

Product Arrival Prediction by Regression Analysis in Wafer Fabrication

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Abstract

In the wafer fabrication, the equipment utilization and productivity are the major objectives for all factories, due to high cost and fast depreciation on equipment. As a result of complicated processes and manufacturing limitations, shop floor control at wafer fabrication is very difficult. Therefore, a prediction system of production behavior especially for product arrival will be helpful to shop floor control. In this study, a product arrival prediction system is proposed. A multiple linear regression model is applied to establish the prediction system. Several factors related to equipment, such as machine utilization, failure rate...etc. are regarded as the independent variables and the dependent variable is the quantity of products arrival. Besides, the results are compared to the prediction results of neural network system. It shows that there is no significant difference. Since the regression prediction system is easy to establish, it will be a good tool for managers to increase the performance of shop floor control.

Keyword : Wafer Fabrication; Multiple linear regression model; Neural network system; Product arrival prediction