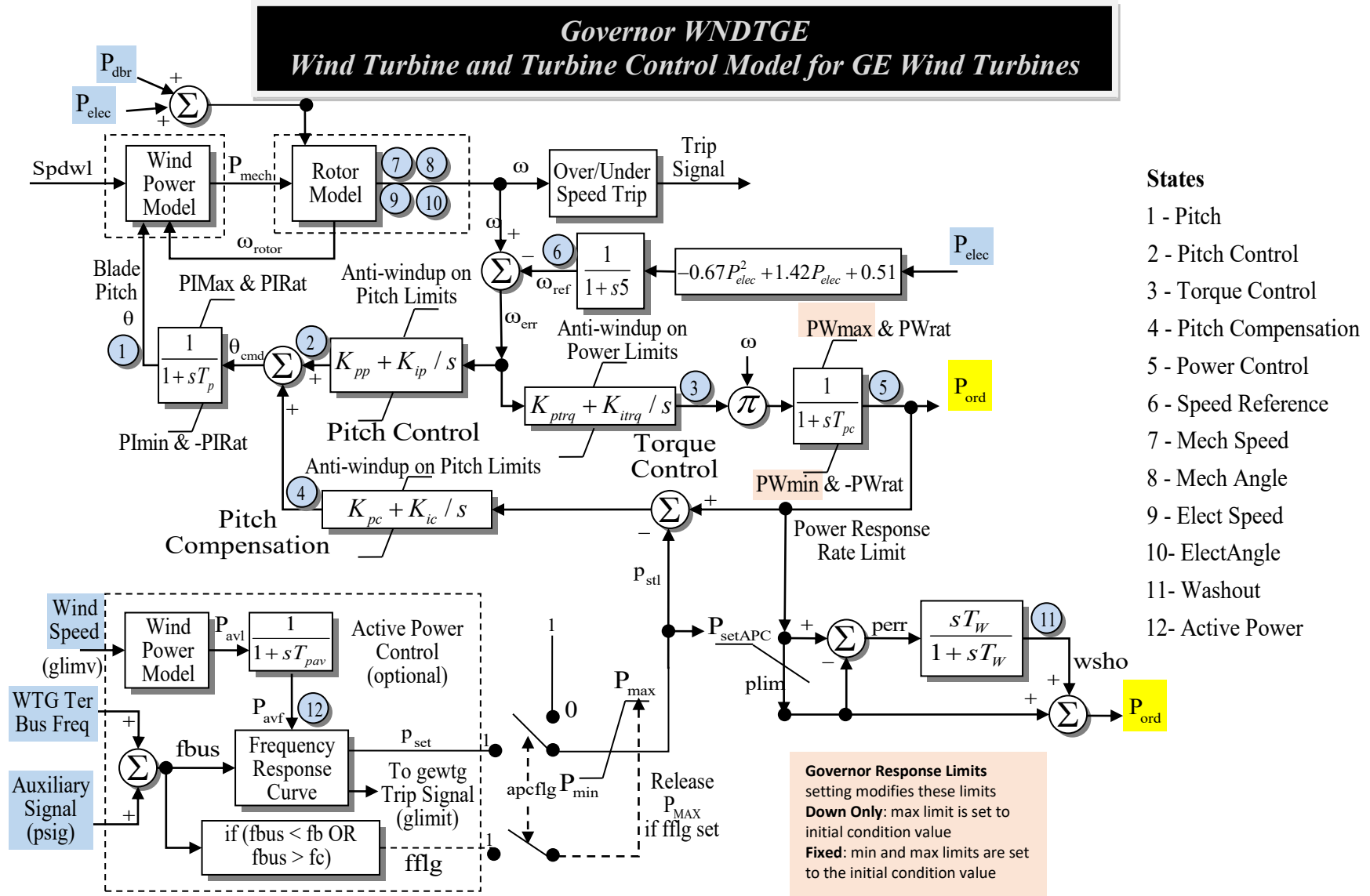


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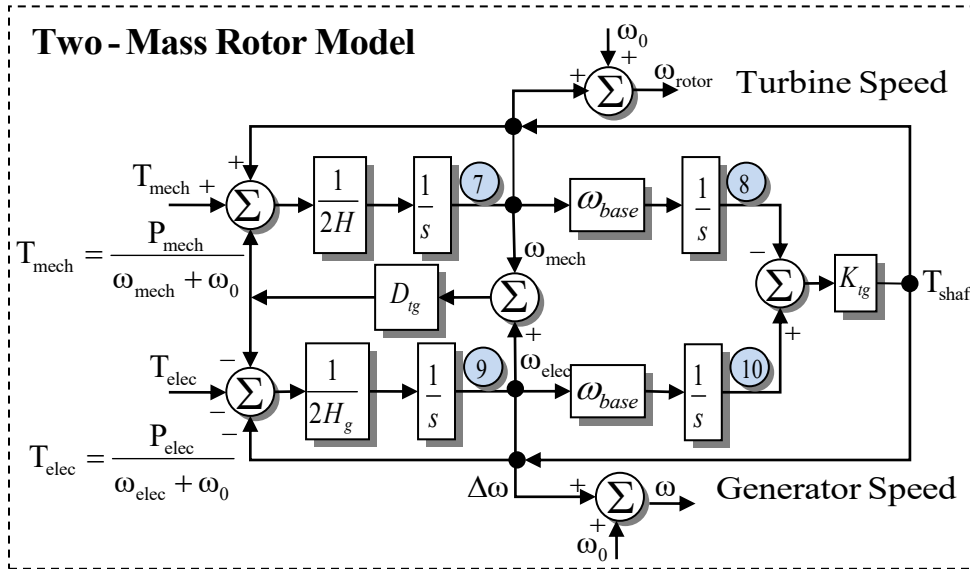


Model supported by PSLF

Apclf is set to zero. Limits on states 2 and 3 and trip signal are not implemented. Simulator calculates initial windspeed Spdwl.

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Wind Turbine and Turbine Control Model for GE Wind Turbines



Wind Power Model

$$P_{mech} = \frac{\rho}{2} A_r v_w^3 C_p(\lambda, \theta)$$

$$\lambda = K_b(\omega / v_w)$$

$$C_p(\lambda, \theta) = \sum_{i=0}^4 \sum_{j=0}^4 \alpha_{ij} \theta^i \lambda^j$$

See charts for curve fit values

Model supported by PSLF

Parameters:

Trate	Turbine rating, MW
Usize	WTG unit size (1.5 or 3.6)
Spdwl	Initial wind speed, m/s
Tp	Pitch control constant, sec
Tpc	Power control time constant, sec
Kpp	Pitch control proportional gain
Kip	Pitch control integral gain
Kptrq	Torque control proportional gain
Kitrq	Torque control integral gain
Kpc	Pitch compensation proportional gain
Kic	Pitch compensation integral gain
PIMax	Maximum blade pitch, deg
PIMin	Minimum blade pitch, deg
PIRat	Blade pitch rate limit, deg/sec
PWmax	Maximum power order, pu
PWmin	Minimum power order, pu
PWrat	Power order rate limit, pu/sec
