Univerzita
Pardubice
Dopravní fakulta
Jana Pernera

ASSESSMENT OF MASTER THESIS

Title: **„Measurement of vertical wheel force on the rail"**
Author: **Mr. Özgür Yurdakul**

The introductory part of the submitted thesis is devoted to the literature review, which focuses on the modeling of the wheel-rail contact using FEM, on methods and possibilities of measurement of the wheel force, on results of experimental measurements and on modeling of the track.

A main part of the master thesis consists of the analytical study of rail response to track loading describing the FEM model setup, validation of the model by comparing the results of contact stresses with the analytical methods and other software and modeling of the track. The result of these analyses is the proposal of suitable locations for installation of strain sensors on the rail.

The next section describes the performed experiments in the company CZ LOKO in Česká Třebová.

The final part deals with the evaluation of the measurements, the results of computational simulations and comparison with the data obtained from weighing device. In this section, an error occurred while displaying data in Fig. 5.13 and 5.14, since they are in conflict with the tab. 3.5. The final summary and conclusion is supplemented by the recommendations for future research.

- Completeness of the work in terms of the requirements of the assignment

  Master thesis fulfilled all points of the work assignment.

- Approach of the student to solve the objectives of the work

  Student was very active not only in searching of literature sources but also in proposal for different methods of track modeling as well as measurement evaluation. Student was able to effectively utilize results and suggestions from many consultations too.

- Utilization of materials from practice and professional literature

  There are only few sources dealing with measurement of the wheel-rail forces in track, mainly focused on presentation of commercial devices or laboratory experiments. Nevertheless student applied in the thesis his previous knowledge from civil engineering study and from experiments performed in Turkey.

- Professional level of master thesis and contribution to the field of rail vehicles

  Submitted master thesis has high professional level and constitutes added value for the field of experimental measurements of vehicle-track interaction due to used combination of analytical solution, computational simulation as well as specific practical realization and measurement.

Contribution of the master thesis consists in comprehensive approach to the problem and deep analysis of many factors during proposal of a suitable and viable method for measuring of wheel load forces. With regards to previously mentioned I recommend this master thesis for defense and I rate it as

– excellent –

In Česká Třebová, June 2, 2015

Ing. Martin Kohout, Ph.D.