



THE DILEMMAS OF CONTEMPORARY PRODUCTION DRAFTSMEN AND TRENDS IN SCHEDULING

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ABSTRACT

Implementation of integrated management programmes has become some sort of fashion these days. The more expensive the programme is and the more complex modules, the better the position of the company of the market is; the faster the implementation is, the better the management staff a company can gain - this is what became a habitual perception but is this true? The article is to answer the questions the master schedulers encounter to whom the data reach and who are to plan the agenda and tasks related to sales, storing or production in the way that according to the assumptions of logistics dislocation of the goods ensue in the right time, the right amount and the right quality.

The fact is that logistics solutions in the production sphere based on integrated management systems are the chance of improving competitiveness and increasing demands of clients. The demands posed to production companies nowadays are high and connected to high risk. Inappropriate plans and forecasts can cause a risk of stock freeze costs. In the same time failure in performing production orders caused by a shortage of the production materials may be connected to client loss. How to reconcile it? The thesis is to present the importance of a human factor in proper performance of plans and more precisely how important in the company a master scheduler is. For a production company the most important a production plan should be and a detailed scheduling to react to any changes in a responsible way.

Key words: production, production schedule, main schedule, production draftsman.

INTRODUCTORY COMMENTS

Many articles have been written about functioning of systems of MRP class - the thesis will not be related to this subject - it will not also prompt, citing from numerous literature, solutions of proper implementations and proper work of such systems.

The thesis is the result of many discussions and interviews with master schedulers working in systems of MRP class in different business sectors. The article presents the problems and dilemmas master schedulers come across each day. What they

fight with to execute the schedule in time and decisions they have to make significantly exceed their range of duties.

The literature of the subject gives a vast number of solutions and prompts the proper functioning. Currently Polish reality seems more complex than examples presented in books often by western authors.

MASTER SCHEDULER AND A PERFECT PLAN

A plan is a scheme of tasks and activities in the form of a document on paper or any other data carrier. It usually includes:

- the amount of articles falling on the planned period, connected with planned actions (sales, warehousing, production) expressed in the standard of quantity or value,
- the size of required capacity or capacity to be gain which is necessary to complete all the planned actions,
- the schedule of aims which are to be achieved and tasks which need to be completed to execute the plan,
- the listing of commonly compliant decisions concerning the admitted aims and the means of their accomplishment,
- the procedure of implementation of the planned actions, locating variations in plan accomplishment and undertaking corrective actions when necessary.

In the context of the article we mainly focus on the first specification of the definition above. If a person taking care of planning is to fulfil the conditions of planning, so the manner of regulation and coordination of actions within time and procedures and means which will help to conduct the latter which are used to gain the certainty that they will proceed in an optimum way [Fertach, 2006], what should a master scheduler's range of duties look like when working in an integrated management system based on MRP? When asked about the profession we hear short answer - planning. It is only one word which in practice means a very wide range of duties and tasks to be executed and coordinated. Is a planning specialist also a logistics specialist? Unfortunately, the position of master scheduler is often understated in a company, in particular if within the structures of organisation a planning department subjects to a production division and not to the head of logistics. A production company should mainly focus on a proper production satisfying all the required quality, quantity and time conditions. The person taking care of production plan time coordination manages one of the most important role in such a company. It is according to his or her prepared schedules the remaining organisation divisions operate. A master scheduler is a person who should not only be knowledgeable about a supply management, storage, an inventory and transport management, a production and information system management, but also about economy, organization and management, so in agreement with M. Fertscha [2006] a master scheduler is a logistics specialist regardless of a division he works in. All the above shows that a master scheduler's work is not only clicking the open production orders with a mouse and putting them into a production schedule, but also logistic abilities of combining much information coming form different production divisions into an optimal production plan.

According to the tendencies in Polish companies people dealing with logistics are mainly transport and shipping specialists. If the structure of a company is so

developed that is has a logistics division people handling the logistics outside the division are not treated as logistics specialists. It is visible in wages as well as in a position of a person in a company.

