

Developing a GUI based software in VB environment to integrate with Creo for optimize forging tolerance utilizing case study of coupling

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ABSTRACT

Recent scenario forging processes induce more complex shape and size component. As the size and shape gives the component more complexity therefore we face the complexity in the calculation of the forging tolerance. So that for getting easily output of tolerance value according to the forging dimensions this CAD approach is apply here. The core of this approaches to decompose a CAD model of a complex forging die in geometrical feature. Technological tolerance data such as height, depth and diameter of forging component can easily carried out with this approach. Purpose of this CAD approach to create a bridge between modeller and manufacturer so that the error of minimizing in information sharing. For the tolerance calculation visual basic & modelling Creo is used. Topological relation according to the tolerance dimensions are being updated in the model topology. The proposed approach is illustrated by a tailor made application on a study case which was accomplished as part of collaboration.

Keyword: - Flange coupling, forging tolerance, visual basic (VB), Creo parametric etc...

1 Introduction

In a late situation of research work wing of any industry are to deal with an atomization of outline and drafting effortlessly. Since we realize that when we expanding the efficiency of outline and demonstrating stage in the item plan advancement, we spare much time and it will be further use for a next periods of item plan and improvement. There are number of programming are accessible for drafting and displaying and in addition investigation like Auto-cad, pro-engineering, solid-works, Ansys and etc. Be that as it may, not particular programming accessible for outline an item. So By this exposition approach we will made a one tailor made programming which is valuable for upgrade resistance for outline section a particular segment. Furthermore, yield of the product is effectively being incorporating with other programming of displaying and analysis.

While to Prepared GUI based software offer user client to more thought for giving the product since it will permit user to interface with electronic gadget through graphical symbols, icons, texes, pictures etc. Which give user genuine perspective around a product. A GUI might be intended for the prerequisites of the vertical business sector in the late situation. So that the accompanying entire report is focus on the readied outline programming on the stage GUI base language.

For the develop a tailor made software we required a programming language which are to be helpful in making of a computation of planning said information parameter. In the software engineering there are number of programming language accessible like C, C++, Java, Visual basic etc. So I door a much practice on a choice of coding languages. In first stage I had been selecting a programming language is C++ for outlining reason, however there are issue in regards to the interfacing with other database with the utilization of above said dialect in this way, I will be switch over to another programming dialect VB (visual basic). It will give us better casing work for a planning information based and also effortlessly interface with software link excel, access, not-pad which are to give a contribution to an another displaying programming as said above.

After selecting language which are to be useful for developing design software, the next stage to selection a mechanical component for case study for run the software and get output. For this first I had been selecting component coupling which are has to update tolerance to automatically base on standard. As we know that coupling is used for transmitting a power and as well as joining and support the shaft structure.. So this software can easily utilize by an industries.

1.1 Existing Work:

This framework is completed working on this issue investigation of flange coupling and standard outline condition being done together with the utilization of programming and utilize CREO as displaying programming.[1] The authors Kwamivi Bernardin Mawussi, Laurent Tapie [2] The focus of this philosophy is to separate a CAD model of complex assembling fail miserably in geometrical components. The authors Xianhong Zhang, YinghongPeng, Xueyu Ruan [3] this paper displays the model of such a framework and examines the key advances that can be used.

2. Methodology:

Design and modelling of protected type flange coupling using power to be transmitted and RPM for engineering application. Use Visual basic software integrates with CREO software. While the designing the component use IS standard. Also including in work various standard material available.

The following steps are required to design GUI based software.

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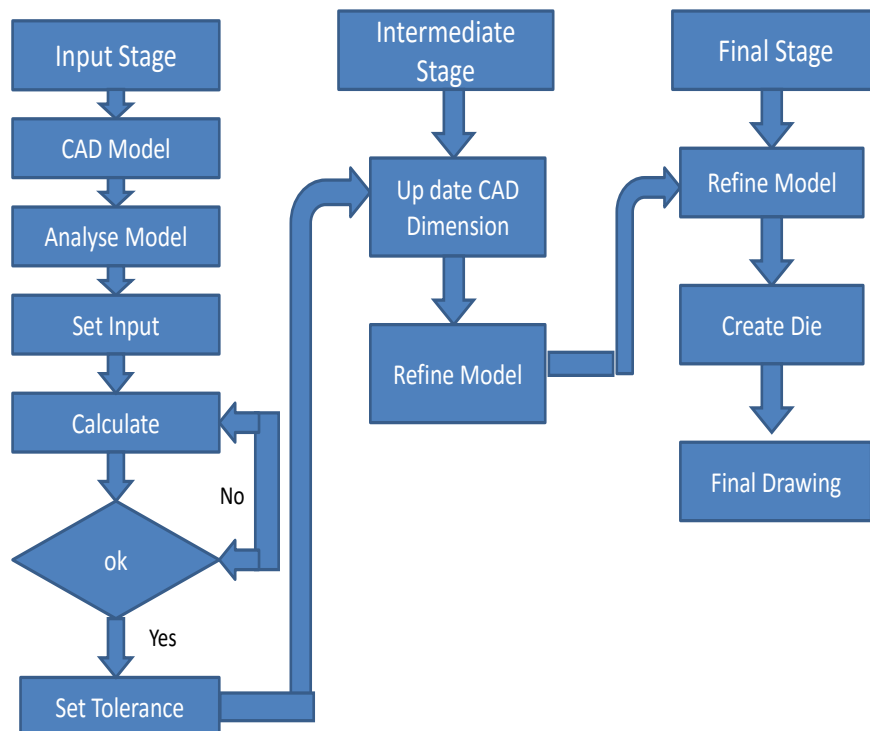


Figure 1: flow chart for proposed method

2.1 Input stage:

- Calculating dimensions value.
- Cad model: According to dimension value prepare a CAD model.
- Analyses model: list the data or dimension or nominal values which require tolerance.
- Set input: Apply above data as an input in VB software.
- Calculation: tolerance
- Set tolerance: Apply tolerance on basic size.

