

EUR24_XX - Hardware in the Loop (HIL) Digital Twin for Power from Shore projects

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Abstract:

Power from Shore (PfS) projects present different engineering obstacles from concept to commissioning to life cycle operation. As PfS functionality are primarily grid-related topics, the possibilities of site specific testing are limited before all equipment are assembled on site and integrated in full-scale into the system. There are possibilities prior to perform "string tests" to bring together transformers, converters, filters and temporary use a of a load bank, where it has it advantages and disadvantages.

This paper will focus on a recent case example of Hardware in the Loop (HIL) Simulator and testing campaign for the electrification and expansion of a Norwegian offshore platform with two medium-voltage static frequency converter systems and two booster compressor variable speed drives as the core part of the HIL.

With the use of a HIL, further testing capabilities are possible beyond software-based simulations done prior, e.g. during FEED study. HIL tests also provide further benefits to de-risking commissioning and to reduce commissioning times. This paper will also go into detail in the needed collaboration among various stakeholders.