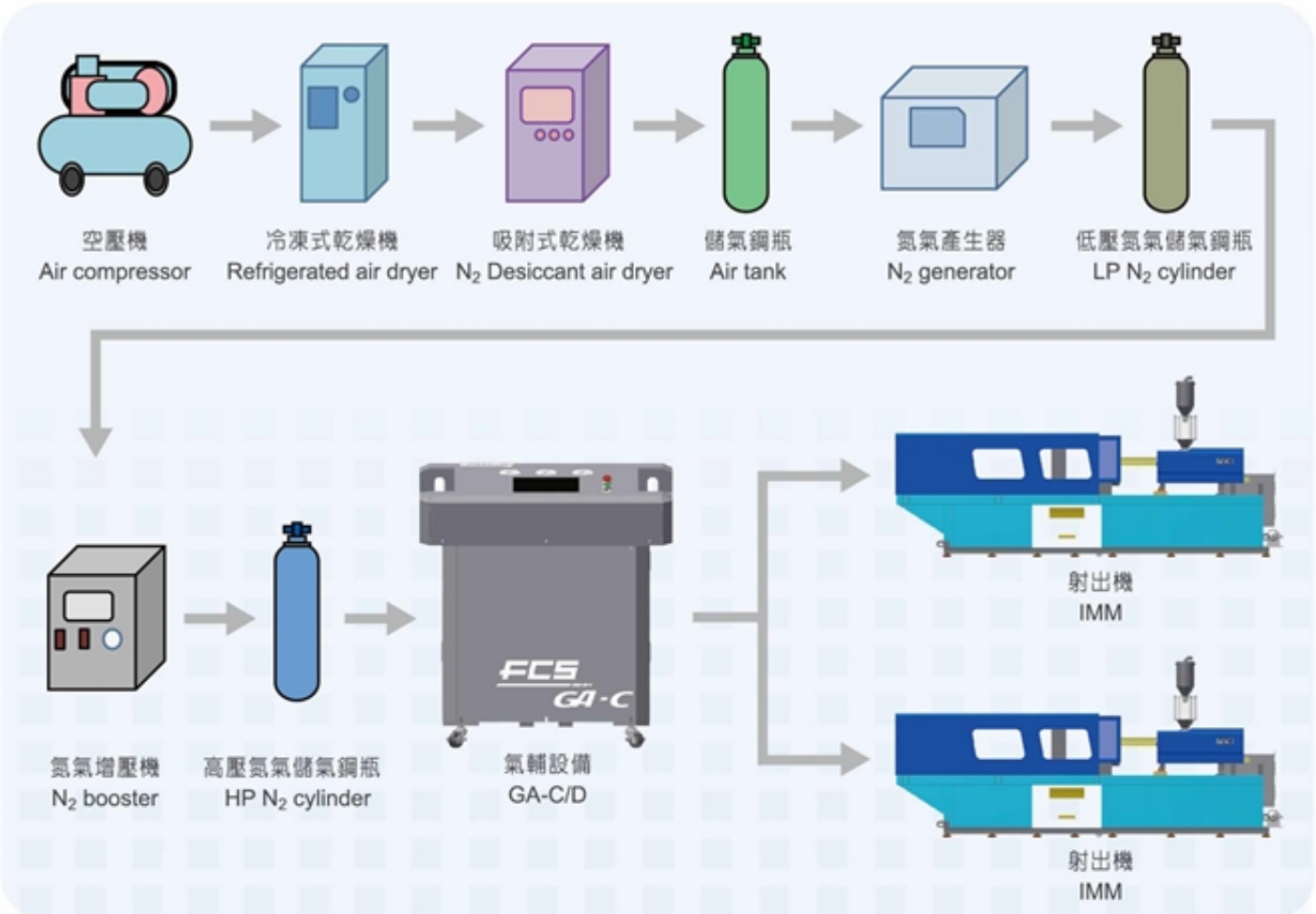
輕量化設計，鋁擠桁架結構
Light-weighted design, aluminum girder structure

氣輔系統整合設計 Integrated Design with GAIM

▶ 少量多樣 For trial/pilot run（完整型/Complete Model）



▶ 大量生產 For mass production（控制型/Control Model）



整廠規劃服務 Turnkey Solution Service

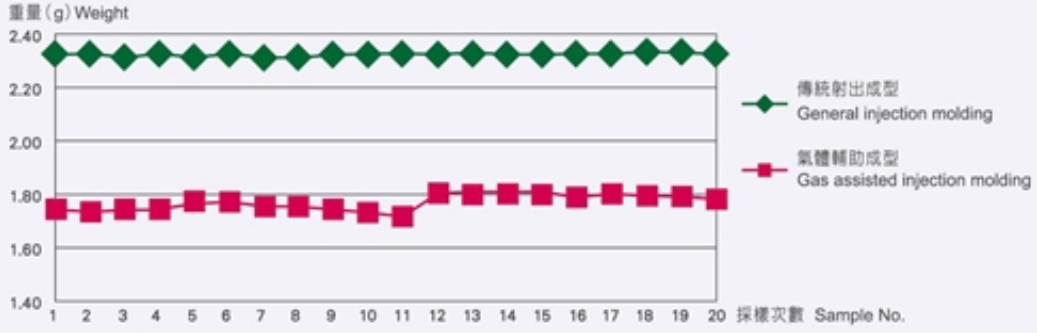
- 掌握客戶需求 Understand Customer Needs
- 生產線規劃 Plant Layout Design
- 報價&整廠規劃書 Quotation & Proposal
- 成品設計 Product Design
- 設備開發 Equipment Development
- 整合測試 Integration Test
- 裝機&教育訓練 Installation & Training
- 專案驗收 Confirmation & Close