TRENDS IN SCHEDULING - THEORY AFTER PRACTICE OR PRACTICE AFTER THEORY

In production logistics and production planning the leading role belongs to MRP (Material Requirements Planning). The condition of an effective cooperation of the planning production sphere on the tactical level within a company is supporting the functioning of both on the same standard of planning. The standard should correspond both to the needs of production and logistics, which means that it [Fertach 2003]:

- must be possible to implement within the frames of planning models,
- must provide data necessary for an integration of production planning and logistics, such data must simultaneously enough for detailed planning in both spheres.

The concept of planning material requirement refers to all the solutions where the bill of material is used as information controlling the course of a planning process. Applying the planning material requirement as policy for logistics system in a production company requires some rules [Fertach 2003]:

- planning material requirement at any level before load planning of production power,
- collaborative plan in one business department,
- creating only one requirement schedule for each item,
- combining all the sources of requirement occurring in a company (demand, company's own production , the need of service and repairs) within one schedule,
- current updating of each schedule of requirement.

While implementing systems of MRP class people taking part in creating syllabi of implementing a PP module and many others often hear that employing a planning policy of material requirement brings such benefits as [Fertach 2003]:

- acceleration of stock rotation - up to 6 times,
- reduction of work-in-process inventory - up to 25%,
- raw materials limitation - up to 50%,
- shortening of supplier's lead time - up to 50%,
- productivity enhancement - up to 10%.

Still, nobody adds that the results were created on the basis of Olivier Wright's research twenty years ago in conditions of American industry and they are of no relevance to current business and economical situation of Polish companies. Actually, it is unknown whether this information are passed on in this form as people taking care of implementation do not know it or whether it is a good marketing catch. Therefore many mistakes and misunderstandings appear and many companies with such a system implemented have to deal with it or actually the people who use them.

Implementation of a system will not bring benefits, especially if research and development syllabi are badly prepared and this is a plague of most of the organisations and the worst part is that they keep continuing such a situation. Unfortunately, from my observations and interviews it is clear that most of master schedulers and not only, as it is also concerned with distribution draftsmen, despite implemented systems of MRP class which require major financial expenses, still use help of tools such as Excel to arrange schedules. Here worth mentioning is that it is not caused by lack of familiarity with an information system they work with or unfamiliarity of the principles of functioning of an MRP rule but by the assumption concerning production and the process of planning itself which has been badly planned and has not been corrected in further agreements. The most absurd seems the fact that schedules are made parallel both in an information system and Excel, as otherwise controlling the time and correctness of orders fails. It is not just the production. Depending of the complexity of a company, piles of unnecessary documents appear apart from an information system. Many inner documents effect in proper order but also they are forced and add work instead of facilitating it.

THE DILEMMAS OF CONTEMPORARY PRODUCTION DRAFTSMEN

The development of a solution called master schedule or master production schedule has begun in the 80' last century. At first the master schedule was treated as a basic short-period production plan containing information about a product range and a quantity of the produced items [Fertsch, 2003]. Basically, two types of situation may occur [Muhlemann, Oakland, Lockyer, 2001]:

- items produced for stock. In this situation it is possible to prepare the schedule and load planning at the beginning of the production period, this is so called 'marketing' planning,
- items produced only for clients' orders. In this situation it is vital to prepare the schedule and load planning within the production period, this is so called 'distribution' planning.

The first option of planning is as good as a forecast is. As the forecast is usually incriminated with some mistakes it is difficult to foresee exactly a product range, quantity, quality and the requirement time. Master schedulers trust their experience and observations of the business situation on the market more that calculations. The example worth presenting here is this year requirement for building materials and increase of their prices of 200%. Despite such an increase materials are usually unavailable for customers. Mistakes in forecasts usually have a negative influence on contacts with clients. In situation where several orders with similar deadline coincide one cannot react properly. Additional danger of such an attitude is a shortage or a surplus of material stock or even refusing to accept the execution of the order due to the lack of production materials which production time at the supplier's is very long.

The second of the reasons mentioned is even more dangerous as a company may lose some part of clients due to long deadlines. Not every client is willing to accept the fact that after implementation of the system the order execution time lasts averagely around 3 weeks and after the implementation is lengthens double or more. Clients cannot plan their level of production or distribution very often which reflects

the producer's order number who has already implemented the system.

