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# 工匠師系列介紹

## CRAFTSMAN SERIES PRODUCTS PROFILES



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# 電蝕加工系統： 精密模具製造核心

EDM System:  
The Core of Precision Mold Manufacturing



嘉利在模具製造的電蝕加工環節配置精密電火花機，採用石墨電極與銅鎢材料以保障加工精度。系統可支援表面平整度達 $Ra0.1\mu m$ 的鏡面加工，以及深徑比達20:1的深槽加工。此環節作為高複雜度模具的關鍵製造工序，能有效彌補CNC於銳角與精細紋理加工方面的限制，進一步提升模具壽命和產品外觀質感，尤其在汽車內飾與電子消費品外觀件等領域具有不可替代的地位。

Karrie is equipped with precision Electrical Discharge Machining (EDM) systems for the mold manufacturing process, using graphite electrodes and copper-tungsten alloy to ensure machining accuracy. These systems support mirror-surface finishing with a surface roughness of  $Ra0.1\mu m$  and deep-groove processing with a 20:1 depth-to-width ratio. This process serves as a core manufacturing method for highly complex molds, compensating for the limitations of CNC machining in sharp angles and fine surface textures. It improves mold durability and product surface quality, playing an irreplaceable role in areas such as automotive interior components and exterior parts of consumer electronics.

# 精密測量實驗室： 品質權威仲裁中心

Precision Metrology Lab:  
The Authoritative Quality Arbitration Center



嘉利的精密測量實驗室配置三座標測量機（測量精度達 $\pm 0.19\mu\text{m}$ ）、雷射掃描器等多項精密量測設備。作為品質仲裁的核心部門，實驗室不僅提供符合國際標準的計量數據，更為工程設計與失效分析提供技術支援，是維護品牌品質信譽的重要屏障。

Karrie's Precision Metrology Laboratory is equipped with advanced CMMs (Coordinate Measuring Machines) with an accuracy of  $\pm 0.19\mu\text{m}$ , as well as laser scanners and a range of advanced metrology instruments. As the Group's core quality arbitration center, the laboratory not only provides metrology data in full compliance with international standards, but also offers technical support for engineering design and failure analysis, serving as an important safeguard for maintaining the Karrie's brand quality.



# 注塑成型體系： 全尺寸精密塑膠製造基石

Injection Molding Line:  
The Foundation of Full-Scale Precision Plastic Manufacturing



嘉利擁有超過200台高性能注塑機，鎖模力覆蓋20至1,600噸，射膠量橫跨5至10,000克，全面實現從微細結構件到大型產品的製造需求。依託高速薄壁專用機，全電動及多色精密注塑系統，我們具備卓越的多材料、多色彩協同成型能力。另自主研發並應用多項先進工藝，包括模內注塑 (IML)、模內切水口、柔性振盤模內自動植螺母、平台化全自動絲印與雷射雕刻、機邊注塑-印刷-組裝一體化、氮氣輔助注塑、無痕注塑、漸變色注塑等，大幅提升產品結構與外觀的表現力。

Karrie owns more than 200 high-performance injection molding machines, with clamping forces ranging from 20T to 1,600T and shot weights from 5g to 10,000g, fully covering the manufacturing needs from miniature components to large-scale products. Leveraging high-speed thin-wall machines, all-electric and multi-color precision molding systems, we excel in multi-material and multi-color integrated molding. In addition, we have independently developed and applied advanced technologies including In-Mold Labeling (IML), in-mold gate cutting, flexible vibration-plate in-mold nut insertion, platform-based automated screen printing and laser engraving, in-line molding-printing-assembly integration, gas-assisted injection molding, seamless injection molding, and gradient color injection molding. These innovations significantly enhance structural integrity and aesthetic appeal of products.

同時，嘉利全面導入六軸機器手臂，實現自動化注塑取件與視覺檢測作業，確保達±0.01mm成型精度。配合自主研發的MES注塑管理系統及智慧節能系統，實現資源調度、過程監控與品質追溯的數位化管理，使能耗降低30%以上，將「品質、效率與綠色製造」深度融合於生產閉環中，成為塑膠製造的核心基石。

Meanwhile, Karrie also integrates six-axis industrial robots for automated part removal and vision inspection, ensuring molding accuracy within  $\pm 0.01$  mm. Our self-developed MES injection molding management and intelligent energy-saving systems enable digitalized resource scheduling, real-time process monitoring, and quality traceability, achieving over 30% energy savings. By deeply integrating “quality, efficiency and green manufacturing”, we have built a solid foundation for advanced plastic production.

