

The National Renewable Energy Centre of Spain -CENER- is a technology centre specialized in applied research and development as well as the promotion of renewable energies. CENER is divided into six departments: Wind Energy, Photovoltaic Solar Energy, Solar Thermal Energy, Biomass Energy, Bioclimatic Architecture and Renewable Energy Grid Integration.

More info: www.cener.com



STUDY OF ELECTROMAGNETIC TRANSIENTS IN ELECTRIC CIRCUITS



- PSCAD is a powerful simulation software to study electromagnetic transients in electric circuits.
- CENER offers the possibility of evaluating the response of the wind farms (wind turbines, FACTS) in the event of voltage dips with the requirements specified in different international Grid Codes
- Taking advantage of this software, CENER offers the following services:
 - Power Quality Analysis (Harmonics, Voltage dips, Over voltages...)
 - Transformer saturation effects / Transmission lines and HVDC
 - Insulation coordination of transformers, breakers and arrestors
 - Evaluation of filter design and harmonic analysis
 - Control system and coordination of FACTS
- CENER offers a Test Bench that reproduces in the range of the kW the behavior of the wind turbine to study the disturbances in the grid .



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RENEWABLE ENERGY GRID INTEGRATION STUDIES WITH PSS/E, POWER SYSTEM SIMULATOR FOR ENGINEERING



- Renewable energy integration studies are useful for the design and operation of the power system and to define the grid infrastructure development.
- PSS/E is the premier software tool used by electrical transmission participants world-wide. It is an integrated interactive program for simulating, analyzing, and optimizing power system performance.
- Taking advantage of this software, CENER offers the following services:
 - Renewable energy integration studies on power systems (national or regional studies with different temporal horizons and scenarios).
 - Infrastructure development studies.
 - Wind farms grid impact studies (power flow analysis, short circuit analysis, safety studies (contingency analysis N-1) and stability studies (dynamic)).
 - Optimal power flow studies (calculate the optimal power flow with optimal scenarios).