Implementing Just In Time has become very popular among procurement services. Unfortunately, implementation of this policy into companies restricts only to procurement leaving other divisions out. The result is that due to the lack of carrying out the purchasing rating according to commonly accepted rules - from the viewpoint of the importance for each company (ex. price, quality or delivery dates) - an agreement with only one supplier is signed with no substitute supplier. I would like to remark hereby that we are talking mainly about the suppliers of production materials from the view point of importance of delivery dates for master schedulers. It very often causes delays of material deliveries from suppliers. Lack of information regarding delays is a plague or even worse: lack of deliveries despite confirmation. From a master scheduler's perspective it results in changes in production schedule as it is impossible to produce an item without material. The worst part is that procurement services even if they have the knowledge about delays care nothing about the first rule of logistics which is information [Fertach, 2006]. There is one other danger if a company produces only one type of item at a given production line and has no possibility of change-over, it takes up decision about production and later scrapping due to the suitable quality of items. It is caused by the fact that stopping and launching the production again highly surpasses costs than the scrapping and benefits loss.

Another problem while scheduling is too big work load of the production line, especially during seasonal productions. To come up to many clients expectations concerning deadlines of items adjusted in quantity to productivity of clients' production lines combined with a huge amount of sales orders in big production batches some orders need to be divided. In effect sales orders are divided into several production orders in smaller lots. On the one hand a schedule prepared this way ensures realization of sales orders but on the other hand it causes often outage due to change-over. In situation when a company has some part of standard items ready for most clients such a production is anyway launched in small quantities which boost the percentage of faulty items.

A very often problem main schedulers encounter is layout of material incorrectly put into a system. It so happens that people make mistakes while putting material specification and also technological itinerary into a system. It is said the one who does not work makes no mistakes, still this is the cause of most of the corrections in scheduling. It needs to be marked there is no information from technical departments about a change of technology in produced item. There may also be last minute changes of technology made by clients when materials and production lines are already ready to execute orders or even worse if the production is in progress.

Main schedulers' nightmares are unexpected urgent orders when on division manager's instruction they need to change whole production schedules and they disturb the agenda. A very important element of scheduling is planning production of semi-finished products as a part of a finished product. When despite the collaborative planning, semi-finished products are produced in different business departments and the finished item assembly is still in another business department many problems with delivering semi-finished products on time occur. Lack of information from shipment divisions about the delays or many other reasons, like lack of information in a system about ready semi-finished product results in inability of production of a finished product and another schedules corrections.

Creating production schedules is also connected to planning human capacity on particular work centres. If incorrect yearly production plan is accepted on the basis

of sales department forecasts where the work load of working positions is planned conflict with overtime, employing new workers and their training occurs. Nowadays in connection with mass emigration to western European countries in search of better wages, lack of workforce has become very visible. There are no both skilled, like welders, and unskilled workers. Looking at a current situation on a labour market employers should be more engaged in problems of human resources - motivation and attachment to a company one works in. Probably one year after another the situation will be deteriorating due to the lack of graduates of technical and vocational schools which results from reforms in educational system in our country. Not everyone can or should be a manager.

During interviews I heard also that avoiding heads is also problematic as they should not walk around the production too often. I will leave it without comment.

Summing it all up every of the problems cited above many schedulers encounter every day is connected to the lack of information from any particular sphere. One is certain that lack of information is worse than the worst information. The result is that a stream of information which controls dislocation of material goods is the most important sequential of a logistics system in the whole chain of dislocating goods in a company.

FINAL COMMENTS

I am sorry to write here that in the literature of the subject one may read many solutions, prompts, ready-to-use models of implementing and executing the system described above, unfortunately there few practical case studies. If the latter appear they describe the process itself and not the problems which arrived and their solutions or suggestions so that companies implementing such systems in the future could avoid similar mistakes. In an unlimited source of knowledge which is the Internet one can find many interviews concerning implementations, comments of board members, heads, coordinators who always claim that the systems works properly and brings profits mentioned in point 3. Unfortunately, nobody interviews employees on a lower level who work in systems of MRP class day by day and they are undeniable source of enormous knowledge about weak points of the implementation itself. On the other hand nobody reasonable would agree to such an interview and give their name knowing that it might end with redundancy or other sanctions. Probably the same opinion is common among management responsible for implementations and functioning of the system. Who will claim in front of the board that the system works improperly and financial expenses spent on implementation and purchase of the equipment has been placed unreasonably or that the system should be restarted again and implemented again but this time avoiding any shortcomings or mistakes. If the company leads production activities which are discussed here, all the processes should be adjusted to production processes and should be a starting point in managing of the remaining areas of organisation. Production scheduling is not only a feature of integrated systems of MRP class, it may turn out that a company cannot afford the costs of implementation. Implementing by force, as those are the recent trends, will not be favourable for an organisation but only can deepen the lack of information and cause a conflict with clients or their loss.

