AUTOMATION DESIGN ASSEMBLY MOULDS BY GROUP TECHNOLOGY

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ABSTRACT

The article deals about design methodology for automation of works to designing mould assemblies using group technology. There inafter characteristic CAx systems for drawing tools using assembly of moulds. The application of group technology and CAx systems for design assembly of moulds is taken into consideration and discussed in order to well determine costs, adequacy and short time-market.
Keywords: mould, Group technology, CAx systems

1. INTRODUCTION

Nowadays moulds are very sophisticated tools what they have high claim for quality, precision, productivity, dependability and automation of production.

The mould is tool whose used at special machine created plastic product. The mould has got two area. The first area is cavity mould whose constructional design is very various and design cavities are determined rules design for manufacturing (DFM) and function, shape, product design for plastic product. The second area is own design architecture of mould which she has a lot of similar elements and therefore is very good used principle group technology.

For automation works with used and modification assembly of mould he was make use of module Pro/ASSEMBLY at the system Pro/ENGINEER. At the environment of system Pro/ENGINEER was created interactive program for modification assembly of moulds composition at the base modular elements of system HASCO.

2. CHARACTERISTIC CAx SYSTEMS

CAx systems are computer systems assigned for support activities in all phases of production it is from design products, planning production by herself production assembly storage and expedition. In the area CAx systems belong to CAD systems concrete system Pro/ENGINEER, which apart from modules he has got module Pro/ASSEMBLY. This module he has got tools for creating simple large and complex of assemblies.

Base tools for creation assemblies are accessible at the base module system Pro/ENGINEER. Different modules of system Pro/ENGINEER us provides functions in the mode Assembly.

Considerable similar design of moulds and cost seriousness for production separate components prevents towards unification and normalisation. These modular systems are records for construction design of moulds.

Variability of system in consist series production, standardized parameters single of boards and components reciprocate what make possible assembling of moulds.

System Pro/ENGINEER has got modular system from firm HASCO what at the present is very applying standard.

3. DESIGN METHODOLOGY FOR AUTOMATION ASSEMBLY OF MOULDS BY GROUP TECHNOLOGY

Design construction of moulds is completion process consist a lot of information and conditions which have to be correct applied so as to get optimal solution.

Input information for automation design assembly moulds creating:
- information about mould (type, normalized units),
- information about product (profile, material, quality, economics),
- information about construction and production moulds (design for manufacturing, systemic calculations, specification of machines.

Additional informations which input to system are definite by database. We were use database assembly of mould following system HASCO.

Database assembly of moulds is modelling at the system Pro/ENGINEER module ASSEMBLY.

The second database is database typing representative single of products. Associative products towards typing representative of product are used variant method with by principle group technology which is making up type similarity products. After associative typing representative of products toward type mould following input information system generated assembly of mould. This is representation on the figure (Fig.1)
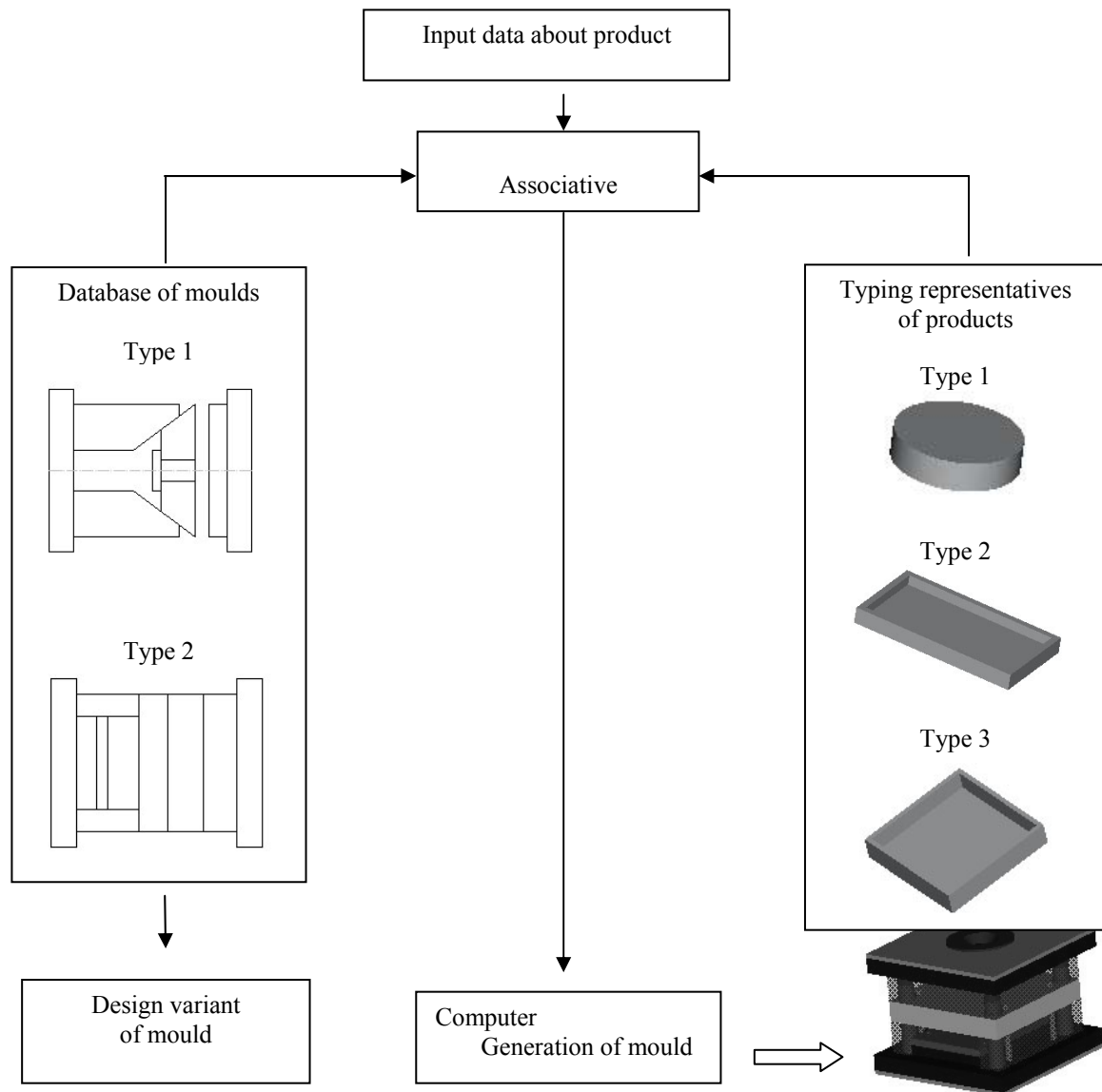

