

Review of Diploma Thesis

Name of student: Mert Okar

Title: Time Delay Algorithms for Control of Rolling Mills

Student Mert Okar followed the guidelines given in the thesis in satisfactory manner. First, the problem of Automatic Gauge Control (AGC) is introduced as the main topic of the thesis. After that, the state of the art is performed with focus on rolling mill modelling and control. Particularly the issues of time delay and eccentricity compensations are introduced in this state of art. In the next chapter both the Internal Model Control (IMC) and Repetitive Control (RC) are reviewed for the purpose of both time delay and eccentricity compensation. After this chapter the rolling mill model as three mass-spring system is built up and tested by simulations. Simultaneously the data-based model is identified which relates the rolling gap to exit thickness. Later on this rolling gap-thickness model is applied to IMC design for the sake of the time delay compensation only. Finally both the IMC and RC are verified on the gap-thickness model control providing both time delay compensation and disturbance attenuation.

On one hand I have to admit all thesis' assignments are satisfactorily achieved as follows: the state of the art is thoroughly worked out together with introducing AGC problem and the theoretical background as regards the IMC and RC is successfully applied to the rolling mill. On the other hand a missing application of the IMC scheme to the three mass-spring system is the drawback of the thesis. In fact, instead of this system the data-based model (i.e. black box model) is utilized for the IMC design. In appendices the software solutions to the thesis assignments are available with rich comments. Finally I have to appreciate the master thesis is typed with understandable English.

From the viewpoint of control theory application the thesis is abundant enough in solved problems but as regards own solutions of these problems the thesis is moderate only. Nevertheless the thesis meets sufficiently the given assignments with the grade

D = satisfactory =

Praha, 20 June, 2017

Ing. Jaromír Fišer, Ph.D.
reviewer