

Announcement for Bachelor Thesis / Research project

Control Interface Setup for a Test Bench and Online Analysis of Measurement Data

Motivation

Strain wave gears – also known as harmonic drive gears – are often used in robot joints due to their compact design and high gear ratio at the same time. In fully automated factories of the future, robots are in continuous operation, which implies a high demand on the life time of the robot and in particular the strain wave gears. Therefore, a close investigation of its dynamics as well as mechanisms of wear and degradation in the gear is of high interest. A test bench that enables these investigation will be set up at the Chair of Automatic Control. One aspect of the setup is the implementation of the superordinate test bench control and the management and storage of measured data.

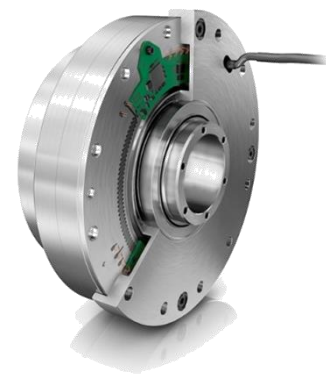


Figure 1: Source: <https://www.schaeffler.de>.

Task description

The subordinate test bench control should be implemented in MATLAB/Simulink using the dSpace interface that is required for the real-life test bench later on. The implemented control is tested with an existing MATLAB/Simulink model of the test bench. In addition, it should be taken care of the sampling, management and storage of measured data. Furthermore, methods for the online analysis of measurement data should be implemented and tested.

Requirements

Basic knowledge of MATLAB/Simulink and control theory (e.g. having attended the course Regelungstechnik A) .

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