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THE POSSIBILITY OF AUTOMATION OF A PRODUCTION WAREHOUSE AS A KEY COMPONENT IN CIM SYSTEMS

Mirlind Bruqi
Mechanical Engineering Faculty
10000, Prishtina
Kosovo

Ramë Likaj
Mechanical Engineering Faculty
10000, Prishtina
Kosovo

Jorgaq Kaçani
Polytechnic University of Tirana
1001,Tirana
Albania

Arben Gjukaj
Electric Corporation of Kosovo
10000, Prishtina
Kosova

ABSTRACT
Production systems play an important role in industrial and economic development of a country. Recent years, there was a tremendous change in the technology of production systems. Such changes happened as a result of advances in the field of hardware and software technology, which are directly or indirectly related to modelling and simulation of production systems. In this paper, we will investigate the possibility of automation of a production warehouse as one of the key components of CIM technology.
Keywords: CIM, warehouse management, billing.

1. INTRODUCTION
Software design which is used for storage management in the production systems for electrical machine is permanent and essential need in recent years. Material management within the CIM systems has become so important in recent years, in such a way that includes an increased number of functions, raising its position in the hierarchy of the organization. Problems that occur in the field of material management vary depending on the industry. This is due to the type, number of products or services created, the differences between suppliers and consumers, the nature of the raw material and supply revenues and economic factors such as values of individual units of the products or services. Companies in the service industries mainly are dealing with procurement and supply of materials. Their main focus is to make orders, receipt, storage and internal distribution of the needed items for such services.

2. INFORMATION SUB SYSTEM OF FLEXIBLE SYSTEM FOR ELECTRICAL MACHINE ASSEMBLING
In the context of the programming interfaces will are referring to the so-called protocols. Protocols represent the "language" of components. Protocols depend on the operating systems which are installed in the computers, but in this paper is mentioned well known and the most compatible protocol: TCP / IP (Transmission Control Protocol / Internet Protocol). This protocol provides the rules of exchange of information through various system components in the networks with different operating systems and with different hardware components. Currently this protocol is the most used and is very suitable for the design of networks with different topologies in both small and large

enterprises. This protocol will be used for the case of the flexible system for electrical machine assembling.
In Figure 1 is shown the information subsystem of flexible system of electrical machine assembling. As is shown on the top of the hierarchy lies the internet network. For each customer is given the opportunity to communicate on the enterprise server via TCP / IP protocol. This means that nowadays is not necessary to go physically to the enterprise or faxing a document and in order to order the products, but this is done automatically by the computer system on-line within 24 hours. So, every day we will have the list of the orders which are processed in the appropriate planning unit of the enterprise.

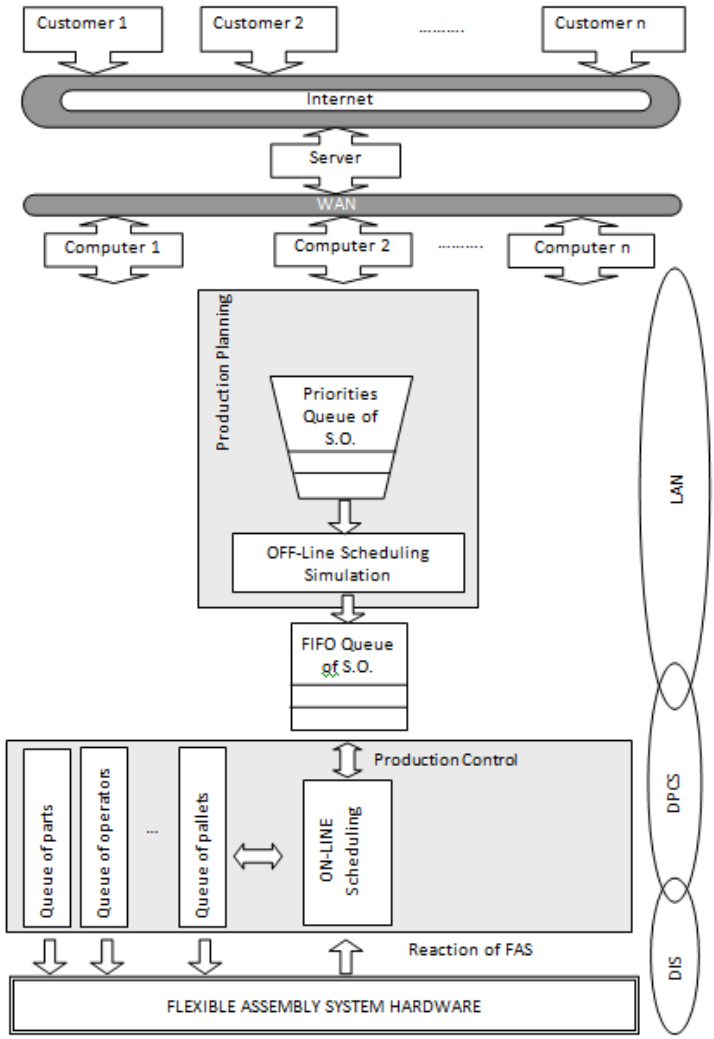

Figure 1. Information subsystem of flexible system for electrical machine assembling

On the top level is the production planning system. Each order has an external priority as a scale of order urgency. The priority scale has 10 points, from 0 to 9. Priority 0 is given to orders which are not to be processed yet. The normal urgency is priority 5, a very good order is priority 9 and a not urgent order is priority 1.
The first level of contact with the outer world is a WAN (Wide Area Network) and constitutes the wide network of computers. Large enterprises such as Ford, BMW etc have this kind of wide networks, while small enterprises are connected to the internet with LAN-Local Area Networks.

