BOUNDARY CONDITIONS ANALYSE FOR SEMI-PRODUCT DESIGN IN FORGING PROCESS AND THEIR DIGITALISATION AND USING IN CAPP SYSTEMS FRAME.

Ing. Jozef Kuba, PhD.
University of Žilina, Faculty of Mechanical Engineering
Department of Measurement and Automation, 01026, Slovak Republic
e-mail: jozef_kuba@kma.utc.sk

Abstract: The lecture analyses problem of semiproduct design in forging process in comparison to chip technologies. It refers to determination of boundary conditions and rules digitalisation from aspect of computer technique putting. The part of article undertakes boundary conditions implementation to CAPP systems bases on expert system principles.
Key words: forging, semiproduct design, database, boundary conditions

1. INTRODUCTION

The main objective of this paper is to describe connection between complete input date of forging process and semiproduct design. In this design for forging manufacturing is needed complex appreciation of the problem. The determination of needful conditions has to reflect on used cutting and forging equipment and about forging operations character, which are conditional by part shape, used material and production precision requirements.

2. DATA PROCESSING

There are certain differences in semiproduct design, which are sequent on forging machine, which can be forging press or hammer. Important question is whether certain semiproduct to cut by cold or hot process for relation to section and cutting material strength. This problem is a matter of course dependent on machine equipment and economic aspect. Semiproduct weight and dimensions optimalization is conditional maximum shape approximation of semiforging to final forging. At shape complex forging is this approximation very ambitious task.

These questions can solve in interaction technologist and computer, where volume attendance of technologist is conditional of software quality, technologist experience and analysed problem complexity. Dates gathering and sorting has become a priority for the area technical product preparation of each company (Fig. 1.). This task can be ensured by

expedient with tools and components that are especially useful to programming, database application and database managing e.g. Borland Delphi, SQL and so on.[1,2]

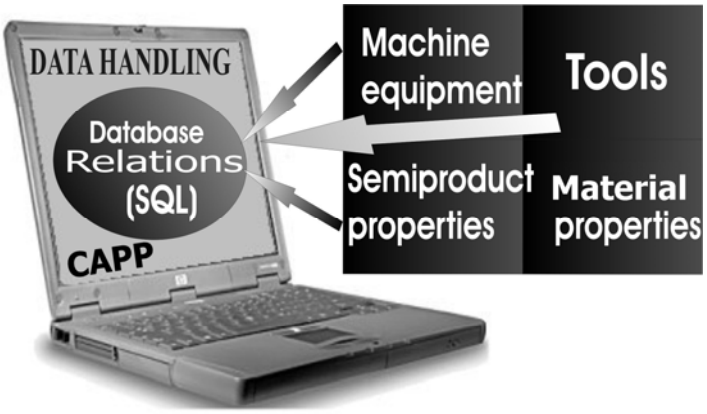

Fig. 1. Date areas

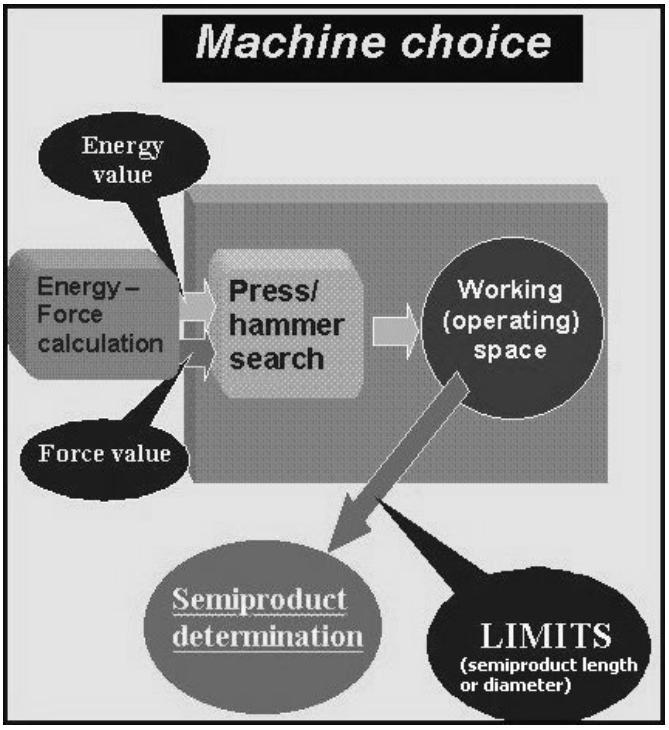

Fig.2. Choice of forging machine

3. FORGING PROCESS ANALYSE AND BOUNDARY CONDITIONS

Machine design from view point of the kind - press or hammer (Fig. 2.), so as operations determination (Fig. 3.) is affected shape part, precision, wall thickness and produced parts amount and accessible machine park evidently.

