Quality control of the injection molding process using an EWMA predictor and minimum-variance controller

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Abstract

This study presents an exponentially weighted moving average predictor and minimum－variance controller for the quality control of plastic injection molding processes. This is a slow drifting problem of quality control during plastic injection molding processes. In order to have good product quality for plastic injection molding process, a proposed approach was applied to achieve the desired process control quality during the control process. To simplify the process model and reduce system loads, design of experiments technique was adopted to analyze the important factors that had significant effects on the product quality and their relative correlations. The results of this research showed that the proposed approach was effective for a quality control of plastic injection molding process. This cannot only steadily control the manufacturing process to reduce product loss and maintenance time due to unforeseen malfunctions, but they can also increase the efficiency of the equipment and the process.

Keyword：EWMApredictor . Minimum－variance