

Fitting out machinery for reference change in a hosiery plant: A DES approach

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Proposal presentation

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Hosiery industry

- The hosiery industry is on charge of all the processes relevant with the elaboration of socks.
- Fundamental process: Knit the sock



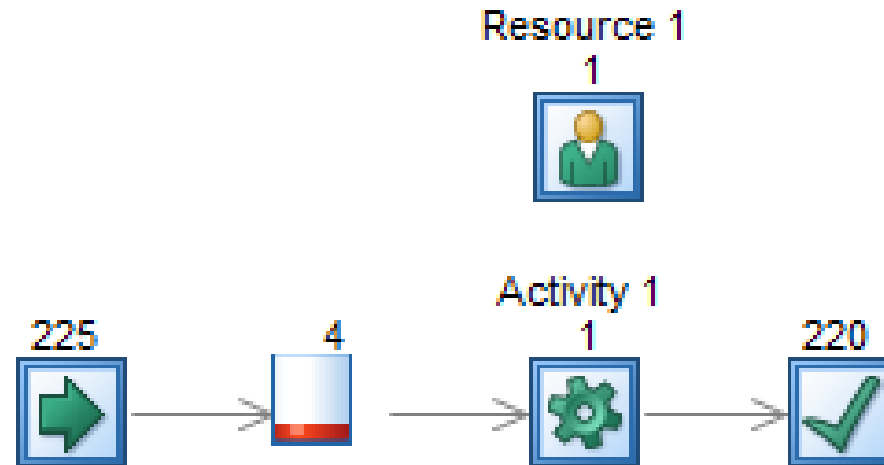
<http://www.santoni.com/>

Changing references

- Design especification: Length of the sock, number of colors, stripped design
- Known reference / New reference
- Other variables: Different tissue type

DES: Discrete event simulation

- Four key elements: entities, activities, queues and resources (Tako & Robinson, 2009)



DES: Discrete event simulation

- Attributes of the entities can be randomly generated (Gunal & Pidd, 2005)
- DES focuses on specific areas and use historical information (Lane, Monefeldt, & Rosenhead, 2000)

General objective

Implement a DES model for the process of fitting out machinery for reference change in a knitting plant using Simul8.

Specific objectives

- Understand how the process works by experimenting with the developed model.
- Identify key variables that affect the productive times by fitting out machinery for changes.
- Test different settings for the requirement and distributions of staff responsible for fitting out machinery when changes are required.

Methodology

1. Review of previous studies in the area.
2. Formulation and description of the model.
3. Data picking of times of service
4. Distribution fitting.
5. Model implementation on Simul8.
6. Experimentation with the completed model.
7. Exploratory analysis of the data

References

- Gunal, M. M., & Pidd, M. (2005). *Simulation modelling for performance measurement in healthcare*. Paper presented at the Simulation Conference, 2005 Proceedings of the Winter.
- Lane, D. C., Monefeldt, C., & Rosenhead, J. (2000). Looking in the wrong place for healthcare improvements: A system dynamics study of an accident and emergency department. *Journal of the operational Research Society*, 518-531. 7
- Tako, A. A., & Robinson, S. (2009). Comparing discrete-event simulation and system dynamics: users' perceptions. *Journal of the operational research society*, 60(3), 296-312.