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JOB DESCRIPTION DESIGN IN DIE FORGING AREA WITH ASPECT TO DIGITAL MODULES USING

Jozef Kuba, Ing., PhD.
KAVS, SjF, ŽU Žilina
Univerzitná 1, 010 26 Žilina
Skovakia

Ján Moravec, doc. Ing., PhD.
KTI, SjF, ŽU Žilina
Univerzitná 1, 010 26 Žilina
Skovakia

ABSTRACT
The paper presents brief description of the conventional and special information technology tools application. That is aimed at activities in tendering procedure frame, decision-making process and job description design of the hot die forging process by implementation of the digital data sources handling and analyzing.
Keywords: die forging, technological production preparation, group technology, information systems

1. INTRODUCTION
Technological production preparation rationalisation, especially reduction of the new production analyse running time, moves the agency of documentation treatment to marginal position.
It is necessary to apply activities logical relationship of new production start.
In much machine engineering company that are producing components that were realised in former times or are to them alike.

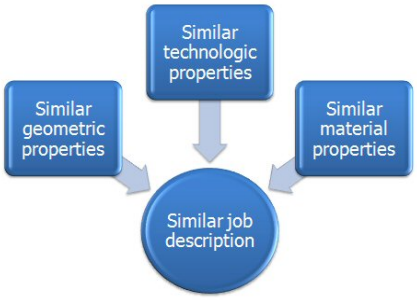

Figure 1. Similarity relations of forging

In tendering procedure the group technology principles are implicit including in a lot of area without special mentioning of that.
In several determination methods of the material consumption, time consumption and operations sequence design based on specific measure of objects properties similarity that is possibly to apply group technology in relation to database approach to information.
On that basis (*properties similarity*) we can predict connectedness according to Fig.1.

2. CHOOSING SIMILARITY CRITARIAS DEFINITION
GT code (*choice criterion*) should involve necessary information to production process design.
It is needed to define basic data about final product that can have general, respectively cleanly company character.

Not ever it is very convenient to prefer forging shape importance. Especially in forging can be shape only additive attribute. More importance can be dimensions relations, transition radiuses, respectively economic batch size. Next it can be apply further criterions:

- Weight category of forging,

- Geometric properties (max. length, max. width/diameter/),
- products count,
- material quality, plasticity /forgeability/
- roughness, ...,

Criterion´s characteristic and their description can have variable form. For forging shape classification the shape sorting /*shape maps*/ is used. According to shape the product is classed to group which representative type is most similar. For close classification should have been available further properties e.g.:

- semiproduct sort, surface quality,
- semiproduct geometric properties and precision...

Key task in tendering procedure frame is finding the similar or equal GT code existence, respectively product with specific similarity degree according to analysed new product. Information database of products can be filtered by means of the selective data (conditions) entry of options for GT code comparison, e.g. SQL commands.