H	Rotor inertia constant, p.u. (on turbine MW base)
Nmass	2 for 2 mass model
Hg	Generator rotor inertia constant, p.u. (on turb. MW base)
Ktg	Shaft stiffness (p.u. torque / rad)
Dtg	Shaft damping (p.u. torque / p.u. speed)
Wbase	Base mechanical speed (rad./sec.)
Tw	Rate limit washout time constant, sec.
Apcflg	Active power control enable flag
Tpav	Filter time constant on Pavail, sec.
Pa	Active power point in frequency response curve, p.u.
Pbc	Active power point in frequency response curve, p.u.
Pd	Active power point in frequency response curve, p.u.
Fa	Frequency value for Pa frequency response curve, p.u.
Fb	Frequency value for Pbc frequency response curve, p.u.
Fc	Frequency value for Pbc frequency response curve, p.u.
Fd	Frequency value for Pd frequency response curve, p.u.
Pmax	Maximum wind plant power, p.u.
Pmin	Minimum wind plant power, p.u.
Kwi	WINENERTIA gain; default=0; typical non-default is 10
dbwi	Deadband, pu
Tlpwi	Low pass filter time constant, sec
Twowi	Washout time constant, sec

urlwi	Up rate limit
drlwi	Down rate limit
Pmxwi	Maximum power output, pu
Pmnwi	Minimum power output, pu
wfflg	WindFREE reactive power function flag (1=enabled)
Td1	Time delay in APC output, sec
Tpset	Filter time constant on Pset, sec