

Optimal Designing of Modified Quick Switching Sampling Systems for Variables Inspection

A sampling plan in quality control is a statistical method of determining whether to accept or reject a lot of material that is being produced. Acceptance sampling schemes are the combinations of random sampling, inspection and decision making for the submitted product. A sampling system consists of two or more sampling plans and the rules for switching between the sampling plans to achieve a blending of the advantageous features of each of the sampling plans. Whenever the normal distribution for the quality characteristic is justifiable, variables sampling plans are used. The main advantage of the variables sampling plan is that the same operating characteristic (OC) curve can be obtained with a smaller sample size than would be required by an attributes sampling plan. An important goal for the quality control practitioners is to apply optimal sampling to improve the quality of the products by the implementation of proper sampling inspection plans. The word optimal is used in the sense that the sampling plan should have minimum sampling inspection in terms of minimum average sample number and/or it involves minimum of producer and consumers risks. The producer risk is nothing but the probability of rejecting a good lot and the consumer risk means the probability of accepting a bad lot. Some of the special purpose sampling plans are chain sampling plan, quick switching sampling system, tightened - normal - tightened system etc for variable inspection are available in the literature. The ultimate aim of our work is to develop the modified quick switching sampling systems for variables inspection when the quality characteristic under study follow normal distribution which will minimize the producer and consumers risks at the same which involves minimum inspection in terms of minimum average sample number and those plans can be applied for costly and destructive testing.