

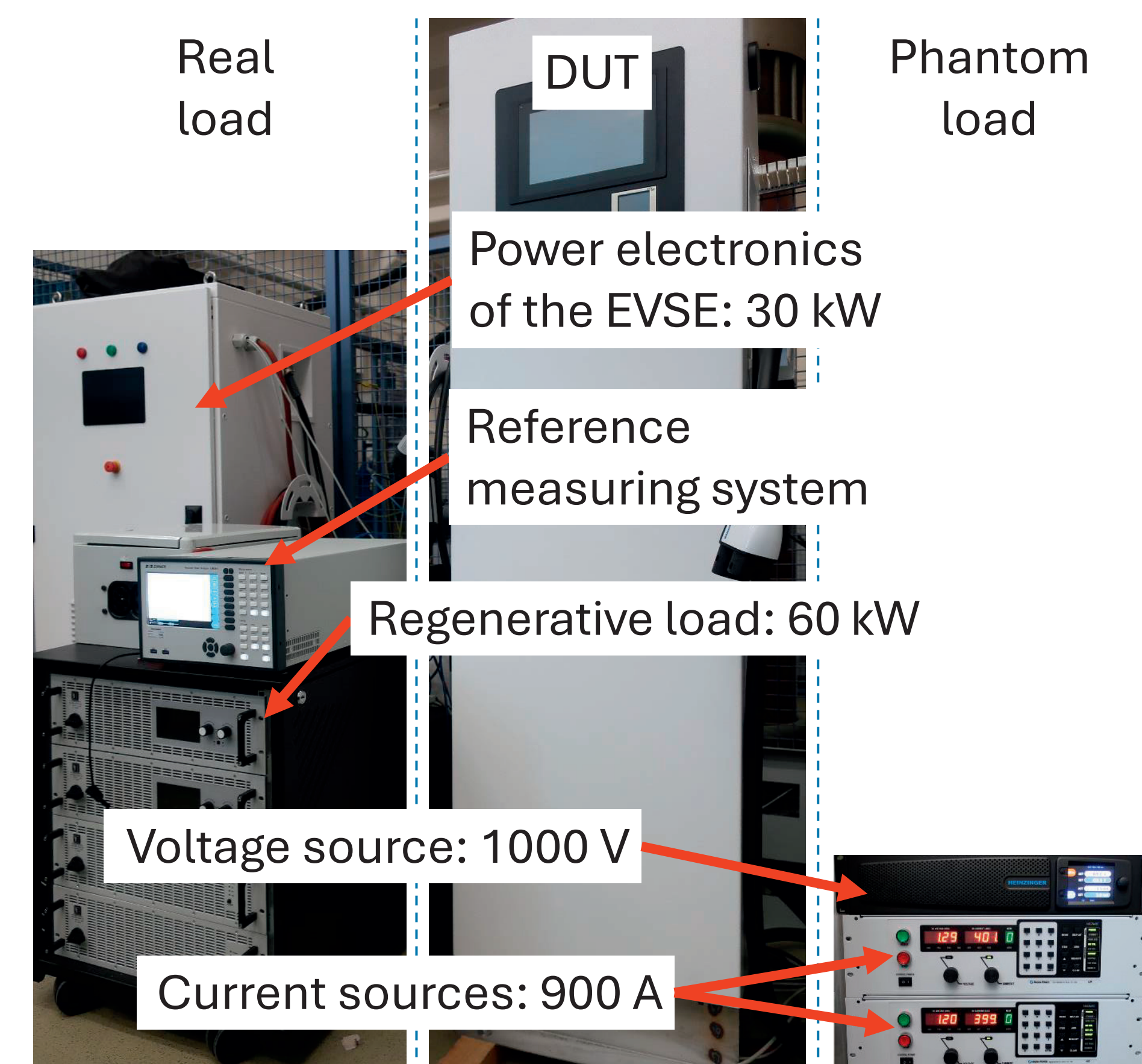
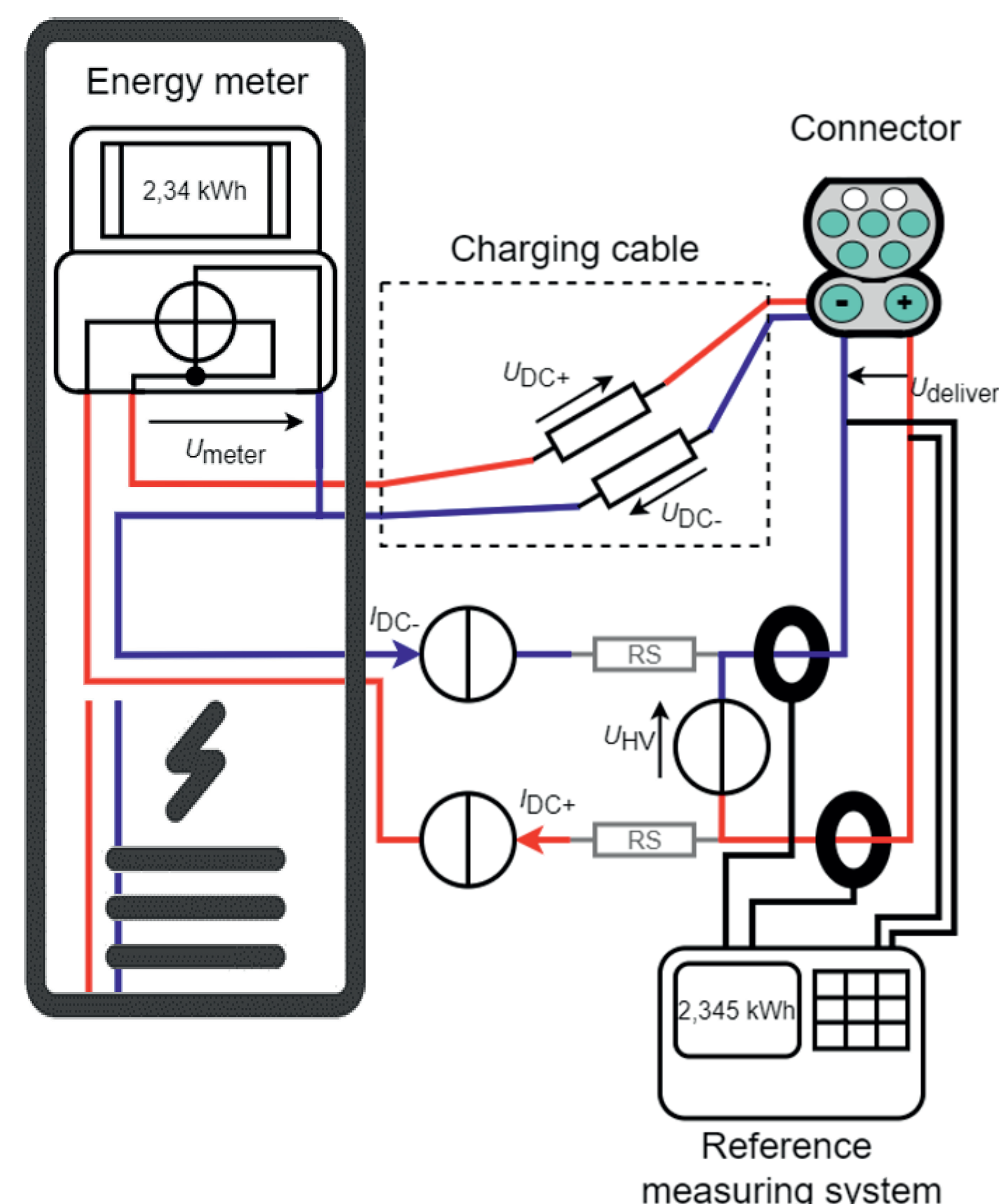
Efficient verification of high-power DC charging stations with a PTB Phantom Power Test Setup

