



CYMSTAB - Transient Stability Analysis

CYMSTAB is the transient stability module of the CYME power engineering software dedicated to simulating electromechanical transients in balanced and unbalanced electrical power systems. It features an extensive library of equipment and control models; the capability to include user-defined controls, a very flexible user-interface; and, powerful graphics.

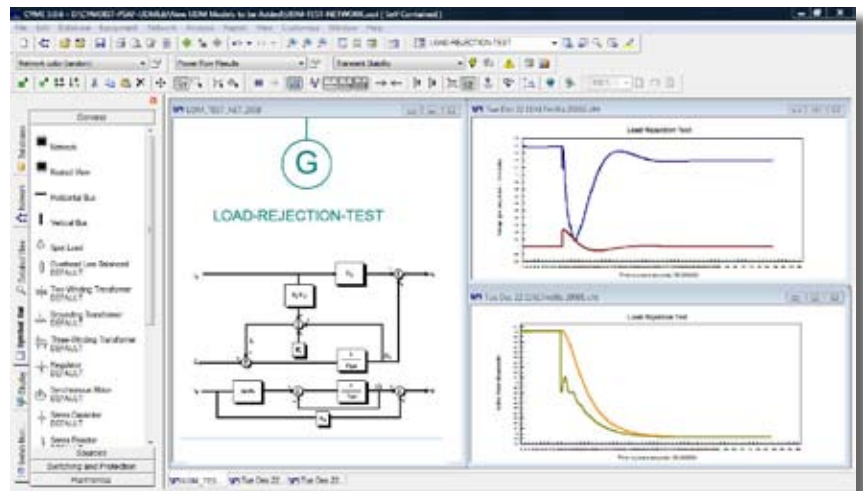
Program Features

CYMSTAB utilizes the simultaneous implicit trapezoidal integration solution technique for network, machine and controller equations. The program supports the capability to test the step response of controllers and user defined modeling for system equipment and controllers.

Analytical capabilities

- LLL, L-G, LL and LL-G fault application and removal
- Line switching and line re-closing
- Single pole re-closing including line charging effects
- Load shedding and load increase
- Generation shedding
- Disconnection of lines, cables and transformers
- Tripping and reclosing of protective devices
- Frequency-dependent modeling of generators
- Networks with multiple nominal frequencies
- Possibility to monitor specific equipment during the simulation

- Load modeling as a function of voltage and frequency at individual bus bars or throughout the system
- Disconnection of static Var compensators
- Addition and removal of shunts
- Direct on-line or assisted induction motor starting and stopping
- Synchronous motor starting
- Automatic validation of maneuvers and their sequencing in time
- Verification of equipment and controller data
- Possibility to vary the integration step during the simulation
- Possibility to interrupt the simulation temporarily and restart
- Range validation for controller settings and simulation parameters



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Simulate electromechanical transients in balanced and unbalanced electrical power systems.

Control Model Library

The CYMSTAB control model library has an extensive library of dynamic models of equipment and their controls. This includes default data values of the parameters, their description and block diagrams as per published transactions and papers.

This includes control models of:

- Round poles and salient poles generators
- Modeling of excitation systems taking saturation into account, based on IEEE® standards
- Power system stabilizers
- Governor models comprising hydraulic, thermal, diesel, and gas turbines
- Static-Var compensators
- Under-voltage, under-frequency and frequency droop relays
- Induction motor models with frequency dependent modeling
- Dynamic modeling of co-generation facilities such as Wind Energy Conversion Systems (WECS), photovoltaic (PV) cells, fuel cells and micro turbines

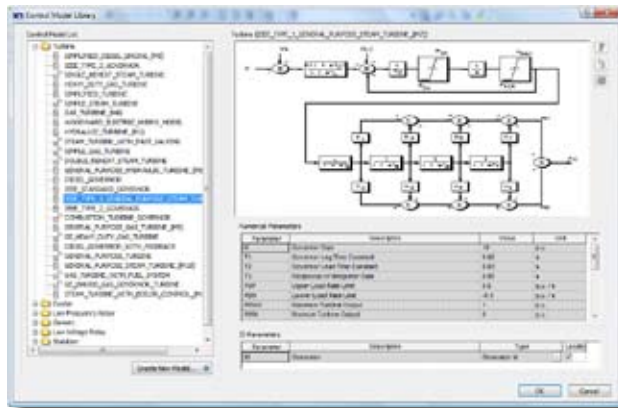
User-Defined Modeling

CYMSTAB features a unique ability to supplement the existing array of control models for system equipment and controllers, giving the user the opportunity to model any desired control system using user-defined modeling.

The user-defined modeling approach rests on the premise of interpreting, at run time, the user-defined equations. The program is provided with an extensive library of elementary functions and building block controls to model any control scheme, including system-wide operations.

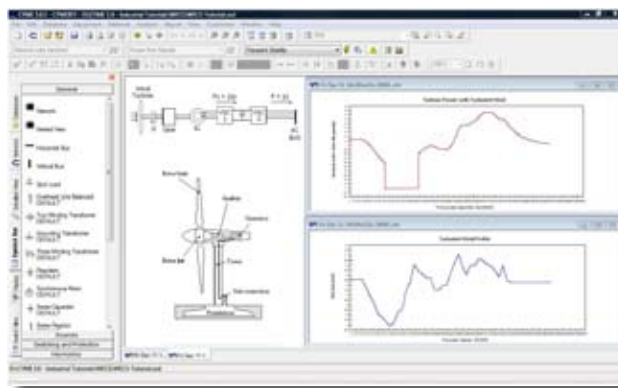
The model can be created with a simple text editor and there is no need to recompile the software to integrate the new model into the library.

The control model library is so flexible in its design that the user can create or import in the library any control model that he has coded with the built in user defined modeling functions. This includes any model created previously for the PSAF software or any new one that the user may wish to add to the CYME library in order to include it in any study requiring such model. In addition the user can import the dynamic model block diagram since the program supports the most popular bitmap image formats.



Dynamic Modeling of Co-Generation

CYMSTAB now includes extensive modeling capability of co-generation equipment such as Wind Energy Conversion Systems (WECS), photovoltaic, fuel cell and micro turbine dynamics. The advanced solution algorithms provide the user with the necessary tools to carry out power system studies comprising these types of installations.



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