

# **Optimal Production Quantity Under Worker Fatigue Accumulation and Recovery**

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## **Abstract**

The classical Economic Production Quantity (EPQ) model, while widely adopted, has faced criticism from both practitioners and researchers due to some unrealistic assumptions. These assumptions can limit its practical applicability in real-world scenarios. In general, the classical EPQ and its variants assume that the worker's performance is always 100%. In practice, however, this assumption is not valid due to the worker fatigue accumulation. Usually, the worker's productivity, measured by the production rate, is inversely proportional to the fatigue level of the worker. Hence, it is expected that the decline in the worker's productivity affects the optimal production quantity and the model must be modified accordingly. In this study, we develop a model that finds the optimal production run when the operator fatigue accumulation and recovery is considered.

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