Power Hardware-in-the-Loop Conception: How to Design a Field-Test Environment for Large-Scale Smart Grid Integration Studies

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Motivation
Power Hardware-in-the-Loop (PHIL) enables investigations of close-to-reality and worst-case test scenarios. Nevertheless:
- no out-of-the-box systems exist,
- no general setup or unified description are available,
- standardized usage and applications are needed.

Addressing the Challenge
A step-wise approach for setting up PHIL testing systems is being proposed:

Step 1: Execution of preliminary stability studies
Step 2: Parametrization of the RT simulation
Step 3: System security check
Step 4: PHIL parametrization and performance evaluation.

This approach offers a straightforward process to support the design and the execution of successful PHIL-based tests.

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