The second level is therefore LAN, which in the practice represents a part of the enterprise (eg sections of planning, design, finance, etc.), each of them collects a number of computers. Production planning of flexible system for electrical machine assembling is followed by building of so-called "Queue of awaiting messages." This range has a trapezoidal shape, giving us the means that such messages are not treated equally, but each of these has a certain priority. The messages at bottom of trapeze are urgent messages. In contrast to those which lie at the beginning and represent the messages that can wait for a while to be executed? Ordering of these messages by following such a hierarchy is based on the strategic interests of the enterprise. For practical purposes, it should be known accurately which are messages that should begin the installation process and what it look like the order of products assembly process. This is so-called off-line simulation and is assigned a rank of optimal one dimensional Queue of messages, by taking into account the preliminary phase. The designed Queue in this way is called FIFO (First In First Out), which is afterwards broken down, starting from the first and finishing with the last.

The third level of network is called DPCS (Distributed Process Control Systems). This level represents directly some smaller subsystems in the production process. This level role is to inform the central system for the failure / performance of processes and activities in the assembly process. At this level it is performed so called On-Line simulation for the purpose of division of work to the assembling system resources. At this stage is performed so-called resource reservation which results in the construction of Queues of parts, pallets, workers etc. Word On-line means that we are dealing directly with the processes, in the literature this is known the Scheduling activity. Scheduling is the final level where depending on the reaction of the system me must take decision for production process.

Fourth level of the information subsystem, of the flexible assembling system is called DIS (Distributed Systems Interface). This is the final level of information subsystem which has a very important task to transfer the information through devices and sensors. These are components that have direct physical contact with system components, with their feedback links showing whether the goal is achieved or not. In the most cases in the literature this is known as peripheral subsystem, where the operator through various keyboards provides technological instructions.

System Inventory Manager which is shown in Figure 2, is used for registration, maintenance and the classification of stocks, warehouses, inventory, etc. Inventory Manager System is an autonomous fast and efficient system and consumes a limited system and human resources. Its administration is very simple and quick. All what a manager should do is: to assign users and their rights and to make backup of database in regular intervals.

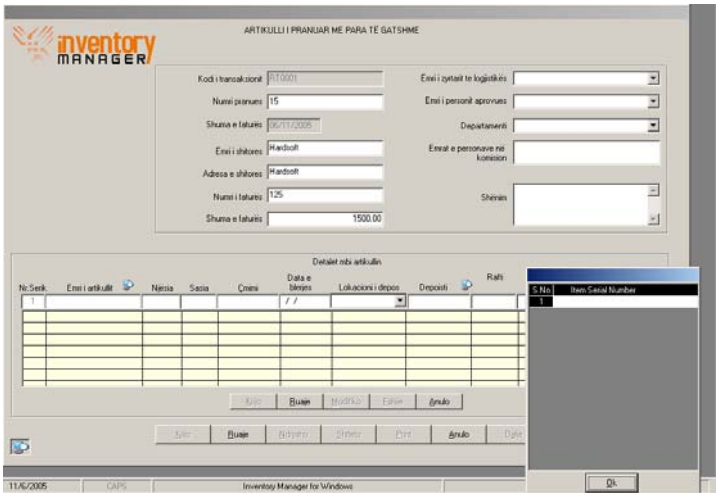

Figure 2. Inventory Manager Interface

3. CONCLUSIONS

The demand for storage systems with high degree of automation have been decreased over the last years, this happened for two reasons: (1) a trend toward the reduction of the amount of stored inventory and (2) trend toward ' Just-in -Time ' systems, which reduce the work in process.

The purpose of the management of purchase and materials units is the existence of two or more suppliers. The idea has been that through the competition to have price reduction and to reduce the risk of supply shortage.

For a given company in order to successfully compete in the global market the supplier of high quality and with acceptable price and delivery time is needed.

Inventory Manager will compile a list of suppliers and then develop a program to improve technical capacity of suppliers, quality, delivery and prices.

Inventory Program Manager, is used for the management of warehouses, starting from the registration and distribution of items throughout the process, then placing the supplier and customer, time, type, quantity of purchase and supplies, reporting about the warehouse state related to each item separately, reports on the status of each supplier and buyer and so on.

4. REFERENCES

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