

Autor práce: Shkurte Kastrati

Název práce: Heat transfer in technological processes

Typ práce: Diplomová

Vedoucí: Assoc. Prof. Tomáš Vít, Ph.D.

Pracoviště vedoucího: TUL, Department of power engineering equipment

A. Formální náležitosti práce:

Velmi dobře

(Vyjádřete se k jazykové a typografické úrovni práce, struktuře textu, řazení kapitol, přehlednosti ilustrací a ke skladbě, správnosti a úplnosti citací literárních zdrojů)

Formal belongings of the thesis: Very good

The diploma thesis has adequate structure and sufficient language level. There is a minimum of typos in the work only. More attention should be given to the presentation of some of the figures and graphs. Some images have wrong dimensions (Fig. 2), a number of other (most of them reproduced) has lack of explanation labels (Fig. 6, 7, etc.). The axis on graphs (Figs. 48-50) are not correctly identified. The number of articles and books is cited in the thesis.

B. Řešení práce po teoretické stránce:

Velmi dobře

(Vyjádřete se k rozsahu a způsobu zpracování rešerše, způsobu popsání řešeného problému, případně k vhodnosti a náročnosti použité teoretické metody)

Thesis theoretical part: Very good

The literature overview is presented in the second and the third chapter. The literature overview relates in particular to the description of the manufacturing process of precision optics and to the description of the material properties and material models of substances used in the production of optics. The literature overview deals with the issues that are not the objective of the thesis in some paragraphs. Described theoretical relations are used to build a model of visco-elastic behavior of the wax. It would be appropriate to present some analytical model of studied phenomena.

C. Praktická část práce:

Velmi dobře

(Vyjádřete se k přiměřenosti a náročnosti použitých metod, k úrovni a množství získaných dat.)

Thesis practical part: Very good

The author's own work is presented in chapters four and five. It is related to the preparation of FEM model of the material models and to the determination of the boundary conditions. It also compares the results of numerical simulations of two configurations of brackets (aluminum and brass with Zerodur disk). An important part of this work is related to the development of visco-elastic model of the used wax. It is necessary to mention that it is not possible to find any characteristics of the wax in the available literature. Used model parameters are therefore only the best estimations based on the results of a few experiments. The author should mention in details the procedure, how the properties of the wax were derived.

D. Rozbor získaných výsledků:

(Vyjádřete se k úrovni zpracování získaných dat, včetně určení nejistot měření, k diskusi výsledků a formulování závěrů.)

Dobře

Results analysis: Good

The results of numerical simulations are presented in the form colourmaps and graphs. Results which are presented as colourmap are on different pages and have different scales, the comparison of such results is therefore very difficult. Also, the presentation of the graphs is confusing. The only direct comparison is presented on the graph at Fig. 46. Unfortunately, it shows only the total displacements which are influenced principally by different CLTE of the aluminum and brass. The experimental results are presented without further details and without any link to the numerical simulations.

E. Celková úroveň a náročnost práce:

(Vyjádřete se k celkové náročnosti a rozsahu práce a k původní práci studenta.)

Velmi dobře

Level and quality of the thesis: Very good

The objective of the thesis is the influence of temperature on technological processes in the production of precise optics. Due to the topical issues the task dealing with the influence of the structure of the holder on the manufacturing precision was selected. The main part of the problem seems to be the visco-elastic behavior of the used wax. The main problem is unique. Solution of corresponding problem can not be found in the available literature. Contribution of the thesis is mainly the preparation of FEM model and definition of the material model of the wax.

If work is to be practically useful, it will be necessary to perform high-quality validation of the results.

Celkové zhodnocení:

Overall evaluation:

The extensive overview of the literature dealing with the production of precision optics is presented. The work also provides an overview of materials used in the manufacturing of optics. T

The author set numerical models for simulation of the manufacturing process (cementing, grinding and polishing) of precision optics with respect to the structure of the holder and the parameters of used adhesives. The evaluation of the results of numerical simulation is superficial. The procedure of the validation of the results is not presented in the thesis.

Otázky k obhajobě:

Questions for the defense:

Define the test procedure which should be appropriate for the validation of the material properties of the used wax.

Celková kvalifikace: Práce splňuje požadavky na udělení akademického titulu, a proto ji doporučuji k obhajobě

Navrhuji tuto práci klasifikovat stupněm **Velmi dobře** 2

V Liberci

dne 11.6.2016

Podpisem současně potvrzuji, že nejsem v žádném osobním vztahu k autorovi práce



Podpis vedoucího práce