



## Master Thesis

Practical

### Fault detection and diagnosis for Three-tank system via network connections in real time

*Keywords: FDI, Three-Tank- System, MATLAB/SIMULINK<sup>®</sup>, LabVIEW, MIMO system*

#### General conditions:

Duration: 6 Months

Prerequisites:

- Knowledge of process control for linear and nonlinear dynamics
- Knowledge of fault detection and diagnosis for technical systems
- Programming experiences with MATLAB/SIMULINK<sup>®</sup> and LabVIEW

#### Content:

Fault detection and isolation (FDI) is an important task to deduce from observed variable of the system if any component is faulty, to locate the faulty components and also to estimate the corresponding fault magnitude. The goal of the thesis is to develop an applicable approach of fault diagnosis to detect different faults in the three-tank system (3TS). The implementation of the FDI-approaches should be done using MATLAB/SIMULINK<sup>®</sup> by the Simulation Interface Toolkit (SIT) via network connections (udp/ip) in real time. The hardware and a LabVIEW-based user interface for controlling has already been established by former works. (Fig. 1 and Fig. 2).



Fig. 1

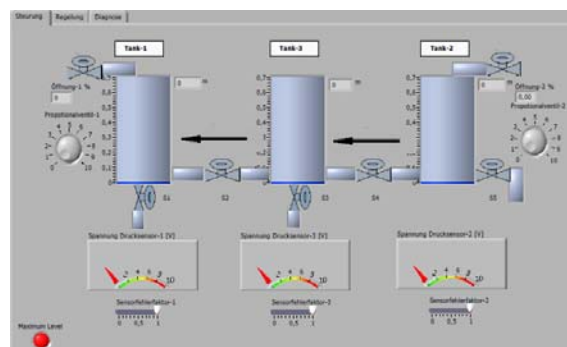


Fig. 2

The thesis should include a literature research of the already applied FDI approaches for 3TS, the necessary improvements of current controller, the implement of selected approaches as well as tests and evaluations have to be documented. The whole work has to be demonstrated within an oral presentation.

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