Figure 1. Design methodology for automation assembly of moulds by Group technology

4. AUTOMATION MODIFICATIONS ASSEMBLY OF MOULDS AT THE SYSTEM Pro/ENGINEER

Automation modifications assembly of moulds at the system Pro/ENGINEER we can separate to following points:

1. Modelling single components of mould.
2. Creation dimensional components of mould by similarity tablets.
3. Creation main assembly for single types of mould at the module ASSEMBLY by interchange assemblies.
4. Definition dimensional of mould for single types of moulds by similarity tablets.
5. Definition notes: base parameters of mould, cost normalise of parts.

Output data about mould can by registered in the form of matrix.

$$\begin{bmatrix} \text{Base parameters of mould} & [\ mm\ ] \\ \\ \text{Cost normalise of parts} & [\ EURO\ ] \end{bmatrix}$$

Automation modifications assembly of moulds at the system Pro/ENGINEER module ASSEMBLY is representation on the figure (Fig. 2).
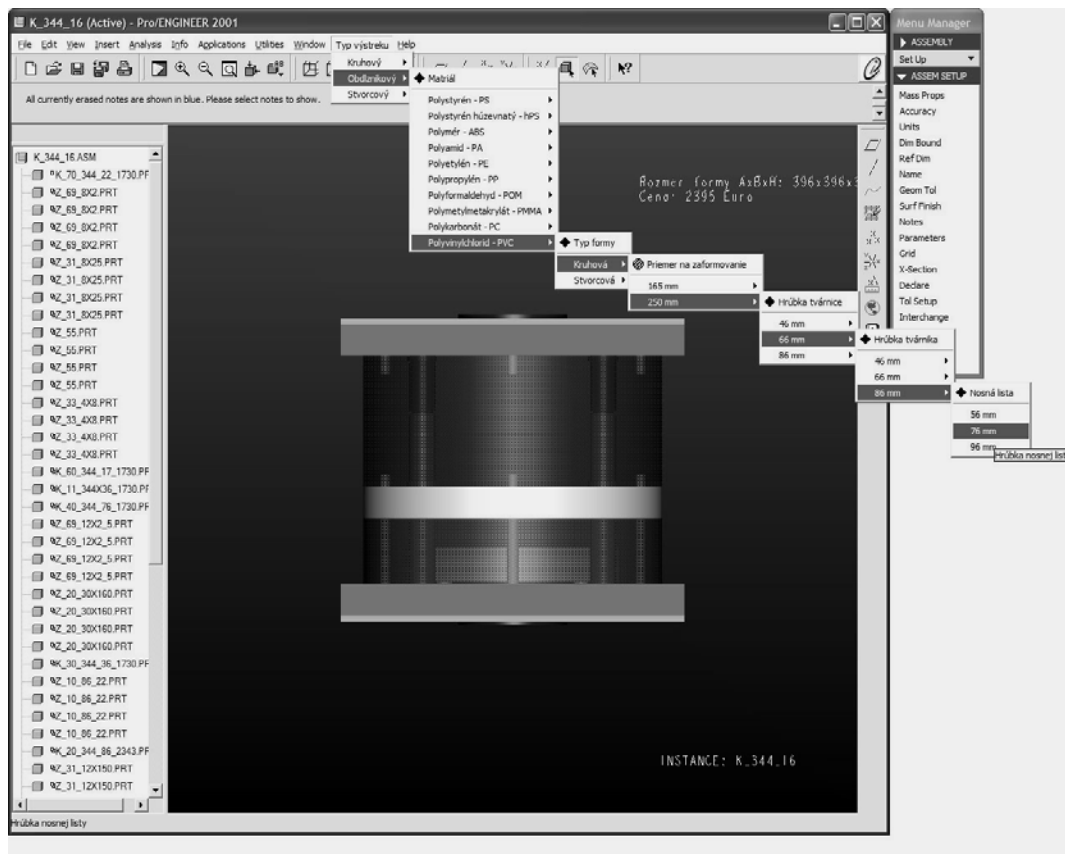

Figure 2. Automation modifications assembly of moulds at the system Pro/ENGINEER

5. CONCLUSION

The automation works for design of assembly is one from base technical means for make use of modules CAx systems which create 3D models of moulds basically individual databases. These databases were design by standard HASCO of parts and are possible their custom single replace in term of types, parameters and cost.

Concerning that nowadays is make use of all tools which are systematic, quicker and economic method of design big signification make possible automation function coupled with design different types of assemblies.

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