SIEMENS

**Process analysis and automation of a test procedure for gas valves**

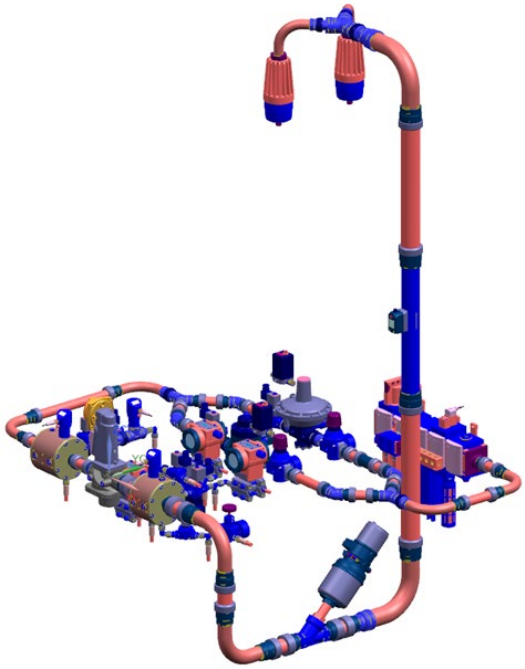
**Bachelor Thesis**

**Motivation:**

At the Siemens plant in Rastatt, safety actuators for gas valves are produced in large series. The actuators have a pressure regulator for controlling their outlet gas pressure. Since the control behavior has a complex interaction with the (unsteady) flow state of the used medium, a precise knowledge of the controlled system is essential for the successful operation of the regulator. For this reason, a test rig has already been set up at the Rastatt site to investigate and test the control behavior. In the next step, (i) the control behavior of the test section and (ii) the interaction with the test specimens have to be investigated and optimized

**Objectives:**

The goal of this bachelor project is to analyze the process performances of the procedures, which subsequently is improved in a accordingly optimized procedure. To do so, the following tasks have to be done:



- Control of sensors and actuators with LabView
- Automated data acquisition with LabView
- Statistical analysis of the data
- Improvement of the control loop through software and hardware optimizations
- Optimization of the test rig to meet the accuracy and reliability requirements for series production

**Requirements:**

- Studying mechanical engineering
- Good knowledge of gas dynamics,
- Basic knowledge of electronics and programming
- Good knowledge of LabView and MS Office (mostly Excel)
- Curiosity and passion to constantly learn new things
- Good written and verbal English and German skills
- Beneficial skill: Knowledge of Minitab and Process analysis


**KIT Contact:**

Prof. Dr.-Ing. B. Frohnapfel

Karlsruher Institut für Technologie
Institut für Strömungsmechanik

*bettina.frohnapfel@kit.edu*

**SIEMENS Contact:**

Dipl. Ing. M. Wörner

Siemens AG
Smart Infrastructure
Building Products
Berliner Ring 23
76437 Rastatt, Deutschland
Mobil: +49 174 3134853
mailto:m.woerner@siemens.com