▶ 產品掏空減重解決方案實例 Example of weight reduction

傳統成型 General

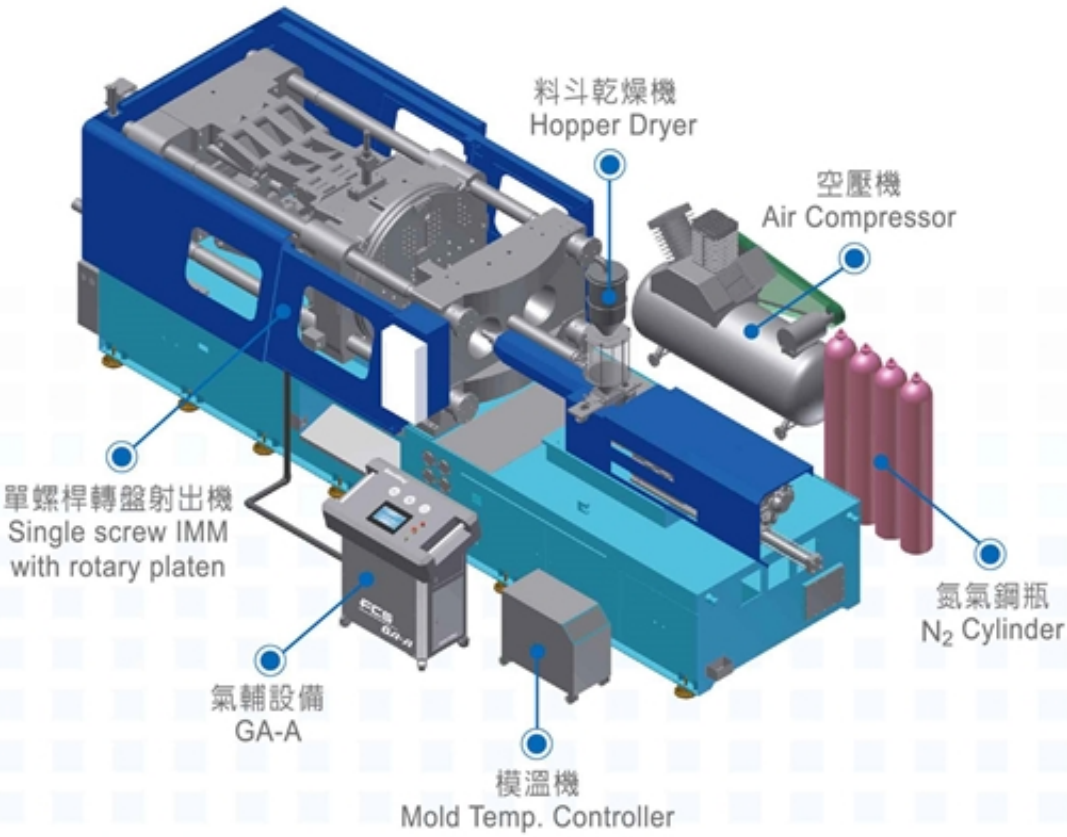
氣輔成型 Gas assisted

傳統/氣體輔助射出重量比較 Product weight of general injection molding & GAIM



以眼鏡腳為例，與傳統射出成型相比，氣輔掏空率為24%，減重0.55g。
Take the glass temples for example, GAIM can reduce 0.55g of general product weight (with the emptying rate of 24%).

▶ 射吹同步成型 Injection blow molding



模具開發前評估：氣體輔助CAE技術 Prediction & Evaluation: CAE Technique

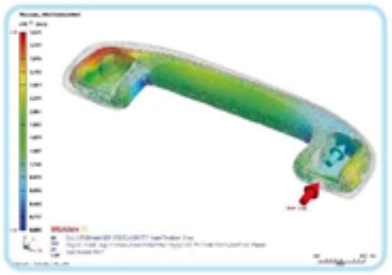
▶ 模擬塑料及氣體流動行為 Simulate the mold flow of melted plastic and gas

塑料 Melted plastic

氣體 Gas

▶ 預測一般射出與氣輔射出之成品收縮結果 Shrinkage prediction

傳統成型 General (worse)



氣輔成型 Gas assisted (better)

應用領域 GAIM-Applications

溜冰鞋 Skates

各式手把 Assorted handles

高腳杯 Goblet

家電外框 Appliance case

運動眼鏡 Sports glasses

電視框 TV frame

儀表盤 Dashboard

保險桿 Bumper

Gmolding

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Gas Assisted Injection Molding System

FCS

www.fcs.com.tw

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