A Study of Control Chart for Plastics Injection Molding Process

賴桂香、余豐榮

E-mail: 9607676@mail.dyu.edu.tw

ABSTRACT

Over time, polymer processing technology has been gradually improved, so that plastic products become the most popular articles in daily life; and injection molding is one of the most important polymer processing technologies, injected products have higher added value, but the manufacturing process still has many complex controllable and uncontrollable factors, as well as time limit. Therefore, it is still hard to make effective online process monitoring so as to minimize change of controllable factor in order to improve product quality. To improve injection quality, possible methods include control chart analysis of controllable factor, monitoring the variation of critical controllable factors, adjusting controllable factors directly when they are deviated from control status, thus to lower variation, improve product quality, and monitor product quality in real-time. This study first used contribution degree of variance analysis to find critical controllable factors influencing injection process, then utilized CUSUM control chart to control change feature of critical controllable factors. Control chart was applied into plastics injection process, instantaneously controlling change of controllable factors, so as to improve product quality, and thus realizing real-time monitoring of product quality.

Keywords : Injection Molding ; Control Chart ; Taguchi Methods ; Regression Analysis

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