Regional logistics, supply, and supply systems

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ABSTRACT

The aim of the regional logistic systems is to organize, plan, regulate and control the material and information flow between the company and the procurement and sales markets and the internal material and information flow within the company. Provided that the sales opportunities are limited the actual material flow should be initiated by an information flow starting from the sales. The second information flow connected to the first one is needed to monitor and regulate the material flow from the procurement market through the production to the sales market. The comprehensive approach contributes to a better organization design which provides undisturbed production, reduces turnaround time and stocks and enables to flexibly satisfy the costumer's needs. Transport costs show a growing tendency. Globally this is associated with the energy situation in the world, but these costs are also influenced by regional and local economic factors and regulations. The internationalization of the markets is associated with the increase of transport distances. This increases the specific transportation cost for the product unit. The faster increase of transportation cost cam lead to a reduction of the market area around the production plant.

The design of a logistics and supplier system is especially important if there is a big traffic of goods, many goods have to be supplied, stored and delivered within a given timeframe. An important starting point at the design is the expected vehicle and goods traffic because these determine the basic setup of the system to be introduced (e.g. entry using a doorman, a code, using RFID (Radio Frequency Identification), or entry using license plate recognition, e.t.c), and also the capacities and the of the warehouses (number of loading and unloading points) and the different parameters of the waiting queues of the vehicles like waiting time, processing time, throughput time etc. The identification and analysis of such problems is best done by the means of queuing theory and performance-analysis Simulation is a method accepted nowadays to determine the expected parameters of a system, narrow pass can be estimated and the design of the system can easily be changed. In the case of an existing system the parameters can be compared to those coming from the simulation and differences can be made visible.

The basic research method was to investigate the characteristic parameters of the queuing theory and performance-analysis which are first to be estimated and planned with the design of an appropriate simulation environment (SIMUL8), and then are to be applied after the establishment of the real system and finally to be applied in the real system after a comparison with the real values and an optimization. The main characteristic of the research was that the data had not to be obtained and analyzed from an existing system which then had to be transformed, but we received data covering the important parameters of the system and this way over- or under-planning can be kept on a minimum, which has and advantageous effect on the cost of the investment and operation.

Summary: The new and innovative license plate recognition and access control system developed by the Institute of Machinery and Mechatronics has a considerable effect in increasing the distribution and commissioning performance of the Huncargo Ltd. This modern and innovative system facilitated an improvement of the logistic processes of the Ltd and an improvement in the quality of services connected to these activities. The installation and the set-up of the system is completed and the system has been tested. It can be stated, that the vehicle identification system works properly and can further be developed according to the future needs of the Huncargo Spedition Ltd.