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DEVELOPMENT A DATABASE OF MODULAR FIXTURES

Abstract: Importance of fixtures in the productional systems with automated production and automated product design imposes the need for modern approach to those designs. The aim is to create conditions which could provide the choice and construction of fixtures with the aid of computer hardware and modern applicative software which accelerate and facilitate the resolution of needed fixtures. This paper shows a model of database for designing and archiving of fixtures as well as segment of output data. The Application is developed on PC using Microsoft Access and ProENGINEER applicative software. The paper finally butlines relevant conclusions and expected future trends of the research.

Key words: Fixture, database

1. INTRODUCTION

Computer application has reached an enviable level in the last decades, and hence, began to be used in almost every human working and living segment; in some areas, it has become almost irreplaceable. One of these areas is certainly manufacturing industry. Constant development in computer technology enables continual increase in its application possibilities in the engineering activities. The illustration can be numerous worldwide examples stating about developed CAX systems and software with various purposes for automated task solutions in product design area.

Increasing the automation level with the simultaneous increase in production system flexibility is possible to achieve only by applying CNC – Computer Numerical Controlled, and the increase in flexibility and productivity of the completely manufacturing system by applying CIM – Computer Integrated Manufacturing. Computer application in modern engineering practice is certainly multiple; however, one of applications that are more important is definitely manipulation and control of large sum of information and data of technical or some other nature, realized by new and increasing software class known as databases or DBMS – Database Management System. In every production system there is a need for manipulating a large sum of data, whether it is product design, technology preparation, control, and the like. Efficient database is only the one enabling fast access to the desired data and efficient data manipulation, and today it is impossible without a modern DBMS system.

2. PROBLEM DEFINITION

Modern production systems in manufacturing industry are characterized by product range extension, high frequency in changing the range, demands for constant product quality improvement, shortenings in production time, constant need for increasing technological level of products and decreasing their manufacturing costs. With such market demands, and

intensive development of science, technique and new technologies, the level and the trend of further development of technological processes in manufacturing industry depend on all the composing factors. The factors with the highest influence on the quality of technological solutions are the following: preparation type of blank, machining processes, order of operations, operation structure, machine tools, tools, fixtures, measurements, etc. In order to raise technological solutions to a higher level, it is necessary to solve optimally all these elements.

To set the adequate measures for rational fixture usage, it is necessary to analyze the existing situation. Today, inadequate organizational conception in almost all companies obstructs the optimal usage of the already present fixtures. The unexploited capital is shown after the research of fixture constructions in a company (Fig. 1). The diversity in fixture constructions indicates the presence of a number of same or similar fixture drawings (fixture construction). Very often new constructions are being elaborated although minor change on the existing drawings would do the job. New fixtures are being made although the existing one could be redesigned with a small cost. In addition, there are cases when there is a suitable fixture, but a new one is designed and manufactured.

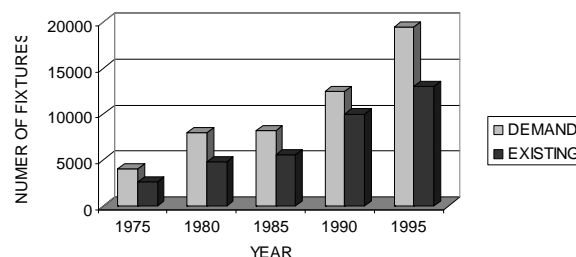


Fig. 1. Proportion between the existing fixtures and a demand for them

Second example, also presenting current situation in the field of fixtures, is given in Fig. 2. According to some researches elaborated in the USA, the average