2.2 Intermediate stage (Creo and Excel):

- Tolerance value imported in Excel based on 3469 (Part II) - 1974IS
- VB is used to create bridge between Excel and Creo.
- According to dimension CAD model updated.

2.3 Final stage (Creo):

- Create die and final drawing updated.

For a developing a GUI based software which are to be integrated with the other modelling software we required to select one component and one programming language. So far a case study I had been selecting a component as a flange coupling and GUI base language as visual basic 6.0. For integrating of data with modelling software CREO. I used a intermediate software is Microsoft excel and for modelling. Detailed study and the methodology are showing in the current chapter.

For the tolerance updated design of coupling we required to set a parameter which is to be selected as input and as output. I had been preparing software on the basis of application so that set an input parameter is Weight (W), Thickness, diameter and mechanical properties. On the basis of that software frame work is to be prepared and get final updated tolerance design of coupling model.

3. Case Study:

The following test model has been prepared to verify the accuracy of software. Description of part is given in this figure.

d = Inner diameter of hub

D = Outer diameter of hub

D₁ = Pitch diameter of the flange

t = Thickness of flange

Table 1: Coupling dimensions

dimension		Nominal values (mm)
Diameters	d	80
	D	160
	D ₁	320
Thickness of flange	t	40

The model has been prepared in Creo parametric 3.0 software.

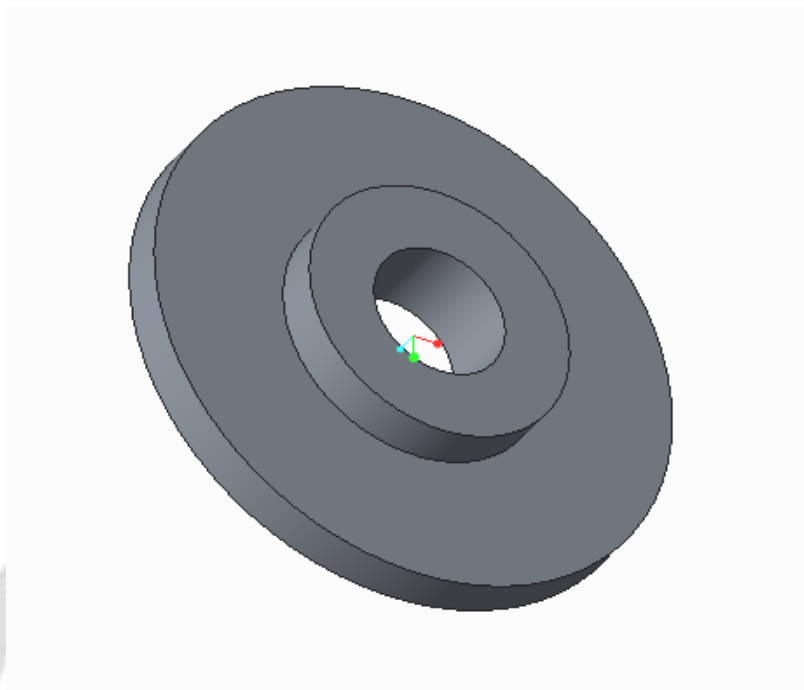


Figure 2: Coupling model in Creo

A screenshot of a software calculation module window titled "Form1". The window contains several input fields and a "Calculation" button. The inputs are: Weight (16), d (90), D (180), D1 (300), and t (30). There are two sections of radio buttons: "Difficulty of Material" with options M1 and M2, and "Complexity of Material" with options S1, S2, S3, and S4. Below the "Calculation" button, the calculated values are displayed: d 91.6, D 182, D1 302.2, and t 31.4.

Parameter	Input Value	Calculated Value
Weight	16	-
d	90	91.6
D	180	182
D1	300	302.2
t	30	31.4

Figure 3: software module

	A	B	C	D	E	F	G	H	I	J	K
1	d	D	D1	t							
2	91.6	182	302.2	31.4							
3											
4											
5											
6											
7											

Figure 4: Excel generated database

The following figure shows the basic structure of software, where values have been imported and tolerance has been calculated. Tolerances are calculated and generated using Excel software. After calculating the tolerances, dimensions will be updated in creo software with tolerances. Creo file of updated dimensions will be generated.

4. CONCLUSIONS

A prototype system for calculating tolerances has been developed based on data based techniques, and successfully verified by performing case study. The proposed system is very much helpful to the Job Work Industry which has been in the developing stages lately. The workers in such industries quote the prices to the customers based on the time required to calculate tolerances. Therefore such industries can use such tolerance Estimator to estimate tolerances. This will also ensure customer satisfaction. The result shows that the proposed method is also feasible and applicable in industry.

5. REFERENCES

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