



TU-Dortmund ie3 V1.0

→ COMPISO User Story

User:

Technische Universität Dortmund
ie³ Institut für Energiesysteme, Energieeffizienz und Energiewirtschaft
Smart Grid Technology Lab
Emil-Figge-Str.70
44227 Dortmund

Installed System:

COMPISO System Unit CSU200-2GAMP4
Three 35kVA single-phase isolating output transformers each equipped with CIO Boxes
COMPISO Real Time Processor RTP, running the EGSTON AC-Source Application

Application:

Researching ambient conditions in varying and flexible Smart Grid configurations. The system has a 200kVA transformer for galvanic isolation, a 4 Quadrant Active Frontend for bidirectional energy flow and two groups of four COMPISO amplifiers (2GAMP4).

These two groups of amplifiers are ready for flexible configurations and independent use in

- 4-wire grid emulation
- 4-wire load emulation
- Mixed modes for prosumer emulation
- PV-Inverter testing (1 group for PV Panel DC emulation; second group plus output transformers for AC grid emulation)
- Various DC emulations, e.g. E-Car charger or battery emulation

CIO boxes allow the researches to receive the internal measurements through galvanic isolated low-voltage signals and postprocess the collected data. They are connected to the COMPISO system unit cabinet by optical fiber.

The FPGA-based EGSTON RTP box together with the AC-Source Application provides users with easy, freely programmable AC waveform generation for grid or load emulations, superimposed harmonics, LVRT sequences frequency sweeps and many other applications.

For complex applications, free simulation models run on an external HIL real time processor connected to the COMPISO system unit by a 5-Gbit optical SFP-interface.

Benefits:

Freely configurable and flexible use of two groups of four single amplifiers in AC and DC operation. Bidirectional energy flow for source or load operations. Ultra-high bandwidth of up to 5 kHz full span sine wave voltage and up to 15kHz harmonic frequencies. Huge variety of amplifier configurations for current and future Smart Grid lab research applications.