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Production planning for a ramp-up process with learning in production and growth in demand

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Abstract

This paper presents a production-planning model for a manufacturing process that undergoes a ramp-up period with learning in production and growth in demand. The labour production and demand functions assumed in this paper are validated using available empirical data. A mathematical programming model is developed with numerical examples presented. The results of the paper indicate that the total costs of production can be minimised if the facility produces without interruption during the ramp-up phase and if the production and demand rates are synchronised as much as possible. The latter can be achieved by producing with the lowest possible production rate and by frequently re-structuring the workforce assigned to the production line.

Keywords:

production planning learning in production growth in demand labour requirement worker assignment production ramp-up

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