



快速原型及快速製模

Rapid Prototyping and Rapid Tooling

快速原型 Rapid Prototyping

快速原型技術泛指各種利用分層製造法的成型技術，它們的共同特點是：利用計算機把三維實體圖形分解為多層水平輪廓疊層，再利用燒結、光固化、粘合等程序，把原料一層層地堆疊出一個和原設計極為相似的實物。由於快速原型技術過程高度自動化，而且形狀限制相對較少，因此自開發以來，已從汽車、航空等高科技工業普及至玩具、家電、珠寶以至建築、醫療等行業。

快速原型設備包括

- * 立體激光快速成型，由液態環氧樹脂光固化而成，成品半透明，光滑
- * 融合沉積成型，融化的ABS塑料絲織成，表面有紡織品的紋理
- * 多噴咀陣列打印，蠟質融化後由噴咀噴出，凝固而成
- * 立體打印，利用噴墨打印機的原理，用墨把粉末膠合，成品表面呈砂土效果



Rapid Prototyping is the process of generating 3D solid objects layer by layer using sintering, photo-curing, laminating, or other generative technologies. Compared with traditional processes, rapid prototyping is highly automatic and fast regardless shape complexity, its application expands from automobile and aeronautics to toy, household appliances, jewellery, architectural and medical fields.

Rapid Prototyping facilities installed in Global Virtual Factory (GVF) are

- * StereoLithography (1)
- * Fused Deposition Modelling (2)
- * Multi-jet Modelling (3)
- * 3D Printing (4)

快速製模及生產 Rapid tooling and manufacturing

隨著現代工業模式和消費習慣的轉變，小批量、低投資、短產期的產品部件需求呈不斷上升的趨勢。為積極支持此類發展，產品的規劃無論從設計、模具開發以至生產上，都從塑料注塑為主擴展至反應注塑、真空吸塑、金屬離心澆鑄方面。全球虛擬工廠在計算機輔助設計和快速原型方面長久累積的經驗，足以提供全套的快速製造服務。我們配備了真空PU澆鑄設備和低壓反應注塑機，可供生產成品級的部件，同時亦有整套澆鑄、高速切削加工設備為加工鋼、鋁模、金屬樹脂模等提供最有效的製造方法。

Industries are now confronting ever-increasing product range and diminishing production lead-time with rapid tooling and manufacturing technologies. These technologies call for nouveau designs that utilise Reaction Injection Moulding, Vacuum forming, Metal Spin-casting, etc. to replace the less agile traditional injection moulding. The PolyU provides a one-stop service in Rapid Prototyping. Amongst the rapid prototype equipment, the Vacuum PU Casting and Reaction Injection Moulding machines are ideal for producing quality plastic parts, while the Vacuum-assisted Metal Casting and High-speed Machining are best for making Aluminium or epoxy injection moulds.



真空澆鑄 Vacuum Casting

真空PU澆鑄可以無須注塑模具在短時間內製造小批量的樹脂部件，成品在強度、耐溫等都接近生產部件的質素。因此非常適合在功能測試、市場推廣等場合使用。

Vacuum PU casting can be used to manufacture small trial series of parts quickly without incurring high investment costs in production of tooling. The outputs' quality comparable to the final product, thus it is especially suitable for 'form and fit' evaluation, functional testing, and marketing purposes.

低壓反應注塑 Reaction Injection Moulding

低壓反應注塑利用壓力把雙組份的PU樹脂混和，再注入剛性模具，樹脂固化後形成部件。與真空PU澆鑄相比，低壓反應注塑因在常壓下操作，因而模具大小不受限制，最適合用於文儀用品、戶外傢具、汽車配件等行業。

Reaction Injection Moulding (RIM) produces plastic parts by mixing and injecting a two-parts PU resin into a soft or rigid mould. Unlike Vacuum Casting, the process is performed under normal atmospheric condition; therefore the mould size is not a limiting factor. RIM is widely used in office equipment, outdoor furniture, and automobile components industries.

