Chapter 7
The Production Capacity Planning and Scheduling Models in Term of Supply Chain Management

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ABSTRACT

Each company is original from the point of production processes. Application of standard enterprise information system (SAP, proAlpha, Baan, etc.) need difficult adaptation, especially for conditions of small or medium enterprises (SMEs) and the price of that system is relatively high. Therefore, the proposed capacity planning model is much more suitable for the conditions, requires and demands of SMEs. Specifics of production processes of RS Ltd. are: - combinations of discrete and continuous processes, - this small company is connected to a supply chain (KANBAN) with its mother company, which defines the level of some chosen products in the expedition warehouse by the end of a month. For the above mentioned reason it had to be designed the new original production logistic system.

INTRODUCTION

The capacity production planning (CPP) is one level of operative planning (Malindžák, 1997; Rayward-Smith, Osman, Reeves & Smith, 1996). The main targets of CPP are:

- The records of customer orders and production tasks for the next planning period (some weeks) and production department.
- The order assignment to time unit(week) of the capacity plan.
- Capacity smoothing for machine and time unit.
- Creation of the internal orders – cumulated orders from the real customer orders.
- Creation of the production batches (Malindžák, 1983).

By these activity sequences it is created capacity plan of production department, which is input to the next step of operative planning to production scheduling (Malindžák, 1997).Each company is original from the point of production processes. Application of standard enterprise information system (SAP, proAlpha, Baan, etc.) need difficult adaptation, especially for conditions of small or medium enterprises (SMEs) and the price of that system is relatively high (Khouri, Kačmáry, 2009). Therefore, the proposed capacity planning model is much more suitable for the conditions, requires and demands of SMEs (Malindžák et al., 2011; Malindžák & Takala, 2005; Malindžák, Kačmáry & Moussttfa, 2012). Specifics of production processes of RS Ltd. are:

- Combinations of discrete and continuous processes (Malindžák, 1983).
- This small company is connected to a supply chain (KANBAN) with its mother company, which defines the level of some chosen products in the expedition warehouse by the end of a month (Johnson & Wood1996).

For the above mentioned reason it had to be designed the new original production logistic system. This system starts with order evidence, it includes the model of capacity planning, which respects KANBAN and model for production scheduling and operation evidence of the semi and final products (Malindžák, 1997).

Previous reasons forced authors to develop qualitatively new methods of problem solutions by computers, through modelling of various sides of creative human activities (Zimmermann, 2002). This approach is called heuristic approach. Heuristic approach, in contrary to accurate approach (analytic methods), uses modelling of processes of information processing realized by people on different stages of activity and during various tasks solution and development of heuristic models (HM) on this principle (Malindžák, Kačmáry et al., 2013; Michlowicz, 2002).

Design of the logistic system of RS Ltd. can be also applied in any SME, in the area of machinery industry connected to supply chain system with another company (Takala, Malindžák, Straka et al. 2007; Christopher 1997).

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