

IMPROVEMENT OF OPERATIONAL AND PRODUCTION PLANNING

This article focuses on improving operational and production planning.

On the effectiveness of any manufacturing facility affects the coherence of actions of all structural units in time, their manufacturing proportionality, opportunity to monitor the agreed rate of production failures and make the necessary corrections. Therefore, operational production planning is important step in process planning, that prevent or reduce the degree of irregularity of production, which leads to an increase in unproductive expenditures in connection with the downtime of equipment, transportation, labor, breach of contract for the supply of products to buyers, the emergence of overtime, equipment failure, thereby reducing the quality of the products.

Operational planning is intended to provide prompt and quality execution of annual tasks, that are envisaged by plans of socio-economic development of the company or firm. Operative production planning is to develop a critical volume and calendar indicators of production and economic activity of the enterprise [1].

Improvement and further development of operational production planning in the domestic enterprises is an essential element to enhance their efficiency and competitiveness.

On today's time in Belarus there are a number of companies, such as LLC "Technikon", LLC "Patriarch Computer Service", Company "Business Intelligence System", UP "Atex-Computers", "ODO "Profit", LLC "Altvolh", LLC "Softclub" and others who are engaged in the development, implementation and maintenance of a variety of business solutions based on the latest information technologies, including efficient management system. They include a list of criteria for assessing the quality of formalized planning criteria and limiting production.

The most common system – class system APS (Advanced Planning & Scheduling Systems) and MES (Manufacturing Execution System).

APS system provides ample opportunities for planning at different levels and stages of the planning cycle. The basis of the APS-system is based on heuristic method for solving scheduling problems, that allows you with using existing computing power to obtain valid schedules and more or less accurately predict delivery times .

At the same APS-systems do not pose a more complex tasks, for example, to minimize the time a schedule readjustments, transport operations, reducing the amount of equipment to be used, etc., as these requirements will inevitably lead to weighting algorithms and the inability to obtain the shortest possible time schedules for large dimensions. In connection with this APS- systems have on your arms very limited part of planning criteria [2]. Besides the default settings of the system is not fully solve industry-specific problems.

MES-systems perform functions that are operational in nature and regulate the relevant requirements of enterprise's unit (shop, site, department), which is conducted for scheduling. The main functions of this system are operational and scheduling (detailed planning) and scheduling of manufacturing processes on the shop floor. It doesn't have feature CSM (automation of supply chain management) in contrast to the APS-system, which for the last one is the main. MES system at one shop provides direct transfer of detailed information directly from process equipment in ASU of the enterprise (database) [3].

Furthermore, algorithms of MES-systems, although in most cases are based on heuristics, but usually much more complicated and "intelligent" than algorithm of APS. Initially MES algorithm finds a feasible solution with all the constraints and the selected criterion (private or integral). Subsequently, in step of optimization it searches for the best schedule. Of course, the resulting schedule is also not optimal in the full sense of the word , since the optimum search for such problems is always accompanied with a considerable amount of time (MES- systems build schedules for 0.1 – 5 minutes by modern technology), but obtained from this schedule as rule, much closer to the optimum than schedules built in APS-systems. Unlike APS- systems, MES- systems operate with lower dimensions destination – up to 200 machines and 10,000 operations in planning horizon, which is usually less than three ten hour shifts. Reducing the dimensions due to the fact that the MES is considered much more technological limitations.[2] Another important advantage of the systems MES – accounting industry-specific enterprise, so there is ability to better reflect the technology of specific production processes.

However, MES systems are not a panacea, guaranteeing perfect operational plans. First of all, the fact that the existing systems on the market are sufficiently universal. Therefore, as for the introduction of APS, and MES requires additional software development, which will take into account specific requirements. Still any of the above systems operational production planning worthy of implementation. Especially because costs of such systems are paid off with increasing process efficiency in the long term.

List of References:

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