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DYLEMATY WSPÓŁCZESNYCH PLANISTÓW PRODUKCJI I TRENDY W HARMONOGRAMOWANIU

STRESZCZENIE Wdrożenie systemu zarządzania zintegrowanego stało się ostatnio pewną modą. Im wdrażany system jest bardziej skomplikowany i im więcej posiada modułów, tym firma postrzegana jest na wyższej pozycji rynkowej. Im wdrożenie jest szybciej zakończone, tym lepsze można osiągnąć korzyści. Takie są ogólne opinie związane z tym procesem - czy są prawdziwe? Praca ma na celu odpowiedzieć na parę pytań planistów produkcji, którzy przetwarzają dane, związane ze sprzedażą, magazynowaniem czy produkcją a mające być podstawą do podejmowania trafnych decyzji dotyczących lokalizacji zapasu w czasie, przestrzeni oraz o odpowiedniej jakości. Faktem jest, że rozwiązania logistyczne w obszarze produkcji oparte na zintegrowanych systemach mogą wspomóc wzrost konkurencyjności oraz zadowolenia klientów. Oczekiwania, jakie musi obecnie spełniać firma są wysokie i związane z dużym ryzykiem. Nietrafione plany i szacunki powodują ryzyko zamrożenia kapitału w zapasie. Z drugiej strony niezrealizowane zlecenia produkcyjne mogą powodować braki towarowe, co z kolei ma bezpośrednio przełożenie na poziom obsługi klienta. Jak to wszystko opanować? W pracy wskazano na istotę czynnika ludzkiego we właściwym przebiegu procesu planowania a dokładniej ważności planisty produkcji. W przedsiębiorstwie produkcyjnym najważniejszy powinien być plan produkcji oraz sposób postępowania i reagowania na każdą nawet najmniejszą odchyłkę od tego planu.

Słowa kluczowe: produkcja, harmonogram produkcji, harmonogram główny, planista produkcji.

DIE DILLEMAS DER PRODUKTIONSPLANER UND DIE TRENDS IN DER TERMINPLANUNG

ZUSAMMENFASSUNG. Die Einführung von integrierten Managementprogrammen ist heute in Mode gekommen. Je teurer das Programm und je komplexer die Module desto besser ist die Marktposition der entsprechenden Firma - schnelle Programmeinführungen führen zu mehr Gewinnen beim Management. Aber ist dieses bereits ritualisierte Verhalten auch richtig? Dieser Artikel beantwortet die Fragen der Terminplaner, wie z.B. : Wer bekommt die Daten? Wer plant die Agenda und daraus folgende Aktivitäten wie Vertrieb, Lagerung und Produktion gemäß der logistischen Vorgaben. Tatsache ist, dass Logistiklösungen, die in der Produktion auf integrierten Managementsystemen beruhen, Chancen bieten die Wettbewerbsfähigkeit zu verbessern und so die Kundenzufriedenheit zu steigern. Die Anforderungen an modernere Produktionsfirmen sind hoch und immer öfter mit Risiken verbunden. Ungenaue Planungen und Vorhersagen können unangenehme Folgen haben. Fehler in der auftragsgerechten Produktion, welche durch Engpässe entstehen, können sogar zu Verlusten beim Kunden führen. Aber wie kann man dies lösen? Diese Arbeit soll zeigen, wie wichtig der menschliche Faktor ist, wenn Pläne gut funktionieren sollen und wie wichtig Terminplaner in einem Unternehmen sind. Für eine Produktionsfirma ist der Produktionsplan von größter Wichtigkeit und damit einhergehend die Notwendigkeit, angemessen auf eventuelle Änderungen reagieren zu können.

Codewörter: Produktion, Produktionsplan, Terminplanung, Produktionsplaner.

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