

Wind Turbine Generator (WTG)

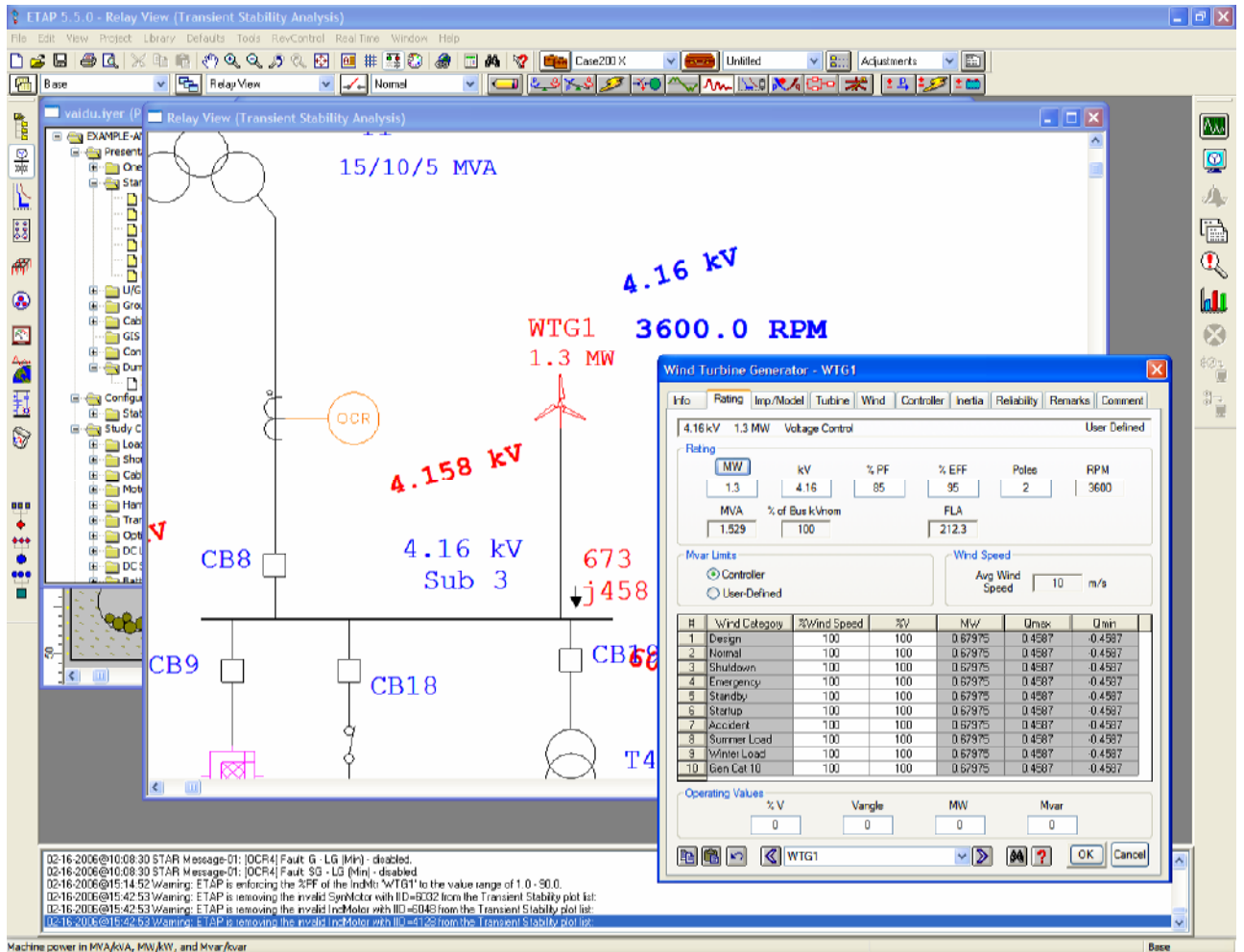
The Wind Turbine Generator module is an important new addition to ETAP 5.5. It allows you to design and monitor wind farms in a highly flexible graphic interface optimized for both simulation and analysis. The WTG module is fully integrated to work with all ETAP calculation modules such as GIS Map, Harmonic Analysis, Load Flow, Optimal Capacitor Placement, Device Coordination, ETAP Real-Time, and Transient Stability. Place simulated disturbances and view the impact on the wind farm to model alternative turbine placement, the installation of protective devices, and other corrective actions.