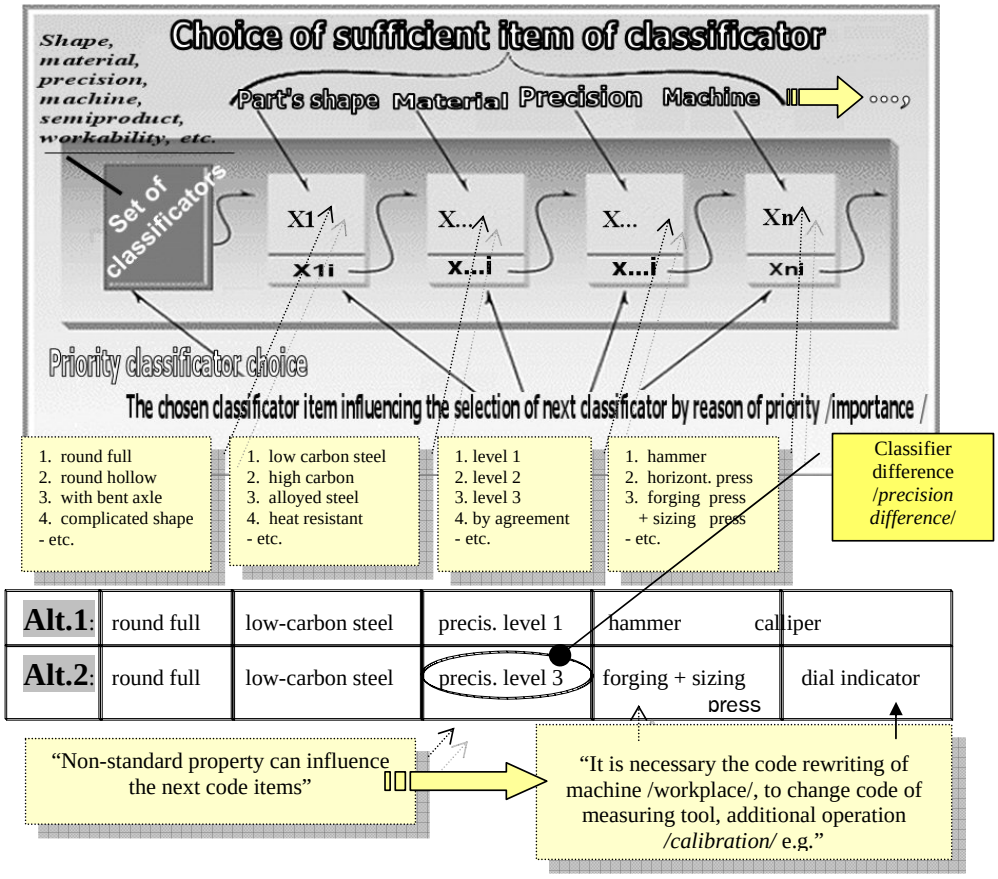

Figure 2. Product classification and definition of similarity measure

The similar or equal code existence is defined by choice conditions determination, which specifies selection accuracy rate. This can be realised through setting of suitable classifiers number (Fig. 2.) and choice application. In specific case those choice items that contain less essential (*rather minor*) sorting information can be omitted.

3. INFORMATION ANALYZING AND TRANSFORMATION TO KNOWLEDGE

The choice can be reduced to criterions that have highest effect to material, time consumption standard, and product feasibility defined by potential customer.
It is necessary to consider, that conditions have important influence to correct product classification according to optimal job description and preliminary cost estimation in the tendering procedure stage.
If the group representative will be founded in the analysed database then technologic documentation acceptance can be applied.
Suitable product existence probability increases naturally with decreasing of selected similarity parameters in GT code frame. It is important to concern lowest accepted product similarity level.
If the GT code similarity is at low level than it is probable that real cost of new product realisation and in former times produced forging should be enough different.
For all that is needs to apply detailed analyse in the tendering procedure frame, of course that is conditional by input information sufficiency.
The exactness improvement of the cost and timing estimate is possible to solve through the frame job description generation. Job description frame creating by means of CAPP systems should be easy modifiable by using of the predefined typical (*standard*) manufacturing operations. In technological documentation editing process then it is sufficiency of the required operation selecting and application.

4. EXAMPLE OF DIGITAL DATA AND INFORMATION ANALYZING IMPLEMENTATION

Key point by reason of sufficient level application of the sophistic technologic documentation creation, preliminary cost estimation and operations sequence for forgings production is needs of optimal input information area analysing.
As an illustration are presented digitized information of company "KLF-ZVL-MTK Martin"., that were handled by means of database tool MS Access and expert system Exsys Corvid.

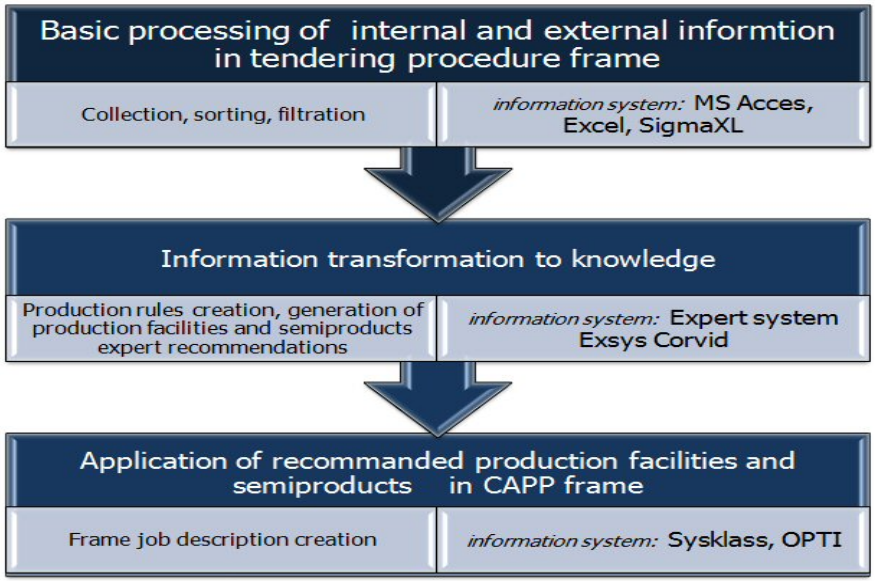

Figure 3. Analyse structure and information processing in new production design process

Exact specification of product realization detail description is practical possible as late as real producing frame when all factors indeed prove. Consequently that is possibly to apply optimizing methods according to process.

