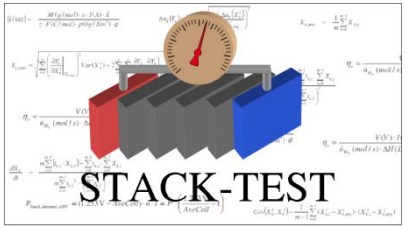
FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING



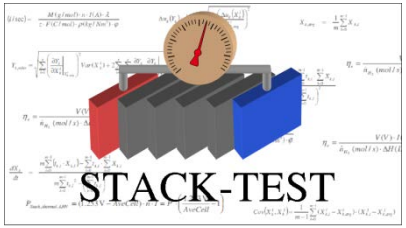
Test Procedures for PEMFC stack performance tests

EXPERIENCES WITH STACK-TEST PROCEDURES,
Freiburg, January 20th – 21th 2015

Jens Mitzel, Erich Gülzow, Andreas K. Friedrich

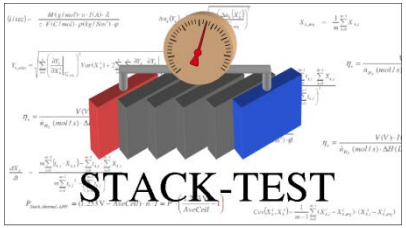
Stack-Test: FCH-JU GA 303445

Overview



- General approach of Stack-Test
- Test procedures for stack sensitivity
- Polarization curve measurements
- Tests under constant load
- Performance tests for dead end operating conditions
- Optimization of operating parameters
- Conclusion

Conclusion



TMs defined and validated for TIPs influencing the stack performance:

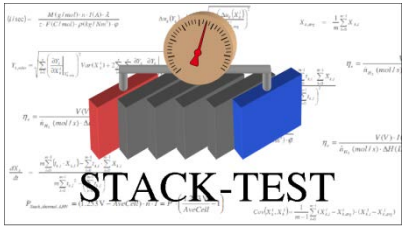
- Stack sensitivity: RH, T, p, λ, reactant composition and stack tilt
  → Impact of one parameter on stack performance
- Polarization Curve: Steady-State curve in 2 h
  → Independent from dwell time and load steps
- Dead end operating conditions
  → Purge parameter test for different stacks using the same test station

TMs can be combined to different TPs:

- Optimization of operating parameters
  → TOC optimization for a given load level using Nelder-Mead simplex

- All TM and TP documents aquireable
  → stacktest.zsw-bw.de

Acknowledgement



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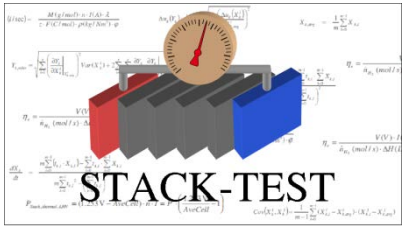

Thank you very much for your attention!

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