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ams' success, being a world leader in the design and production of high performance analog ICs and sensor solutions is driven by our most important asset - our employees. To support our continuing growth, we are looking for people with ideas, people who want to make a difference and are focused on being the best.

# Step up.

## Diploma Theses (m/f) (INL Improvement for Rotary Encoder)

### Education and experience:

Basic knowledge about dealing with, Personal Computer, Microcontroller, FPGA. Eager to learn the handling of common development tools as preparation for the work. Tools: Visual Studio / vMicro (plugin for Arduino Board) / ISE (Xilinx) --> simulation + synthesis / C# (User Interface) / Verilog (FPGA) / Cpp ; C (Microcontroller)

### Tasks and responsibilities:

The goal of this diploma thesis is to test and improve an INL reduction algorithm. The algorithm is based on a former work from the institute for control theory, TU Graz. The potential improvement should be shown on existing hardware including

Motor 3257G024CR (Faulhaber)  
Reference encoder HEDS-5540 A12  
Magnetic Rotary Encoder AS5055 plus magnet  
FPGA – development board: CMOD S6 module from Digilent  
Microcontroller Development Board Arduino UNO  
PC

#### part1: (2 months)

Implementation of the INL improvement algorithm on the FPGA while the microcontroller board can be used to implement helper functions. Transfer the results via the microcontroller board to the PC. Basic user interface to control the data transfer and visualize the results.

#### part2: (2 months)

Evaluation of the results at constant and modulated torque via jump and ramp function. Workout of potential improvements of the algorithm and implementation on the hardware.

#### part3: (2 months)

Transfer the helper functions from the microcontroller to the FPGA board. Evaluation of the final results at constant and modulated torque via jump and ramp function. Documentation of the work.

### Working place:

Schloss Premstätten, Tobelbaderstraße 30, A8141, Unterpremstätten

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