# 沖壓製造體系： 金屬件全系列高速加工能力

**Metal Stamping Line:  
High-Speed Metal Processing Across the Full Spectrum**



嘉利配備超過325台精密沖壓機，涵蓋25至2,000噸高速精密衝床，透過多工位連續模技術，可實現每分鐘10-50次的高速沖壓作業，在保持金屬纖維連續性的同時提升結構強度，形成涵蓋硬碟支架至大型伺服器主機殼的全系列金屬加工能力。

Karrie is equipped with over 325 precision stamping machines, covering high-speed precision presses ranging from 25T to 2,000T. Through multi-station progressive die technology, the system achieves high-speed stamping rates of 10 to 50 strokes per minute, maintaining the continuity of metal fibers while enhancing structural strength. This provides full-range metal component processing capabilities, from hard disk drive brackets to large server enclosures.

## 自動化機器人系統： 智能製造中堅力量

**Robotic Automation System:  
The Backbone of Smart Manufacturing**

嘉利的自動化系統集成超1,000台六軸工業機器手臂，負載範圍4至200公斤，重複定位精度達±0.05mm。機械手廣泛應用於注沖壓上下料、搬疊及裝配等自動化環節，支持24小時連續運作，並透過快速換線系統實現多品種混線生產，大幅降低人工成本的同時提升產線柔性。

Karrie's automation network integrates over 1,000 six-axis industrial robots with a load range from 4kg to 200kg and repeat positioning accuracy of ±0.05 mm. Widely applied in automated stamping and injection molding operations, as well as material handling and assembly, these robotic clusters support 24-hour continuous production. With rapid changeover systems, we can achieve flexible, mixed-model manufacturing, greatly reducing labor costs while significantly improving production agility.

# 鈹金精密製造系統： 精密成形關鍵環節

Sheet Metal Fabrication System:  
Key Link in Precision Forming



嘉利的鈹金精密製造系統集高精度折彎、智慧剪切與多元先進焊接技術於一體，構建從金屬成形到結構組裝的完整產業鏈。折彎環節配置大型及精密數控折彎機，支援0.2mm至5mm板材加工，角度控制精度達 $\pm 0.5^\circ$ ，並配備快速換模系統，實現箱體與支架等結構件的一致性製造。剪切採用高功率雷射切割（精度 $\pm 0.05\text{mm}$ ，切口光滑無毛刺）與數控轉塔沖床，能高效應對複雜孔型及多樣化工件的加工需求。焊接工藝涵蓋氬弧焊、二氧化碳保護焊與激光雷射焊，適用於碳鋼、不銹鋼、鋁、銅等多種材料，滿足強度、密封性與外觀的需求。

Karrie's sheet metal fabrication system integrates high-precision bending, intelligent cutting and diverse advanced welding technologies into one, forming a complete industrial chain from metal forming to structural assembly. The bending process is equipped with large and precision CNC bending machines, supporting sheet thicknesses from 0.2mm to 5mm, with angle control accuracy of  $\pm 0.5^\circ$ , it features a quick die change system to achieve consistent manufacturing of structural components such as enclosures and brackets. Cutting uses high-power laser cutting (accuracy  $\pm 0.05\text{mm}$ , smooth edges without burrs) and CNC turret punch presses, enabling efficient processing of complex hole patterns and diverse workpieces. Welding processes include TIG (argon arc) welding, MIG/CO<sub>2</sub> gas shielded welding, and laser welding, suitable for materials such as carbon steel, stainless steel, aluminum, and copper, meeting requirements for strength, sealing, and appearance.

配合嘉利自動化系統廣泛應用六軸工業機器手臂，實現折彎、連機跟隨焊接等全流程自動化，為伺服器機櫃、汽車部件、高端電子及工程機械提供高效可靠的一站式自動化金屬製造解決方案。

In conjunction with Karrie's automation system, six-axis industrial robotic arms are widely applied to achieve full-process automation, including bending and robotic follow-up welding, providing efficient and reliable one-stop automated metal manufacturing solutions for server cabinets, automotive parts, high-end electronics, and engineering machinery.

# 智能組裝生產線： 精益化與數字化的完美融合

Smart Assembly Line:  
The Perfect Integration of Lean and Digital Manufacturing



嘉利智能裝配線採用模組化柔性設計，集成六軸協作機器手臂、自動傳送帶與智慧擰緊系統，以U型佈局優化物料流動。借助RFID技術，產品換型時間不超過15分鐘。關鍵工位配備0.02mm精度視覺引導，確保精密部件精準安裝。MES系統構建數位孿生檔案，支援全生命週期品質追溯，令產品直通率達99.2%，展現從零件到整機的垂直整合能力，為量產提供可靠保障。

Karrie's smart assembly lines are built on a modular and flexible design, integrating six-axis collaborative robotic arms, automated conveyors and smart fastening systems. A U-shaped layout optimizes material flow, while RFID technology is leveraged to facilitate product changeovers in under 15 minutes. Key stations are equipped with vision-guided systems offering 0.02 mm precision to ensure the accurate installation of critical components. The MES system creates digital twin files to support full life-cycle quality traceability, achieving a first-pass yield of 99.2%. This fully demonstrates Karrie's strong vertical integration capability - from components to complete systems, providing a reliable foundation for mass production.

