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Gmolding

氣體輔助射出成型系統

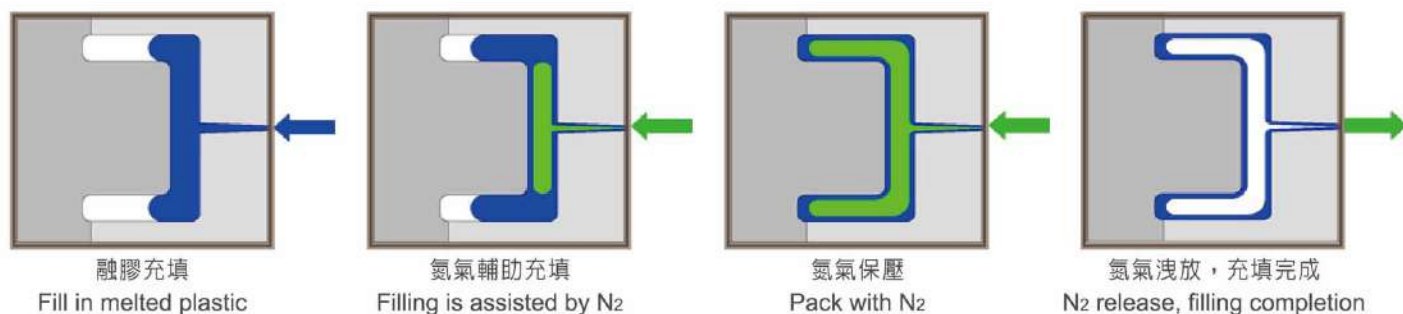
Gas Assisted Injection Molding System



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.

