An Integrated Approach to Assembly Planning and Assembly Line Balancing Based on Connector Concept

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ABSTRACT

在全球快速變遷的時代中，對於事物的改變，可以說是日新 月異，就對產品而言，也是需要面對許許多多來自四面八方不同 的需求，要如何面對如此情況並能夠做出快速的反應與回饋已是 如今重要的課題。然而以產品來說，在考慮其顧客需求變異所產 生之結果為已知的情況下，接下來須對產品之組成有一良好規劃 與設計，因此，本研究由此問題點作切入與探討，乃結合組裝規 劃與組裝線平衡的觀點，對產品之組成作適當歸類與配置來因應 現今少樣多量之需求。所謂的組裝規劃是依據產品設計的描述， 以個人特定的組裝經驗法則為基礎，設計出一定的組裝順序，最 後將產品的各個零件組合而成一個產品。然而其組裝線平衡為考 慮如何有效分配每個組裝工作，使整條組裝線使用率最高，閒置 而在本研究中企圖以具有其組裝工程資訊(結合、方向、工具 與時間)的Connector 取代傳統以零件的表示方法，作為產品組成 之最小單元，在Connector 之先行圖的限制下，以Connector 間相 似分數的觀點來做排列，以此結果在Cycle Time 與Connector 所 屬工作站類型都能符合的情形下，對其組裝順序作工作站配置。 本研究乃採用基因演算法來解決Connector 排列與工作站選配， 並說明此演算法的可行性與相關缺失作為未來改善的依據。

Keywords : Connector, Assembly Planning, Assembly Line balancing, Genetic Algorithm

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