行政院國家科學委員會專題研究計畫成果報告
IC 封裝廠考量動態訂單到臨之現場排程及決策模式

A Shop Floor Scheduling and Decision Scheme with consideration of Dynamic Order Arrivals for IC Packaging Factories

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中（英）文摘要

由於封裝產業具有產品種類數多、機台數眾多、生產預測不易、訂單動態到臨、批量分割、以及機台設置時間相關等問題，使得生產管理的進行面臨許多的複雜問題。目前有關半導體產業生產排程之相關研究，較少針對 IC 封裝業做一探討。為了提昇業界在接單時的競爭能力，縮短生產週期時間、滿足客戶所需交期、並對現場動態事件的發生作一即時的因應，實需一有效的現場決策模式。

在構建現場決策模式時，本計畫分別構建出細部產能規劃模組、及現場生產活動控制系統。在細部產能規劃模組中，透過模擬系統得出不同等級客戶之合理流動時間範圍及其計畫分配量。之後，現場生產活動控制系統承接細部產能規劃模組之規劃成果，在考量訂單動態到臨、機台加工特性差異、及緊急訂單插入，以訂單交期達成為首要目標，分別構建出交期設定、訂單投料、機台派工、系統監控、及現場控制等功能，以提昇業界在產業中的競爭力。

關鍵詞：IC 封裝廠、交期、緊急訂單

Abstract

The production management in the packaging industry is complicated because of its diversity in products, a large number of machines, difficulty in forecasting production, dynamic arrival of orders, lot split, and setup time of machines. In the researches nowadays regarding the production scheduling in semiconductor industries, very few are specific to the IC packaging industry. In order to increase the competitive edge in accepting orders, shorten manufacturing cycle time, satisfy due date request of customers, respond to dynamic events on the floor, an effective shop-floor decision making model is required.

In developing a shop-floor decision-making model, this research plans to set up a detailed capacity planning module and a shop-floor production activity control system. In the detailed capacity planning module, simulation is applied to get a reasonable flow time range for each class of customers and its planned capacity allocation. Next, the results of the detailed capacity planning are used in the production activity control (PAC) system. The PAC system will consider the dynamic arrival of orders, differentiated processing characteristics of machines, and insertion of rush orders, and it will take the fulfillment of due date requirement as the main scheduling objective. Functions such as the setting of due date, order release, dispatching, system monitoring, and shop-floor control are established in the proposed PAC system to increase the competitive power of the company in the industry.

Keywords: IC Packaging industry, due date, rush order