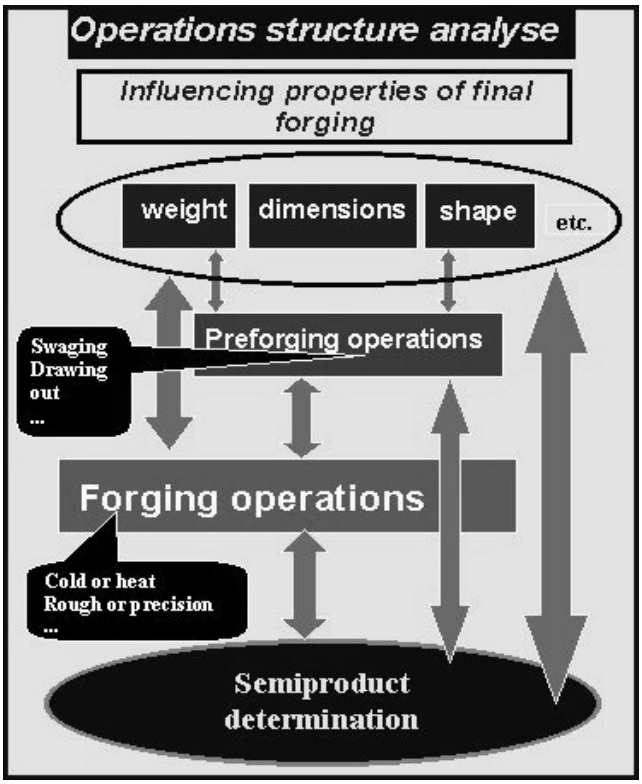

Fig. 3. Operations character

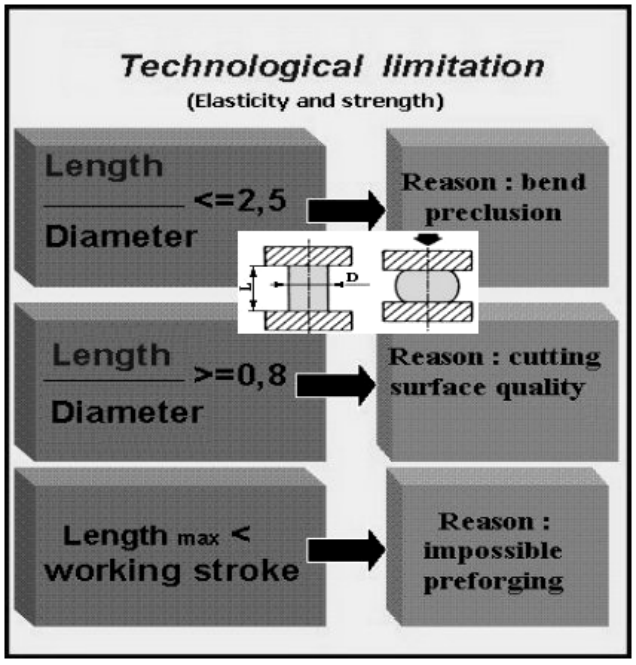

Fig. 4. Boundary conditions

The character of used operation may affect the choice of semiproduct from possibility to set up, e.g. pre-rolling operations. This fact is contingent on machine accessibility in concrete factory. Specific technological limitations result from the theory of elasticity and strength [3, 4] and so on (Fig. 4.).

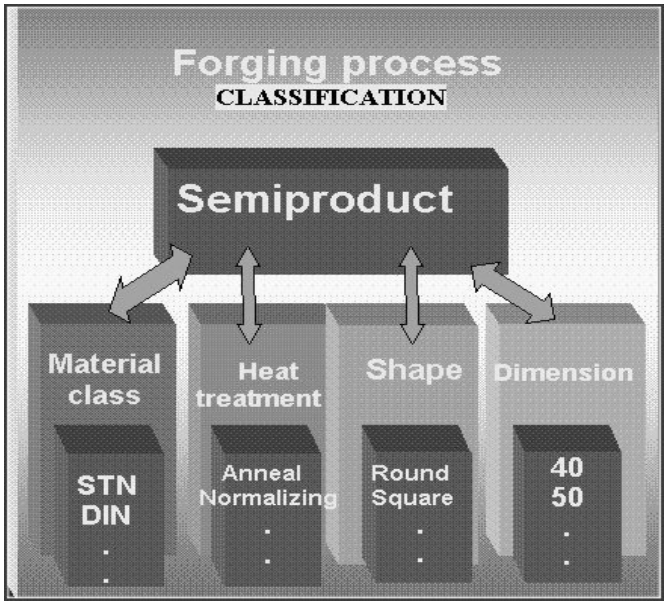

Fig. 5. Semiproduct classification

The classification of semiproduct has effect in frame of Group Technology application from the reason of new part design acceleration by force of the using of database already manufactured parts[5].

The complex realisation of computer assistance at boundary conditions analyse for semiproduct design at forging process is conditional by creating of complex applicable database, which influences not only semiproduct properties. Database has to suitable structure of dates stocking, could be supported suitable methods for working with SQL and applied solvable algorithms with aim for obtained geometric and non-geometric semiproduct parameters.

4. CONCLUSION

It is possible to state, that automatic semiproduct design is complicated problem, which requires detail analyse. There are partial differences between chipless technologies and machining which have to be thinking. In forging process, the same part can be produced from many different sizes of starting billets, allowing for a wider variety of inventoried grades[6]. It means that analyse of starting material dimensions and weight is needful.

5. REFERENCES

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