The ETAP WTG module comes to market with proven utility. It is currently being used for real-time monitoring of power exchange between wind turbines and the power grid for the third largest wind farm in the United States. Features of the new Wind Turbine module include:

- Model wind turbine generators individually, or in groups
- Model detailed turbine dynamics including aerodynamics and power coefficients
- Model doubly-feed machines with pitch and converter controller characteristics
- Model multiple wind speed with ramp, gust, & noise disturbances
- Create multiple generation categories for predictive “what if” studies
- Perform transient stability analysis with individual or zone-based disturbances
- Run one instance or continuous steady-state calculations in analysis mode



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Wind Turbine Generator - WTG1

Info Rating **Imp/Model** Turbine Wind Controller Inertia Reliability Remarks Comment

4.16 kV 1.3 MW Voltage Control User Defined

Locked Rotor

LRC %

PF %

ANSI Short-Circuit Z

Std MF 1/2 cy

Xsc 1.5-4 cy

Parameters

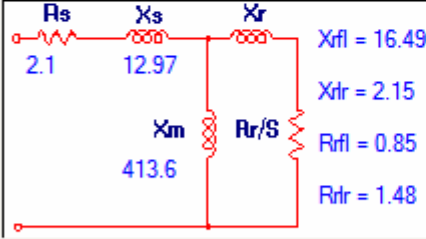
Xo X2

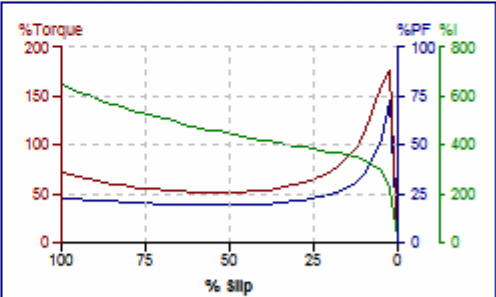
X/R Td'

Grounding...

