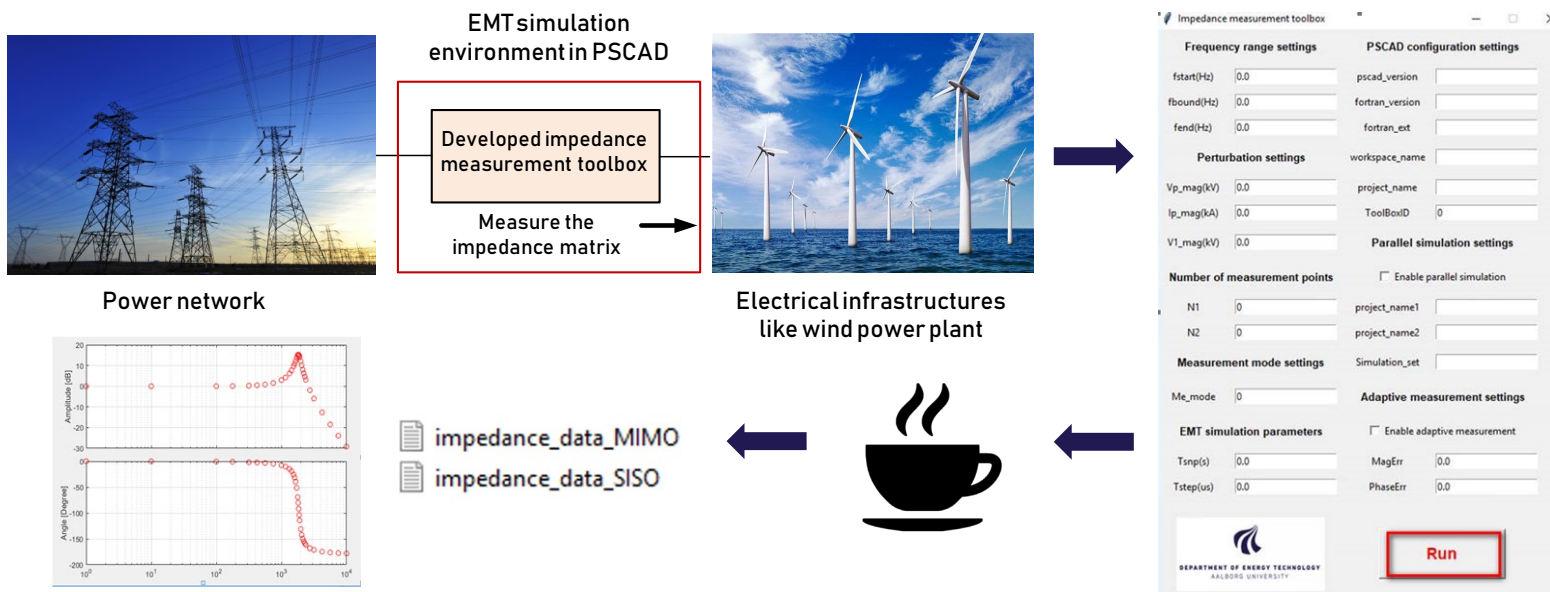


AIM-Toolbox - Automated Impedance Measurement Toolbox

FOR POWER SYSTEM STABILITY ANALYSIS



VALUE PROPOSITION

The invented Automated Impedance Measurement Toolbox (AIM-Toolbox) measures the impedance matrix of electrical infrastructures, such as offshore wind farms, in the PSCAD simulation environment. The AIM-Toolbox can be used by transmission system operators (TSOs) or converter manufacturers for power system stability analysis. Compared to other impedance measuring systems, this is able to measure all elements of the impedance matrix in the stationary frame. Measurement results can be used for low frequency stability (sub-synchronous resonance) analysis.

BUSINESS OPPORTUNITY

Power system oscillation due to the dynamic interaction between power converters and the power grid, has been increasingly reported, which greatly threaten the stability and reliability of the electrical grid. To tackle this challenge, stability studies are mandatory for TSOs before they allow new power converters to connect to the power grid, and suppliers of power converters must secure that their converters meet the demand of the power grid, in order to be chosen as suppliers for new power infrastructure. Generally, power system stability studies are carried out by analyzing the characteristic of power converter impedance. Hence, obtaining an accurate converter impedance becomes crucial when adding new power connections to a specific grid-configuration. To meet this practical demand from the power industry, our AIM-Toolbox has been developed to guarantee the accurate measurement of the power converter impedance, facilitating the power stability study.

TECHNOLOGY SUMMARY

Power converter impedance has a matrix form due to the non-linearity of the converter controller. An advanced algorithm was developed for our AIM-Toolbox. This algorithm enables a direct measurement of the impedance matrix in the stationary frame without any dq-transformation. The AIM-Toolbox is compatible with the PSCAD simulation environment, and the measurement process is fully automated. Customers just need to define the measurement specification by filling in relevant parameters and click the run button, to receive the required impedance data for grid stability analysis. All in all, a fully automated process from measurement to result.

CURRENT STATE OF DEVELOPMENT

The first version of the AIM-Toolbox is now available for licensing, and has been used successfully in a commercial HVDC project with a major European TSO.

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SEEKING

- Available for licensing