AUTOMATION TgPP IN AREA OF CHIPLESS TECHNOLOGIES (FORGING AND CASTING)

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Abstract: *The brief analysis of TgPP in forging(casting) and its traits is presented in this paper. The factors, which are influenced the component production method, are also described.*

Global trend in cause of technological documentation creating wends in the direction of max. effectivity and limitation of routine work of interested creators of product dates. The reserve isn't and nor can be section of metallurgical detail product - forging and casting. The important point is the economic effectiveness of automated manufacturing systems – the possibilities of its improvement and evaluation
Engineering solution automation and technological documentation creating is in this cause equally determining factor of process realisation success so as in chipless technologies.

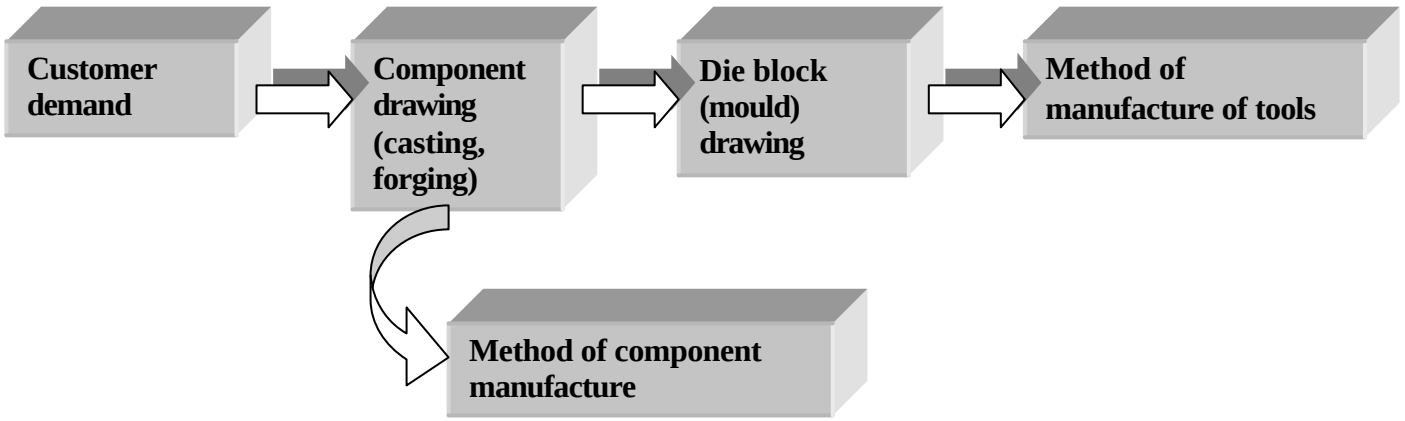

Fig. 1 Basic kinds of documentation

It is needs to admit of fact, that casting and forging area is in this course backward field behind machining.
It is causing by a lot of factors, which are influencing on technological documentation creating of casting and forming process. For solution these problems it is necessary to apply specific access in comparison to resolution problems in machining process. On this fact has influence:

- a lot of widespectral indicators, which are influence on casting and forging process
- problem of definite adjudicating of affect measure of given indicators
- variability of eventual technologies

- lower exactness of apply indicator

Despite of previous facts the automation form of creating technological documentation is key possibility to improve product process. It means area of activity from preliminary order acceptance to product realisation

Brief view of engineering calculation in forging.

It is necessary to analyse general problem and judge in which ambit is possible to eliminate working of technologist in order to not abate final result quality.
Too large negation of interaction technologist – computer would lead to adverse stage, considering that not all parameters it is possible to determinate without certain proportion of technologist intuition, which quality is naturally affected his experiences.
Job priority is determination of optimal total, net, gross weight of forging and subsequently determination of advisable machine for component producing. This alternative is affected beginning with kind of material and ending with kind of production (part, batch.).
The material is characterised by strength and plasticity in existing reach of forging temperatures. The breach of this reach of temperatures is connected with risk of deficient part quality (burnt structure, unfilled shape etc.). On following figure (Fig.2.) is the example of gross weight determining gained from special software, which supports automation creating of technological documentation.

