



REVIEWER'S REPORT ON THE BACHELOR'S THESIS

Bachelor's thesis title **Design Proposal for 4-Cylinder Compression-Ignition Engine**

Author **Daniel Stastny**

Reviewer..... **Ing. Ivaylo Brankov**

Evaluation criteria and their classification

Fulfilment of the thesis requirements and goals B (very good)

Methodology and its application C (good)

Application of knowledge gained
by self-study and from professional literature C (good)

Usage of groundwork and data from practice B (very good)

Professional level and contribution of the thesis C (good)

Formal aspects of the thesis C (good)

Further comments to the thesis:

The bachelor thesis complies the assignment, all items are worked out. A concept design of a CI engine with the required properties is done, incl. parametric 3D CAD models of the components. In the work a parametric simulation analysis of the components is mentioned, but it is not presented - not described in details and not demonstrated on a chosen component. The work contains a short description of the main components as well their basic calculation. The thesis also contains a basic description of kinematic properties of the engine (e.g. speed, velocity and acceleration of the piston, including the progress graphs), but does not contain progress charts of loading forces (gas force, inertia force, resultant force etc.) during the crank shaft rotation (720 deg.) in the place of piston and crank pins. Also dividing of the masses of the cranktrain and concentrating them into two points should be illustrated. What does the author mean with "mass of piston rod" and "mass of piston rod ring" in equation for reciprocating mass? Do passenger diesel engines contain such components? Where and why are these components used?

The design proposal of the CI Engine should also outline the engine cooling system (water galleries), lubricating of the components (oil galleries), position of the fuel injectors, position of the glow plugs, etc. Also the counterweight with the calculated mass should be

outlined. For a modern diesel engine it would be better to use a separate chain wheels (belt pulleys) for both cam shafts (instead of one, e.g. for using a variable valve timing). Weak moments of the design for contemplation – bore spacing (thickness of the wall between cylinders), wall thickness of the hollow camshaft.

There are some lacks in the bachelor's thesis. The sources of the figures used in it (incl. Attachments) are not presented. The recommended items from “Specialized (recommended) literature” from the assignment are not used. Links to references are also not presented.

The language level and style are not enough sufficient. There are many basic spelling and grammar mistakes, which decrease the quality of the work. There are also some incorrect terms and inaccuracy.

However, the lacks the bachelor's thesis is enough quality for defence.

I recommend the bachelor's thesis for the defence.

Summary classification of the bachelor's thesis..... C (good)

Ing. Ivaylo Brankov

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reviewer's name

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reviewer's signature

In Prague, August 5, 2015