Operative manpower planning in production lines by simulation of orders in sequence

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In sequenced automobile assembly, the assignment of personnel is done at almost all major manufacturers subordinate to the sequencing, resulting in sub-optimal utilization of personnel resources. The varying process time requirements of the vehicles lead to model-mix-losses due to over and underutilisation of the staff. The sequence of orders, given by the sequencing determines the process requirements for each station and cycle. The accurate collection of the operational time for each variant and station allows a forecast of the load profile. The presented decision support system is designed to predict the assignment of spare men and the utilisation of core team members by discrete-event simulation. Therefore, the production planner can fed and edit the master data of the production line and the process data and the sequence are periodically transferred from the operative planning systems. The simulation application was realized in the simulation software SLX, which excels in fast calculation and flexible model requirements illustration. Different resulting diagrams are available to analyse the simulation. With the help of filters, regarding vehicle type and/or vehicle attributes, consequences on personnel utilisation can be analysed and goal-oriented measures can be derived to improve the assembly cycle time.