

Höganäs, Sweden on February 22, 2023

**Review of the PhD thesis "New possibilities for gearwheels of automotive gearboxes" by Ondrej Milacek**

To whom it may concern,

I have read and reviewed the above mentioned thesis, and here are my conclusions.

***Achievements of the aims of the thesis***

The goals were only partially met, which is also clearly stated in the thesis.

***Level of the analysis of the state of art***

The analysis of the state of art is very basic and does not demonstrate any deeper knowledge. It does not really go into depth in any area, and also contains some fact errors about for instance powder metal (one example being the sintering atmosphere). I also see a misunderstanding when it comes to standard roll forming vs. the surface densification that was the objective here.

***Contribution to the theory of the subject***

The thesis builds on work by others, and I don't see any new development of the theory to the subjects investigated. However, the experimental contributions to the field are very relevant.

***Contribution to engineering practice***

I think the student has done impressive engineering work, both in terms of developing and improving a test rig, but not least in developing software for asymmetric gear design that at that point was not available in commercial software.

***Relevance of the applied methods and method application***

The methodology with experimental investigation is good and relevant.

***Adequacy of the student's knowledge***

The student demonstrates good skills in areas of practical engineering, both in the upgrades to the test rig, but also the asymmetric gear design and software. However, the thesis does not demonstrate any deeper understanding of the phenomena investigated or the scientific method, and I'm really missing an in depth analysis and discussion of the results.

***Formal issues***

There are some fact errors in for instance the presentation of the state of art (as exemplified above). I also think that the research material for the thesis is thin, the actual scientific investigations only constitutes of a handful of measurements of fatigue life. My main objection is that I don't see the in depth analysis or discussion of the results that I expect of a PhD thesis.





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With all this in mind, I'm sad to say that **I can not recommend the thesis for the final defense presentation.** My main objections are that I think a PhD thesis should contain more actual research work and not just practical engineering, and also that there is a severe lack of in depth analysis and discussion of the results.

Best Regards,

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