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Replenishment planning, lot-sizing and scheduling under uncertainty

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Session code (for submissions): **km245**

Proposed by:

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Aim & scope: Inventory control, replenishment planning, lot-sizing and scheduling are essential issues for companies desirous to satisfy their customers at a lower price. Various sources of uncertainties exist due to: variations of assembly and manufacturing capacities; random breakdowns and rejects, supplying reliability, etc. To decrease the influence of these uncertainties, the companies use *safety stocks*, but stocks are expensive. So, the problem is to control stocks and to avoid stockout while keeping a high service level. The objective of this Invited Session is performing a review on this topic, more particularly on advanced replenishment planning, inventory control, lot-sizing and scheduling models under demand, yield or/and lead time uncertainty. A particular aspect of this session concerns models *for assembly systems*. Indeed, several types of components are needed to produce one finished product in case of assembly lines, then, the inventories of the different types of components become dependent. A delay and stockout of only one component automatically leads to a shortage due to the impossibility to assemble the finished product. In addition, appends an overstocking of the others types of components (delivered but not used). Thus, the models, for this case, are more sophisticated.

Keywords: Replenishment, lot-sizing and scheduling, Uncertainties, Assembly Systems, Newsboy model, MRP parametrization, Safety stocks, Safety lead-time, Stochastic models, Combinatorial optimization.

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Deadline for submissions (please use the code, see above): **February 15th, 2022**

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