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Abstract
In modern extremely competitive market, one of the primary goals for the sustainable development conditions in highly manufacturing industry is how to produce the highest level product with the maximum average total profit. It’s very important to set the process mean because it affects the manufacturing cost and profit. If the process mean sets too low, it will increase the fraction defective, the replacement cost, and the rework cost. On the contrary, if the process mean sets too high, it will increase the manufacturing cost. Hence, how to determine the optimum process mean is an important problem.
Pulak and Al-Sultan presented the optimum process mean with the maximum average total profit under the rectifying inspection plan. However, they don’t consider the quality loss within the specification limits. In this study, the author proposes the modified Pulak and Al-Sultan’s model by considering the quadratic symmetrical, the quadratic asymmetrical and the linear asymmetrical quality loss functions. There are three modified models considered as follows: (1) the first model that obtains the average outgoing quality limit protection or the lot tolerance percent defective protection; (2) the second model that jointly determines the economic manufacturing quality and the optimum process mean; (3) the third model that jointly determines the economic specification limits and the optimum process mean. The numerical examples and sensitivity analyses of parameters are provided for illustration.
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