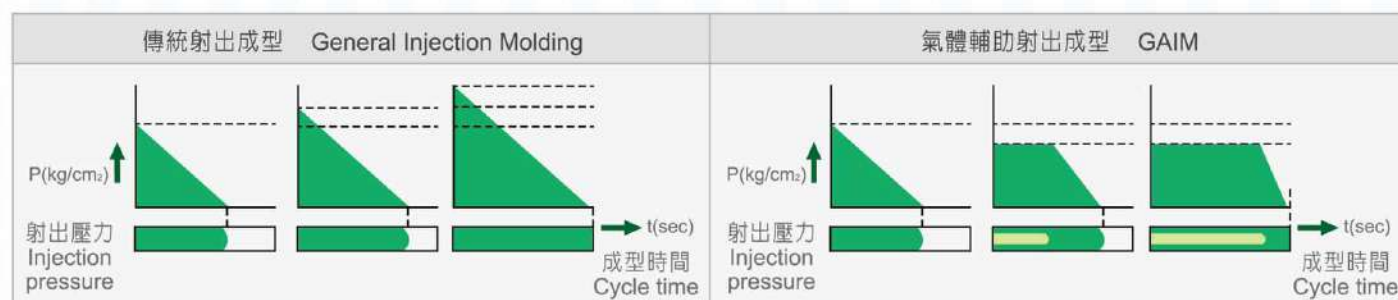


氣輔射出成型系統優點 Benefits of GAIM

- ▶ 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



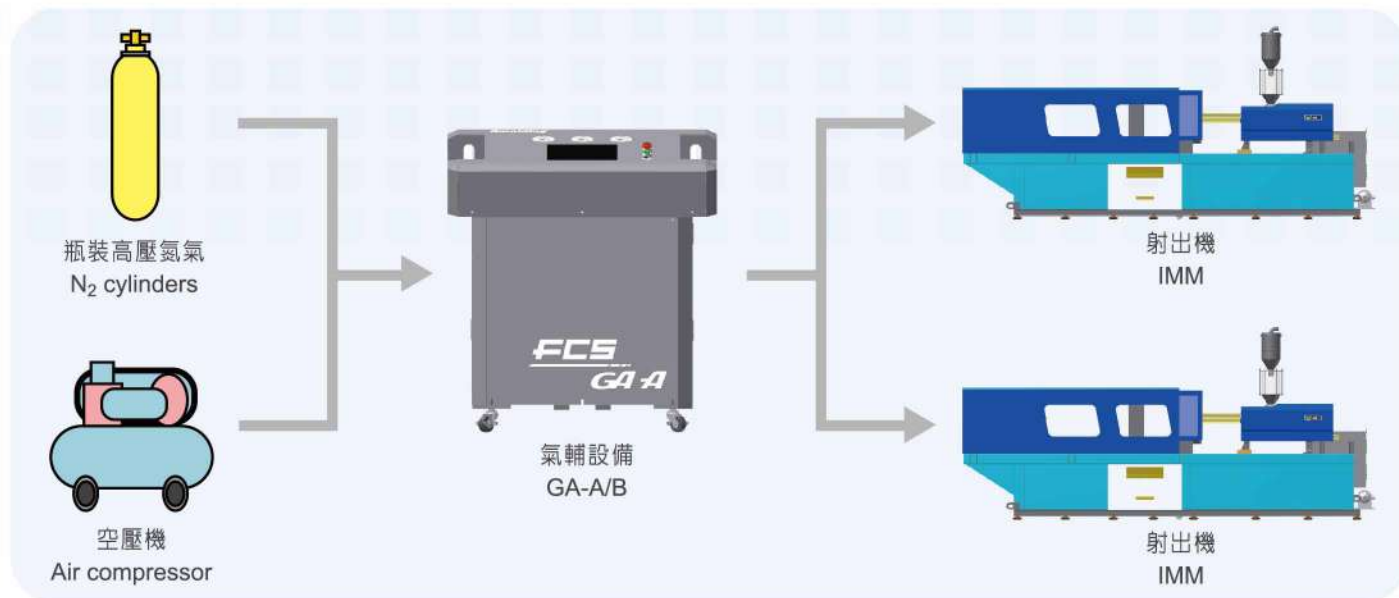
本機功能 Functions

- ▶ 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

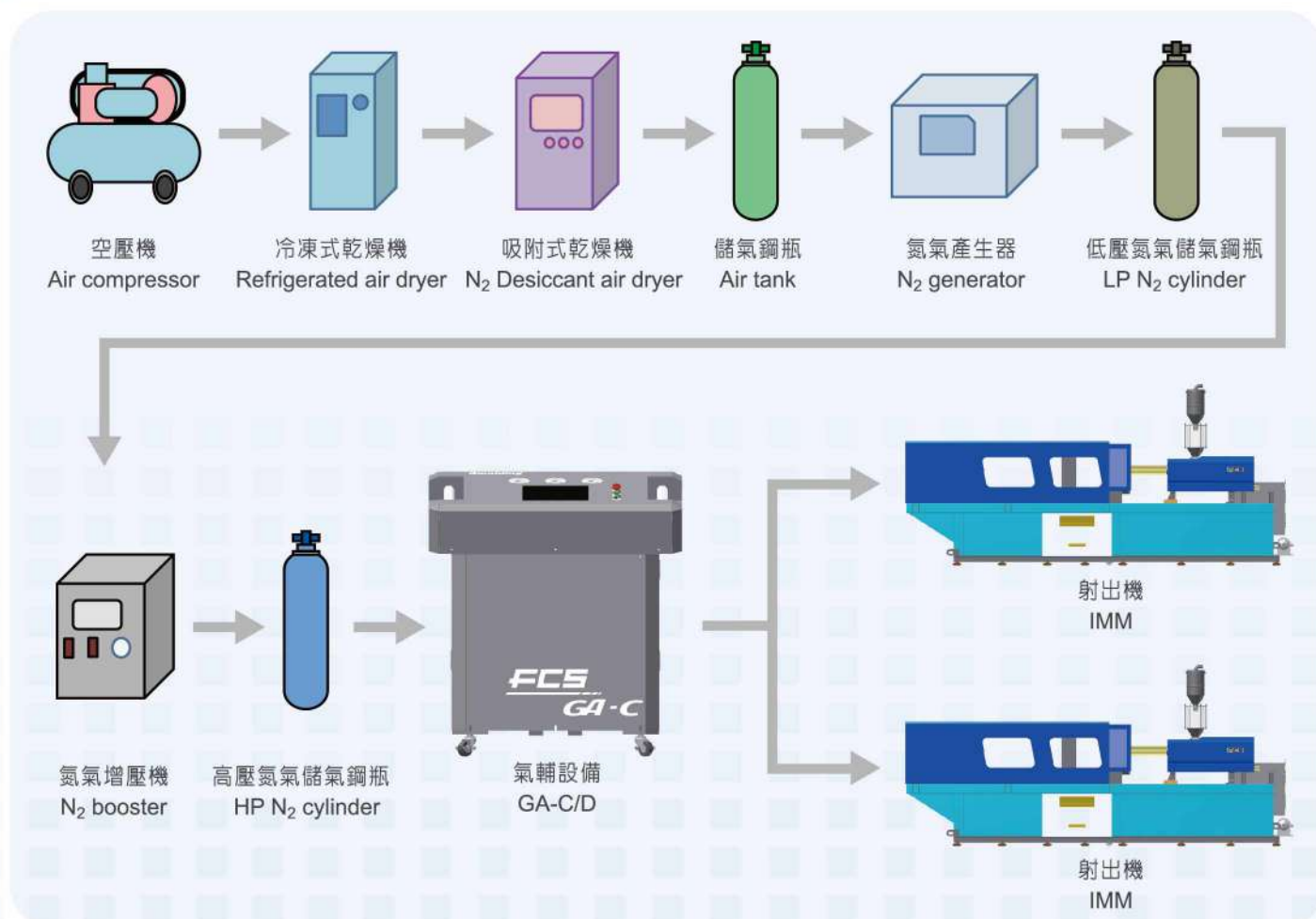


氣輔系統整合設計 Integrated Design with GAIM

▶ 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)



