Outline of research and educational activities

Radovan Galas

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Institute of Machine and Industrial Design
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Presentation
12.11. 2014, FME BUT in Brno, Czech Republic
Scientific and research activities

- Applied research – Phd thesis
- Base research
- Contract research

Teaching and learning activities
Tribology research group

Section Transportation

Section Elastohydrodynamic
The aim of the project is to develop a complex system that allows active control of adhesion in rail transport by means of top-of-rail application of friction modifier into wheel and rail contact. The system includes a modular dispensing unit, an intelligent system for autonomous control and friction modifier as a component that enables change of contact adhesion.
Research and Development of System for Top-of-Rail Friction Management in Rail Transport (2014 – 2018)

Research team

Ústav konstruování
prof. Ing. Martin Hartl
Ing. Milan Omasta, Ph.D.
Ing. Radovan Galas

TriboTec
Ing. Michal Vašíček
Bc. Petr Kejda

VŠCHT
Ing. Jaroslav Černý, CSc.

The output of the project:

- 4 x G
- 1 x R
- 3 x F
Name of my dissertation thesis: Friction Modification within Wheel-Rail Contact

State of the art
- Heinrich Hertz, 1881
- F. Carter, 1926
- T. Beagley, 1975
- J. Kalousek, 1992
- K. Hou, 1997
- A. Matsumoto, 2002
- D. Eadie, 2006
- D. Eadie, 2008
- S. Lewis, 2013
- W. Wang, 2014

Aim of thesis
The aim of dissertation thesis is the experimental determination of friction modifier components on adhesion in wheel rail contact.

Initial experiment
Research and Development of System for Top-of-Rail Friction Management in Rail Transport (2014 – 2018)

Modification of twin disc machine

Current twin disc

Future twin disc
Through-thickness fluid flow measurement in concentrated contacts (2014 – 2017)

The goal is to develop an experimental approach to the study of through-thickness fluid flow in thin-film lubricated non-conformal contacts. The approach is based on particle tracking velocimetry and ball-on-disk test rig and will be applied to the research of dimple phenomena in EHL.

Research team

- Ing. Petr Šperka, Ph.D.
- Ing. Milan Omasta, Ph.D.
- Ing. Radovan Galas
- Ing. Samuel Horňák

The output of the project

- 1 x Jimp
- 1 x D
# Teaching and learning activities

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<thead>
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<th>Teaching activities</th>
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<tr>
<td><strong>Winter semester</strong></td>
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<tr>
<td>5KS</td>
<td>9MOP</td>
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<tr>
<td>(Machine Design – Machine Elements)</td>
<td>(Methodologies of Scientific Work)</td>
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<td>ZTR</td>
<td>9VPR</td>
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<tr>
<td>(Tribology)</td>
<td>(Research Project and its Manag.)</td>
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<td>ZKP</td>
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<td>(Team Project)</td>
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<td>(Machine Design – Mechanisms)</td>
<td>(Elastohydrodynamics)</td>
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<td></td>
<td>9EXT</td>
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<td>(Experimental Methods in Tribology)</td>
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Thank you for your attention

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