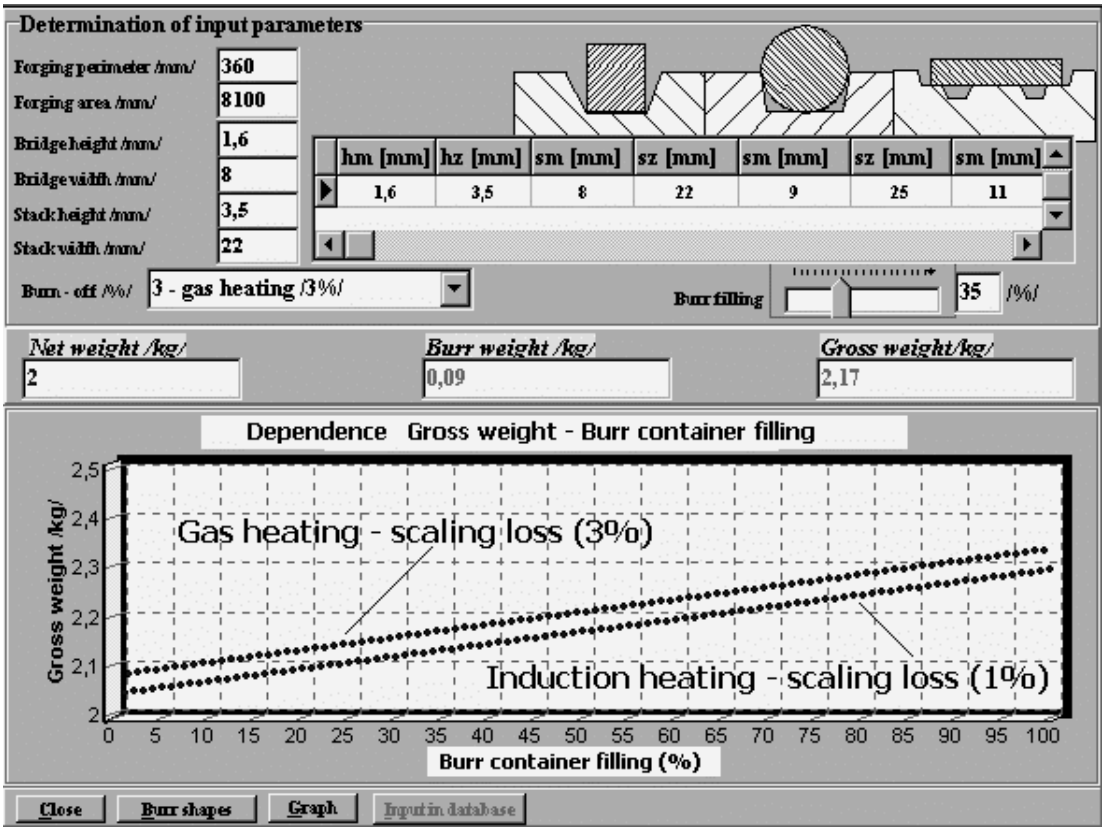

Fig.2. Automation determining of weight parameters (Dependence gross weight – filling of die container)

Problems are relative large for high-alloy steel, when is the range of forging temperature is very close. In this cause is absolutely according to set automation of cut sorting (burnt structure is not possibly to correct)
The parameters, which are normalised we would respect and to pay attention to what is possible to optimalised.
In choice of work unit is necessary to take in account a lot of facts influencing in optimal determination of machine (number of production parts, material properties etc.).

Brief view of engineering calculation in casting.

The same as in previous section concerning forging it is question priority elimination of unnecessary material consumption, optimalisation of casting production method from standpoint of casting subtechnology and adequate production equipment.
Material is characterised by running property, shrink and contraction in considered temperature reach and amount of others properties. Underrating mentioned facts is connected with major or less risk of breach of component quality (unfilled shape, shrink holes etc.). Complication of task resolution in casting area is also affected variety several casting methods, where it is necessary in a lot of cases to evaluate varied process parameters (hydrostatic high, centrifugal force, pressure force…) and subsequently to choose the optimal production method.

Though at present the efficiency and output quality of casting and forging process simulation systems is advancing, the demand on input information is still very greatly. It means, that intelligence level of technologist and computer assistance for determining already mentioned technological parameters has to have adequate quality.

We can cumulatively state the fact that it is not in computer simulation possibilities absolutely to substitute experiment or practical proving test of technological process (alternatively its particular sections) in concrete production conditions.
Full accordance of simulation and test in real conditions would was possibly if source algorithms and data base of simulation application would comprehended all variations mutually connected relations and rulers, which can occur in real process.
But despite of it the importance of simulation technique for this complexity area of engineering technologies is undeniable. The mainly for reason of cost reduction and potential defects detection of technological process.
In major measure likewise is not needy to analyse separate sections of process in detail, but it is sufficient the location of extreme (maximum, minimum) searched relations or the determination of their middle (average) values.

Conclusion

The knowledge experience gained during the implementation of computer support are proof of advantage this process. The purpose of automation of psychic work which is oriented on of comprehensive automation tools as well as the provision for planning, designing and implementing capacities create prerequisites for the further acceleration in TgPP with the aim to give the individual conditions improving work productivity of creating of technological documentation and reducing production cost.

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