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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

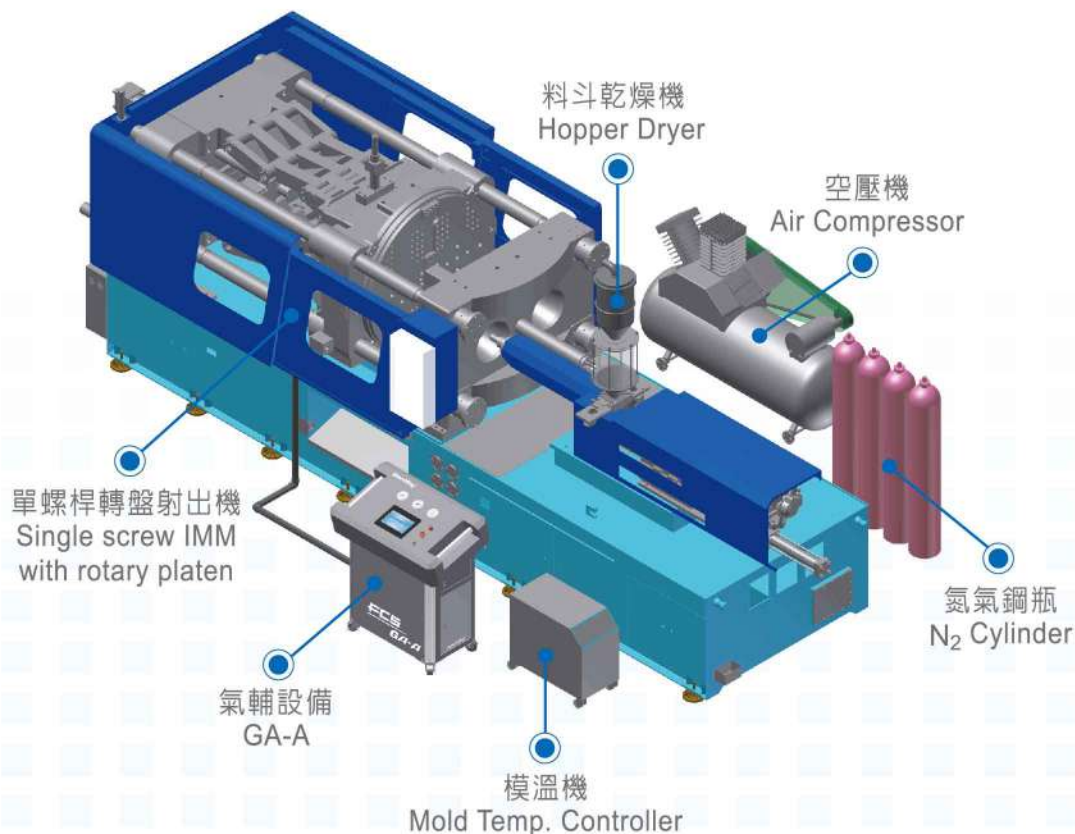
傳統/氣體輔助射出重量比較 Product weight of general injection molding & GAIM



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

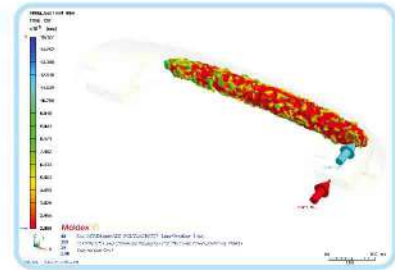


模具開發前評估：氣體輔助CAE技術 Prediction & Evaluation: CAE Technique

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



塑料 Melted plastic



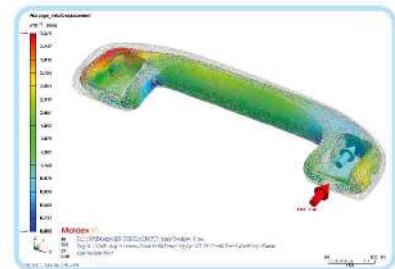
氣體 Gas

- 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)

後收縮 Shrinkage



氣輔成型 Gas assisted (better)

應用領域 GAIM-Applications



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