Bachelor/Master Thesis

Development and Setup of a Transmission Line with Power Flow Indicator for a ETIT Demonstrator

TECHNISCHE UNIVERSITÄT DARMSTADT

SRT

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Background:
Modern power grids feature an increasing number of volatile power generation (PV, Wind). Therefore, the capabilities to store electrical energy become ever more important. To give students the possibility to experience this challenge first hand, a demonstrator of a small, electrically fully functional, modular 12 V DC distribution grid, including generation, storage and consumption is developed at the institute.

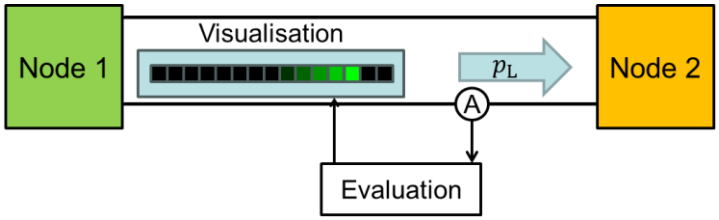

Fig. 1: Systematic representation of the power flow Indicator for a known, stable DC voltage

Goal (Bachelor Thesis):
The goal of this thesis is the development and setup of a transmission line element with integrated power flow indicator utilising measurements and an evaluation method. Thereby, the direction as well as the amount of power transmitted is of interest and needs to be visualised in an easily understandable way. For the evaluation a purely analogue implementation would be of interest but is not a “must have”-criterion.

Tasks (Bachelor Thesis):
1. Research of relevant topics, amongst others: Current and voltage measurement, power transmission and calculation, analogue electronics and/or microcontroller programming
2. Development of a measurement and evaluation method
3. Component Selection and Schematic design
4. PCB design
5. Assembly and verification of proper function
6. Documentation

Enhancement for Master Thesis:
Additional tasks, as well as the scientific goals for a Master Thesis will be discussed individually based on the students personal interest, background of study and its applicability to the project.

Working Language: German, English