

# Masterthesis

In cooperation with AVL

## Grid emulator

### Motivation

A grid emulator (grid simulator) simulates the behaviour of a real low voltage grid in functional and electrical sense. It works basically as controlled 4-quadrant AC voltage source with defined source impedance. With help of the grid emulator, specific grid conditions (voltage dips, voltage variations, short voltage interruption, harmonics, ...) can be simulated and the behaviour (for instance the fault ride through capability) of connected installation can be tested under various conditions.

### Tasks within the thesis

Perform a market research to get the following informations:

- Considerable manufacturer of grid emulator
- Area of application for grid emulators
- Technology (linear amplifier, switched source, ...)
- Characteristic parameters (power range, dynamics, switching frequency, ...)

Assessment of relevant standards for testing of LV-devices

Conceptual design of the grid emulator structure, suitable for testing EV fast charging stations

- 3-phases and neutral, earthing of neutral, ...
- modular setup with existing single phase sources
- rated power up to 1 MW (three phase power)
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### Timing

Immediate start of work possible

### Contact/Supervisor

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