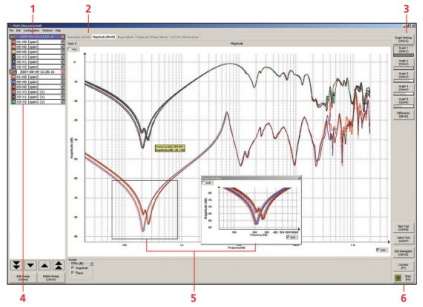
# Diagnostics of Electrical Equipment

## Analysis of Distribution Transformers at Various Insulating Conditions by Frequency Method

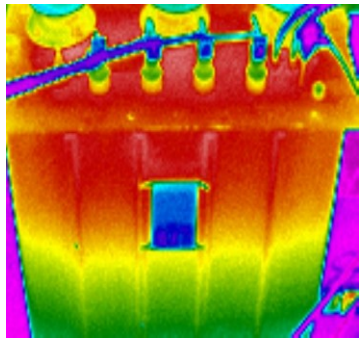
Measurements

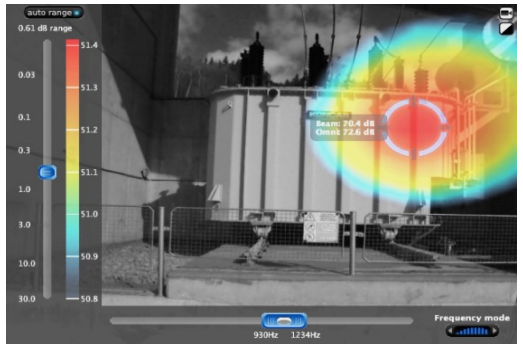
Analysis



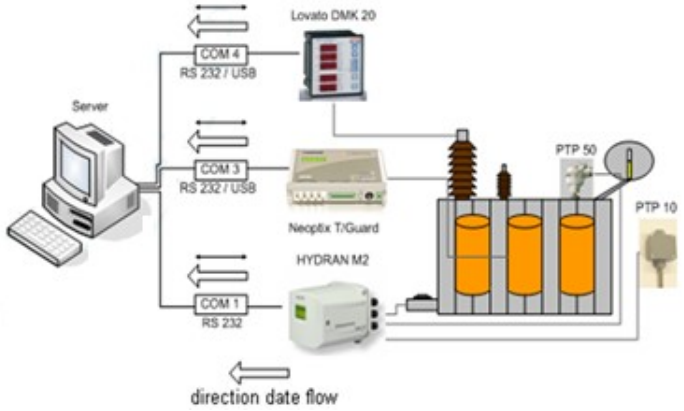
Solutions

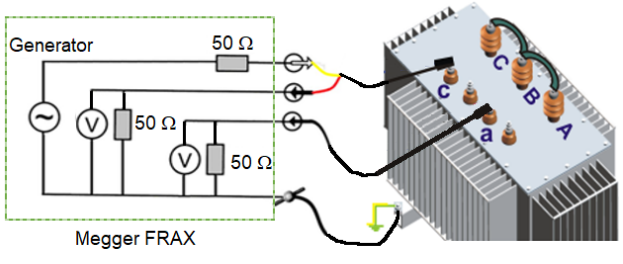
### Non- contact systems for diagnostics of construction transformers properties

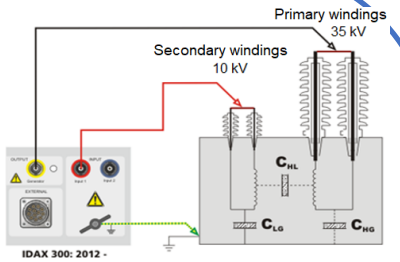




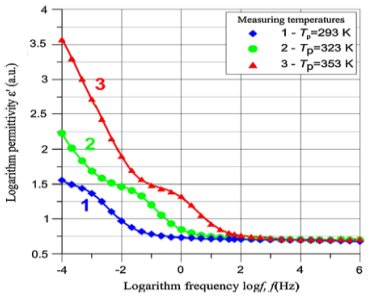
### On-line systems for diagnostics of insulating transformers properties

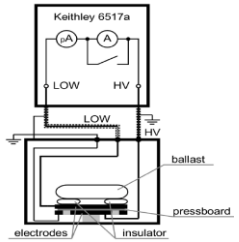


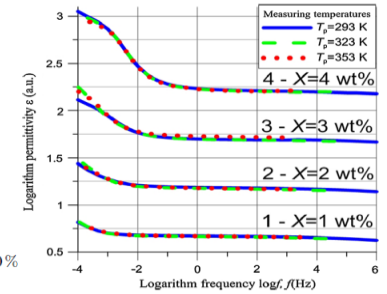

### SFRA METHOD




$$Y(\log f) = \frac{\varepsilon_{apr}(293\,\mathrm{K}) - \varepsilon_{apr}(T_i)}{\varepsilon_{apr}(293\,\mathrm{K})} \times 100\,\%$$

### FDS METHOD




### FDS METHOD – ACCURACY IS AFFECTED BY TEMPERATURE

**Partners:** Lublin university of technology, Poľsko
AGH University of Science and Technology, Krakov, Poľsko
Gdansk university of Technology, Poľsko