Model

Single2 - Single-cage with deep-bars

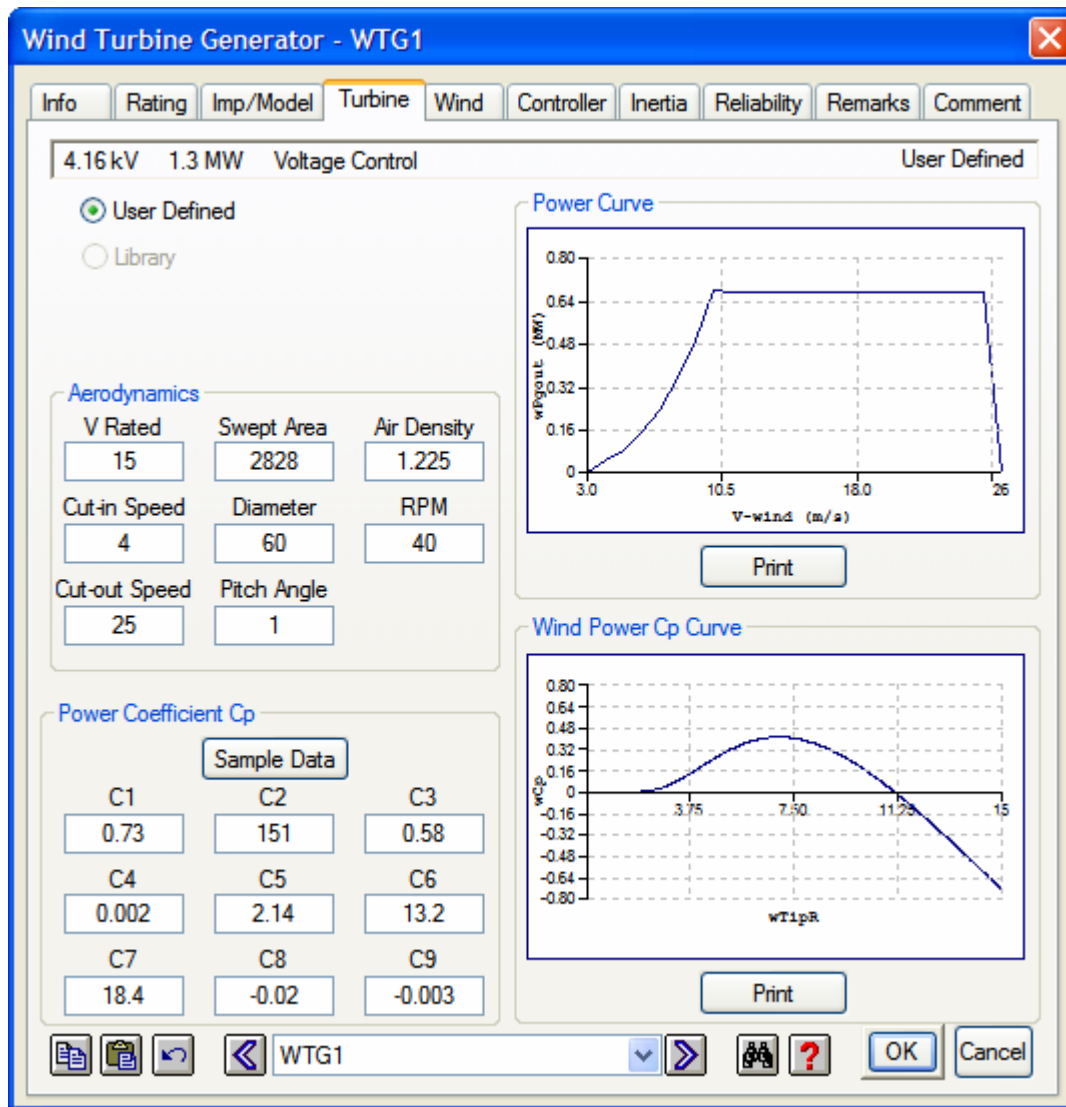




None CKT

HV-HS-HT LV250HP2P

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Wind Turbine Generator - WTG1

Info Rating Imp/Model Turbine **Wind** Controller Inertia Reliability Remarks Comment

4.16 kV 1.3 MW Voltage Control User Defined

Avg. Base Speed m/s

Wind Disturbance

Wind Library
 User Defined

Ramp Wind

Max. Ramp	Ramp Start	Ramp Stop
<input type="text" value="10"/> m/s	<input type="text" value="0"/> sec	<input type="text" value="10"/> sec

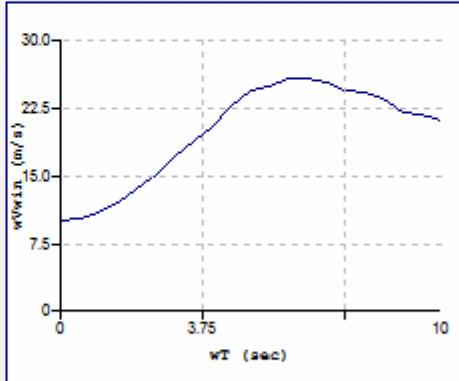
Gust Wind

Gust Peak	Gust Start	Gust Period
<input type="text" value="10"/> m/s	<input type="text" value="1"/> sec	<input type="text" value="10"/> sec

Noise Wind

Surface Drag	Turbulence Scale	Mean Speed
<input type="text" value="0.004"/>	<input type="text" value="610"/> m	<input type="text" value="10"/> m/s
Frequency	N	
<input type="text" value="1.5"/> rad/s	<input type="text" value="50"/>	<input type="button" value="Sample Data"/>

Wind Profile



WTG1

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Wind Turbine Generator - WTG1

Info Rating Imp/Model Turbine Wind **Controller** Inertia Reliability Remarks Comment

4.16 kV 1.3 MW Voltage Control User Defined

Converter Control

Model Type: Type 1 Sample Data

Rc	Xc	Ti	Tr	Tv	Kp
0	0	0.02	0.05	0.05	0.5
Ki	Kpv	Kiv	Qmax	Qmin	Vmax
0.5	20	2	0.3	-0.3	105
Vmin	PFmax	PFmin			
10	100	-100			

Pitch Control

Model Type: Type 1 Sample Data

K	Ts	Rmax	Rmin	theta_max	theta_min
300	0.5	3	-3	27	0
Wmax					
1.2					

WTG1 OK Cancel

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