CREATION OF CONSTRUCT DOCUMENTATION FOR THE AREA OF JOINTS DISASSEMBLING

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Abstract: *The paper describes ways of creation of the construct and technological documentation for disassembling of joints in CAPP system Sysklass. It underlines the necessity of implementing the disassembling technologies into the modern CAPP systems.*

Key words: *Disassembly, Sysklass, Construct documentation.*

1. INTRODUCTION

Mechanical engineering technologies reach high level in many areas, what is supported also by qualitative science-research activity developed mainly in technologies of changes of dimensions, shape and properties of products, which are then realized in parts manufacture. However, product is only rarely represented by one individual part. Mostly, it is complex of parts mutually connected by assembling technology [2].

At present time, the pressure on manufacturers, that requires to consider also the environmental issues in design of their products, raises. Therefore, the producers have to take into account recycling of these products seriously. Ensuring efficiency of products recycling requires their foregoing disassembling. This is connected to a complex series of problems that are required to be solved.

One of the areas, which require solving this topic, is the area of preproduction phases of parts manufacture. Integration of computer techniques and hereby automation of technological preparation of production is required in this area. Thus, for reaching this goal is advantageous application of modern CAPP systems, which are based on the principle of group technology.

2. ENHANCEMENT OF SYSTEM SYSKLASS ABOUT DISSASEMBLING TECHNOLOGY

It is appropriate to target some group of construct nodes in implementing disassembling technology to Sysklas system, which have highest percentage in total disassembling process. Disassembling of dismountable and undismountable joints is this case.

Enahancement of Sysklass system means filling its valid database by data, which then consequently create basic structure of the system. Whole enhancement of system about joint disassembling technology is possible to simply schedule to the steps shown in Fig. 1.
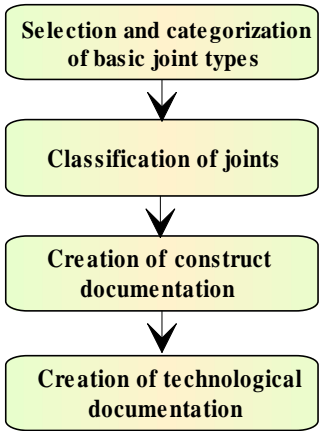

Fig. 1   Procedure of implementation of disassembling technology into the system Sysklass

First step for implementing the disassembling technology into Sysklass system is appropriate selection and categorization of individual part types, in this case of individual joint types.

First and basic division of joint types was performed to two independent groups, to dismountable joints and to undismountable joints. These were then divided to individual groups of known types of joints for each category (Fig. 2).
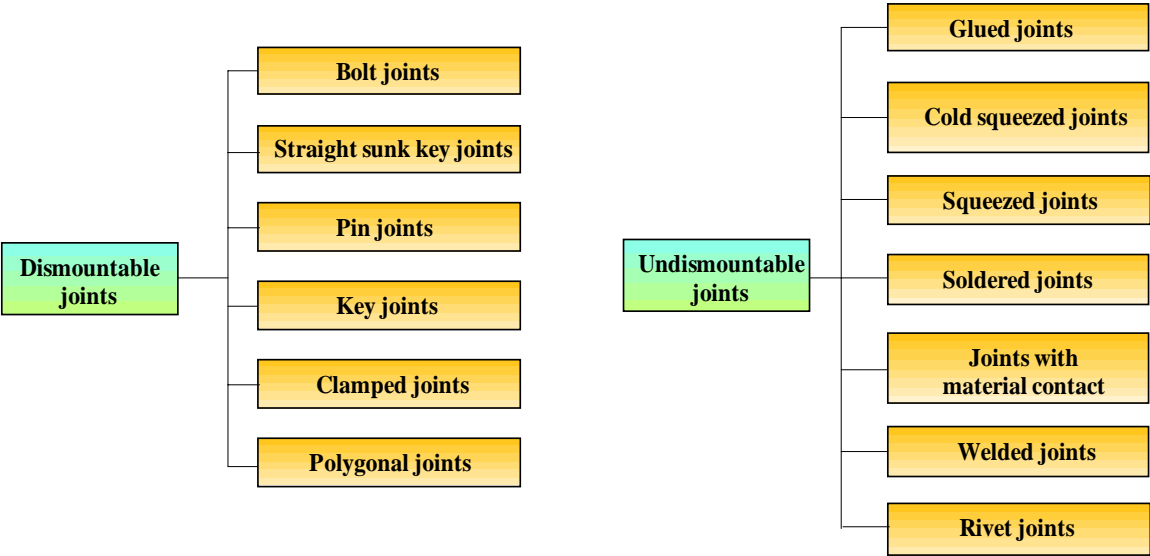

Fig. 2   Basic division of dismountable and undismountalbe joints

Classification of all joints from individual categories is second step. Classification of individual items is determining activity for using the principles of group technologies in the area of construct and technological documentation creation. Classification of mechanical engineering parts implements defined order into the production base of factory.

A purpose of classification is creation of sufficiently precise digital models of parts, which contains properties required for identification of technological conditions necessary for realization of product manufacture.

3. CREATION OF CONSTRUCT AND TECHNOLOGICAL DOCUMENTATION IN SYSKLASS SYSTEM

Creation of construct documentation consists from four parts, from construct head, construct piece-list, inverse piece-list and from construct drawing.

Construct head is basic part of all TPV documentation and contains basic data about produced item. Simply it can be stated that construct head includes almost all data of corner title of construct drawing for given manufactured item. Form is divided to two sections.

Top section contents basic data about item and these data are data for creation of construct head. It is necessary to define which type of item it is. Item can be of following type:

 a) D – detail
 b) Z – assembly
 c) DM – item without drawing
 d) R – representant
 e) F – final product

Z – assembly is always used as item type for creation of construct heads of all items for disassembling. As next basic data are used name and expenditure unit.

Bottom section includes the data of definitions of material conditions, from which the item is produced and data in this section are important for selection of material from storage file during creation of material standard of this item (Fig. 4).

Fig. 4 Form for creation of construct head

Construct piece-list is integral part of construct documentation and describes the composition of manufactured objects. Construct piece-list is created only for item type assembly. Items of type detail are indivisible and therefore they do not have construct piece-list.

Piece-list of item (aggregate unit) is thus a list of other items (lower units), which create compact section of aggregate unit. Individual rows of piece-list are called its positions. Shown form server for viewing, or correction of item construct piece-list (Fig. 5).

Respecting the fact, that node of joint is mostly just a part of higher assembly and in relation to wider options of utilization of construct and technological documentation is

construct piece-list for disassembling area created only from standard parts appearing in individual types.

Fig. 5   Form of construct piece-list

5. CONCLUSION

Studies of successful projects of mechanical engineering production show that present time requires utilizing new approaches in all phases of its preparation and realization. History of development of production processes ensures us about the fact that always more difficult tasks resting on mechanical engineering factories can not be fulfilled by traditional ways of work and its organization. Successful fulfillment of these demanding tasks is possible to reach by gradual implementing of complex automation and integration of production.

By filling system Sysklass by sample construct and technological documentation for the area of disassembling technology of selected types of joints, it is possible to use this documentation in creation of disassembling documentation and creation of disassembling technological procedures of big assemblies, where a numbers of various joints are counted.

6. REFERENCES

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