## 智慧檢測體系： 零缺陷品質保障

Smart Inspection System:  
Zero-Defect Quality Assurance

嘉利的品質檢測體系導入AI視覺系統（最高分辨率達0.01mm），並結合光譜分析技術，實現表面缺陷與裝配完整性的毫秒級檢測。此體系將傳統抽檢升級為全檢模式，能即時攔截不良品並反饋優化參數，形成高效的品質閉環控制。

Karrie's quality inspection system is powered by AI vision technology (with a resolution of up to 0.01mm), combined with advanced spectral analysis to detect surface defects and assembly integrity within milliseconds. This system upgrades traditional sampling into a complete inspection model, enabling real-time interception of defective products and instant feedback to optimize process parameters. The result is a highly efficient system of closed-loop quality control.

# 工程研發團隊： 技術創新驅動引擎

Engineering R&D Hub:  
The Driving Force of Innovation



嘉利的工程研發團隊運用DFx(卓越設計)分析方法,協助客戶進行設計優化,達致降本增效,配合推動新材料與新技術的產業化應用,以及深厚的工程經驗與跨領域整合能力,可為客戶降低30%以上的生產成本,強化製造系統的技術競爭力。近期成功研發的液冷伺服器不僅展示了嘉利從零件製造到系統集成的垂直整合能力,更體現了對綠色運算趨勢的前瞻性佈局。

Karrie's engineering R&D team employs DFx (Design for Excellence) methodologies to assist customers in product optimization, achieving both cost reduction and efficiency enhancement. Backed by deep engineering experience and strong cross-disciplinary integration capabilities, the team also drives the industrialization of new materials and emerging technologies, enabling clients to reduce production costs by more than 30%, thereby strengthening the competitiveness of Karrie's manufacturing system. A recent milestone is the successful development of a liquid-cooled server, which not only showcases Karrie's vertical integration strength from component manufacturing to system-level solutions, but also reflects its forward-looking strategy in green computing.

# 智慧物流系統： 全球供應鏈神經中樞

Smart Logistics Center:  
The Nerve Center of Karrie's Global Supply Chain



嘉利物流體系整合智慧倉儲和配送功能，支持全球範圍30天交付週期。通過供應鏈數據聯動，有效縮短庫存週期並實現準時交付，確保從設計到用戶的價值高效傳遞。憑藉快速響應與強大履約能力，嘉利成為全球領先品牌客戶值得信賴的合作夥伴，展現其國際供應鏈核心競爭力。

Karrie's logistics system integrates intelligent warehousing and distribution functions, supporting a 30-day global delivery cycle. By leveraging supply chain data connectivity, inventory turnover is shortened, and on-time delivery is ensured, enabling high value transfer from design to end users. With rapid response and strong fulfillment capabilities, Karrie has become a trusted partner for large-scale international clients, reinforcing its core competitiveness within the global supply chain.



# 老式磨床機： 匠心·傳承

Legacy Grinding Machine  
- Heritage of Craftsmanship



何師長創業維艱，於車間方寸之間，以老式磨床為筆，書寫匠心傳奇。彼時無數控之精準，乏自動化之便捷，全憑雙目如炬，雙手若神。每一次進刀，皆是金屬與意志的對話；每一聲磨削，皆為歲月與精度的和鳴。他以匠人之魂，將冰冷鋼鐵琢為精良模具，於毫釐之間追求極致，在火花飛濺中堅守信念。

In Karrie's early days, Mentor Ho began his entrepreneurial journey under the hum of an old manual grinding machine, forging a legacy of craftsmanship within the tight confines of a small workshop. At that time, there were no CNC controls to ensure precision, no automation to ease the work - only sharp eyes, steady hands and unwavering dedication. Every cut was a dialogue between metal and willpower; every grinding spark was a harmony of time and precision. With the soul of a true craftsman, he transformed cold steel into exquisite molds, pursuing perfection down to the smallest fraction of millimeters and holding firm to his beliefs through each shower of flying sparks.

此非獨技藝，實乃心法。昔日磨床轟鳴，磨就的不僅是零件，更是企業求真務實、精益求精的根骨。願後人睹物思進，傳承這份沉靜專注的工匠精神——於新時代浪潮中，守一份專注，懷一顆匠心，方能鑄就歷久彌新的卓越品牌。

This was not just skill but a philosophy. The roaring grinding machine of the past honed not only parts but also the enterprise's foundation of truth-seeking, pragmatism, and continuous improvement. May future generations be inspired to advance and inherit this quiet, focused spirit of craftsmanship in the waves of a new era. Only by maintaining focus and a heart of craftsmanship can one forge an enduring and outstanding brand.