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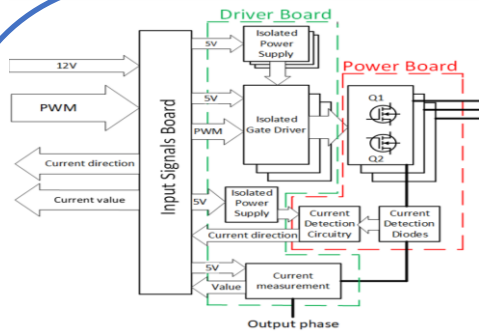
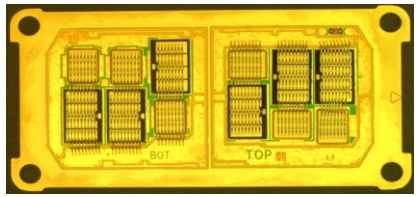
# Power Electronics and battery systems

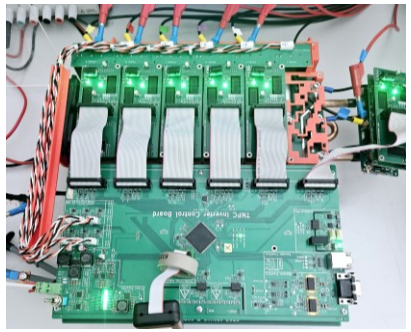
## Research on power semiconductor converters and battery systems




Research

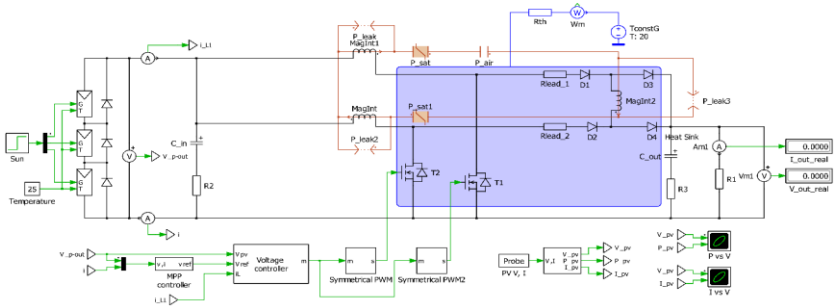


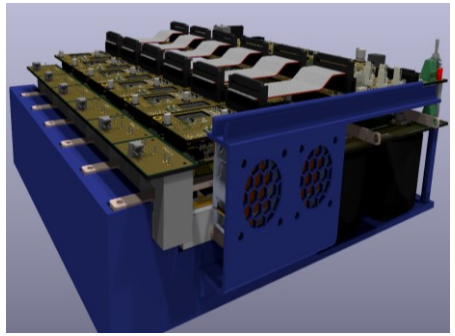
Development

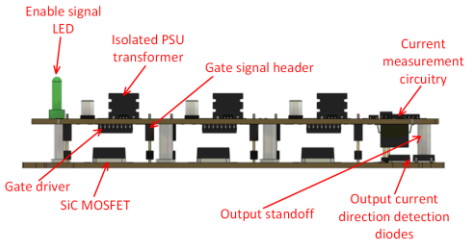


Design

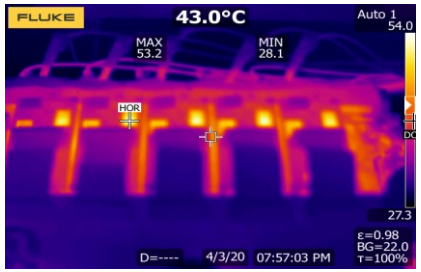
- Verified circuit and thermal simulations
- Control system design and verification
- Prototype design, measurement and verification
- Automotive and Industrial applications
- Custom designs
- AC/DC, DC/DC, AC/AC, DC/AC

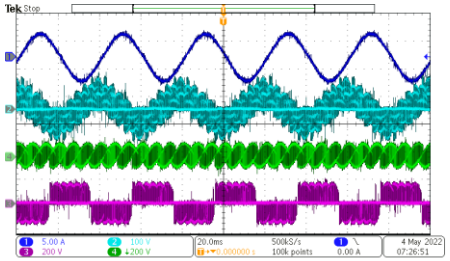


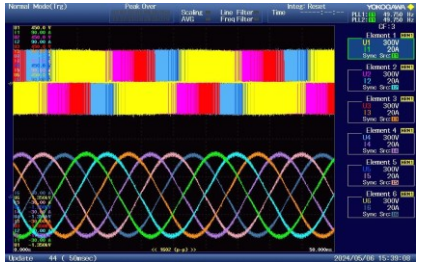


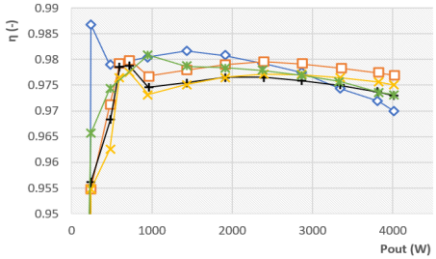



- **Hardware Tools:**
- High-end laboratory equipment (up to 120 kW)
  - High-power lab, EMC lab, Simulation lab, Battery tester
- **Computer Tools:**
- HIL RT Box, PLECS, MATLAB, COMSOL, ANSYS, PSpice, KiCAD





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**References: onsemi, Semikron-Danfoss,**