Introduction

- For electric vehicle charging systems, the energy delivery point is at the connector between the vehicle and the charging cable
- Components between the point of energy measurement and the delivery point influence the measurement result
- Influences must be included in the metrological test
- Testing with real power in the entire operating range of the charging system is complex

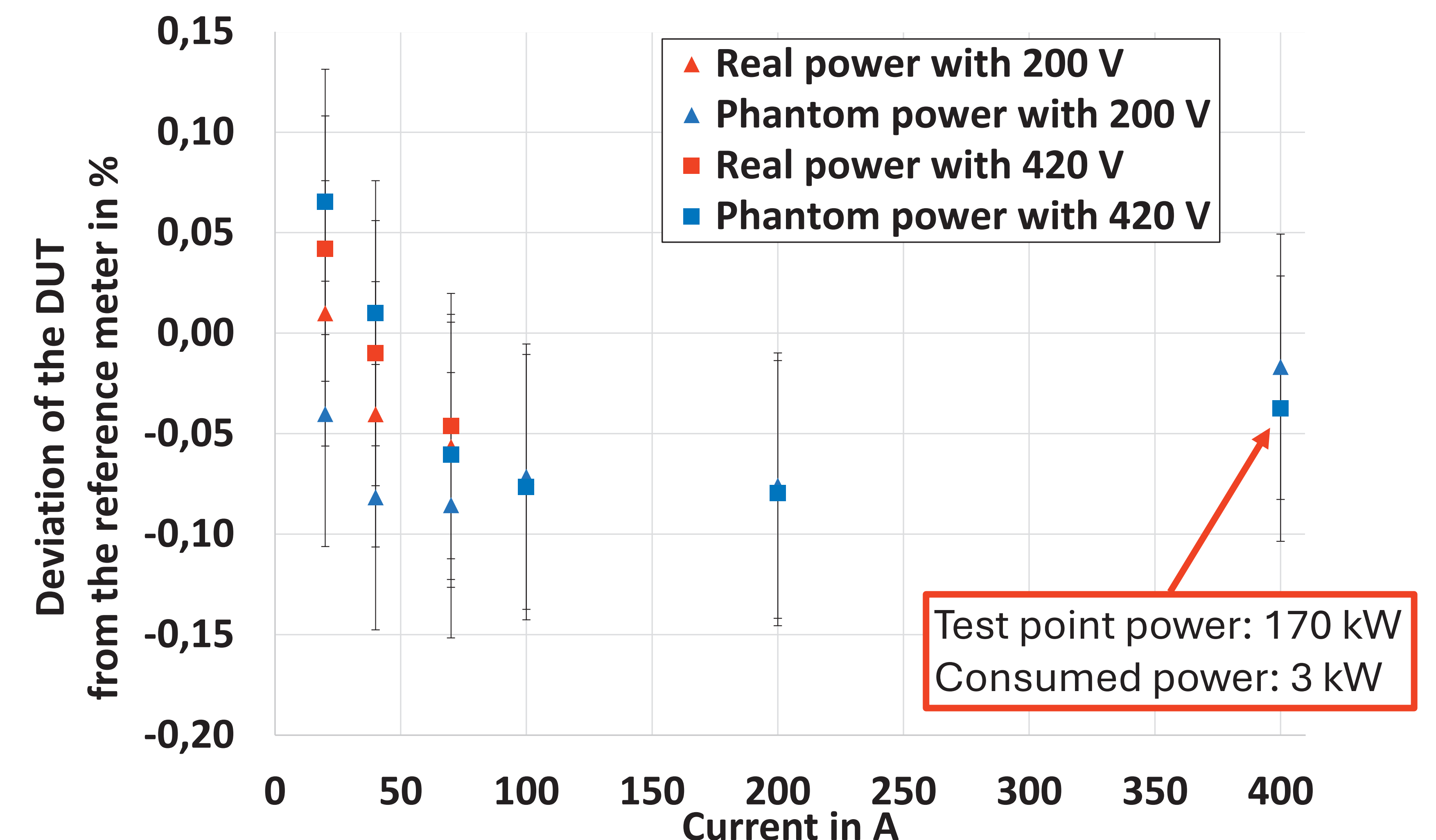
Phantom Power Test Setup

- Test point is set with separate voltage and current source
- Meter "sees" a power that is not actually present
- Simulation of the complete losses between metering point and energy delivery point by means of separately applied currents in DC+ and DC- path
- Only the resistive losses of the current paths need to be provided from the sources



Measurement Results

- Comparison of the metrological test with real and phantom power
- Real power test limited by the real power setup to 30 kW
- Phantom power setup: full maximum current of the charging station possible (400 A)
- Agreement between both setups far below measurement uncertainty of 0,1 %



Conclusion

- Metrological testing of fast charging stations with real power is not economic
- Testing with phantom power leads to the same measurement results as testing with real power
- Test setup is significantly more compact, with greater performance and lower power consumption
- Test setup easily scalable and therefore also suitable for testing future charging technologies (e.g. MCS)
- Approach enables economic testing in the field



Quelle: www.cavotec.com