

## Posudek vedoucího bakalářské práce

### (EXPERIMENTÁLNÍ PRÁCE)

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**Studijní program:** B3909 / Procesní inženýrství  
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**Zaměření**  
(pokud se obor dále dělí):  
**Ústav:** Ústav výrobního inženýrství  
**Vedoucí bakalářské práce:** Dr.-Ing. Radek Stoček  
**Akademický rok:** 2018/2019

**Název bakalářské práce:**

Influence of loading conditions on the dynamic wear of rubber

**Hodnocení bakalářské práce s využitím klasifikační stupnice ECTS:**

Kritérium hodnocení	Hodnocení dle ECTS
1. Aktuálnost použité literatury	<b>A - výborně</b>
2. Využití poznatků z literatury	<b>B - velmi dobře</b>
3. Zpracování teoretické části	<b>A - výborně</b>
4. Popis experimentů a metod řešení	<b>A - výborně</b>
5. Kvalita zpracování výsledků	<b>B - velmi dobře</b>
6. Interpretace získaných výsledků a jejich diskuze	<b>B - velmi dobře</b>
7. Formulace závěrů práce	<b>B - velmi dobře</b>
8. Přístup studenta k bakalářské práci	<b>B - velmi dobře</b>

Předloženou práci **doporučuji** k obhajobě a navrhuji hodnocení

**B - velmi dobře**

**Komentáře k bakalářské práci:**

The bachelor thesis has been aimed to the description of the complex dynamic wear process occurring on tire during service in hard terrain, whereas the main focus of the work was to describe the history and current state of the art in the characterisation of dynamic wear under simulation of the real loading conditions used in the field. The theoretical part deals with the description of the tire tread, which mainly is affected with the dynamic wear process from the complex tire point of view, whereas the generally used rubber types for application into tire tread are introduced. As next the friction process during sliding as well as rolling is described. Furthermore, the historical overview over the testing methods for determination of dynamic wear process have broadly been listed. From this overview it was concluded that the previous methods and equipments have not been sufficiently describing the dynamic wear process in relation to real tire wear and has pointed out the qualitative value. The theoretical part is highly contributing to the understanding of the weak points of the previous methods and future necessity to clear description of the dynamic wear process.

Finally, the experimental part of the work is focussed on the introduction of the novel method and testing facility to determine the dynamic wear under simulation of real tire loading conditions, which is working fully automatically and quantitatively. The rubber compounds based on fundamental rubber types, typical for tire tread application, have been produced and investigated. Additionally rubber compounds modified with different quantity of aramid fibres have been analysed as well. The dynamic wear analyses has been performed in dependence on varied loading conditions to investigate the phenomenon over broad range of applicability of the material in real service.

The student worked fully individually and was highly motivated, whereas his inventions were contributing to experimental investigation. Although, the student previously never has been in contact with the rubber production as well as investigation, he learnt the all processes leading to rubber compound mixing as well as rubber curing easily and adopted these processes to be able to perform all the rubber compound manufacturing as well as rubber curing by himself. He learnt the new testing experimental methods, whereas he periodically discussed the achieved results as well as relationship of the lab testing to real tire loading in the field. The work has the highest contribution in the achieved results describing the dynamic wear phenomenon, whereas the results clearly correspond with the dynamic fracture theory in dependence on the type of analysed rubbers as well as fillers. This phenomenon has not been experimentally determined previously.

The student has shown his ability to individual scientific work and I fully recommend the bachelor thesis to defend.

**Otázky vedoucího bakalářské práce:**

Ve Zlíně dne **30. 05. 2019**

Podpis vedoucího bakalářské práce