

Capability-based quick switching sampling system for lot disposition

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Abstract

Various acceptance sampling schemes have been developed for quality control and assurance. In this research, two types of variables quick switching sampling (VQSS) system based on the process capability index C_{pk} are proposed. The VQSS is composed of two single sampling plans, one is under a normal inspection and the other is under a tightened inspection. Requirements for accepting a lot under the tightened inspection are more stringent than under the normal inspection. The concept of the VQSS system is that the sampling mechanism can adjust flexibly based on the quality history of the preceding submitted lots. A minimization model is constructed to solve the plan parameters for each type of the VQSS system under different mixes of quality levels and risk endurance levels, and several tables are prepared for references. In addition, the performance of the two types of VQSS system are compared with the single sampling plan through the operating characteristic (OC) curve and the average sample number (ASN) required for inspection. Finally, a real example from a dielectric layer coating machine is presented to show the practicality of the proposed system.

Keyword : Acceptance sampling; Discriminatory power; Process capability index; Operating characteristic curve