

# **INTEGRATION OF MAINTENANCE POLICY AND QUALITY CONTROL BASED ON VARIABLE SAMPLING PLAN USING CAPABILITY INDEX PROCESS**

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## **Abstract**

The importance of maintenance and quality roles in industry, encourages researchers to determined an optimum strategy for improving production efficiency and productivity. In process production, the situations where quality is directly affected by the degradation of the production system. Correlation between equipment maintenance and quality control is basis of this study. Integrated model is made between policy maintenance and quality control based on variable sampling plan using process capability index. Integrated model is used to determine the optimum number of samples, critical values for acceptance sampling and to determined maintenance policy based on quality information feedback. The rejected lots are tendenced of deteriorate process so if the proportion of defects in the rejected lot reaches or exceeds on given threshold, the preventive maintenance is applied before the failure of production system occurrence. A stochastic mathematical model is developed and solved using an optimization approach to minimize the total incurred cost. Numerical examples is provided to illustrate the efficiency of the proposed integrated model. Compared to the acceptance of sampling by attribute policy which is widely used in the literature on integrated model, the result can be estimated that with economic design of acceptance sampling by variable using PCI in an integrated context can lead to important cost savings of more than 10% with decision result which is more accurate.

## **Keywords :**

Quality based maintenance, process capability index, single acceptance sampling by variable, preventive maintenance.

## **Biographies**

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