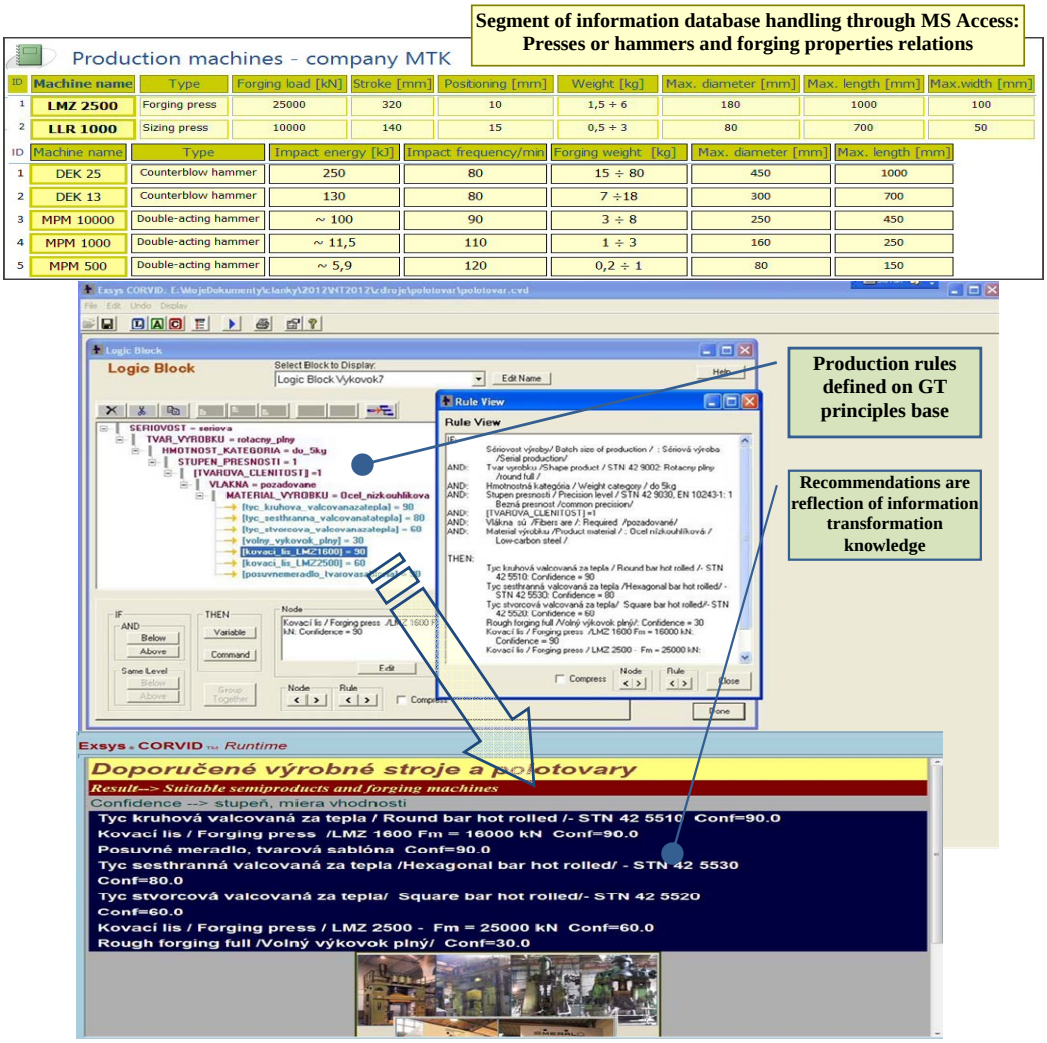

Figure 4. Transformation of information to knowledge example

5. CONCLUSION

The optimal using of presented knowledge in respect of advanced topics of flexibility, routine activities reducing etc. is conditional by software applying that would convenient solve preliminary design of manufacturing process. In addition to applying larger presented group technology it can be instrument for database management, respectively cognitive systems (e.g. expert systems) that in convenient conjunction with GT principles should be share to achieved resultsimprovement.

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