Anexo III-14 Modelos Dinámicos

La Presente hoja de cálculo presenta los diferentes modelos dinámicos de Generadores, Gobernadores, Estabilizadores, Relevadores, Modelo de Máquina Eólica y de SVC utilizados por ETESA en su Base de Datos.

MODELOS DE GENERADORES

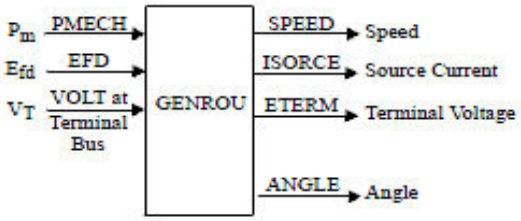
Interpretación:

IBUS	GENROU'	I	T'do	T''do	T'qo	T''qo
6072	'GENROU'	V3	5.1	0.02	0.7	0.1

E.14 GENROU

Round Rotor Generator Model (Quadratic Saturation)

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.
The machine MVA is _____ for each of
_____ units = _____ MBASE.
ZSORCE for this machine is _____ + j _____
on the above MBASE



CONs	#	Value	Description
J			T'_{do} (>0) (sec)
J+1			T''_{do} (>0) (sec)
J+2			T'_{qo} (>0) (sec)
J+3			T''_{qo} (>0) (sec)
J+4			Inertia, H
J+5			Speed damping, D
J+6			X_d
J+7			X_q
J+8			X'_d
J+9			X'_q
J+10			$X''_d = X''_q$
J+11			X_l
J+12			S(1.0)
J+13			S(1.2)

Note: X_d, X_q, X'_d, X'_q, X''_d, X''_q, X_l, H, and D are in pu, machine MVA base.

X''_q must be equal to X''_d.

STATEs	#	Description
K		E'_q
K+1		E'_d
K+2		ψ_{kd}
K+3		ψ_{kq}
K+4		Δ speed (pu)
K+5		Angle (radians)

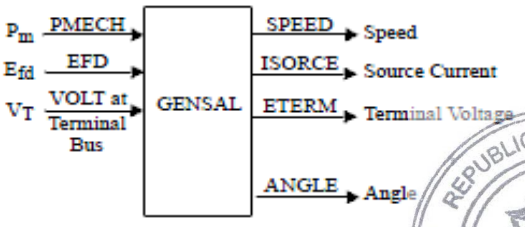
IBUS, 'GENROU', I, T'_{do}, T''_{do}, T'_{qo}, T''_{qo}, H, D, X_d, X_q, X'_d, X'_q, X''_d, X_l, S(1.0), S(1.2)/

IBUS	GENSAL'	I	T'do	T''do	T''qo	H
6127	'GENSAL'	G6	5.3	0.038	0.149	0.971

E.16 GENSAL

Salient Pole Generator Model (Quadratic Saturation on d-Axis)

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.
The machine MVA is _____ for each of units = _____ MBASE.
ZSORCE for this machine is _____ + j _____ on the above MBASE.



CONs	#	Value	Description
J			T'_{do} (>0) (sec)
J+1			T''_{do} (>0) (sec)
J+2			T''_{qo} (>0) (sec)
J+3			Inertia, H
J+4			Speed damping, D
J+5			X_d
J+6			X_q
J+7			X'_d
J+8			$X''_d = X''_q$
J+9			X_l
J+10			S(1.0)
J+11			S(1.2)

Note: X_d, X_q, X'_d, X''_d, X''_q, X_l, H, and D are in pu, machine MVA base.

X''_q must be equal to X''_d.

STATEs	#	Description
K		E'_q
K+1		ψkd
K+2		ψ''_q
K+3		Δ speed (pu)
K+4		Angle (radians)

IBUS, 'GENSAL', I, T'_{do}, T''_{do}, T''_{qo}, H, D, X_d, X_q, X'_d, X''_d, X_l, S(1.0), S(1.2)/

Información de Base de Datos:

6071	'GENROU'	V2	5.1	0.02	0.7	0.1
6072	'GENROU'	V3	5.1	0.02	0.7	0.1
6073	'GENROU'	V4	5.1	0.02	0.7	0.1
6075	'GENROU'	J5	8	0.05	0.7	0.1
6076	'GENROU'	J6	8	0.05	0.7	0.1
6077	'GENROU'	T8	5.936	0.022	0.541	0.045
6078	'GENROU'	V9	6.5	0.023	0.7	0.1
6104	'GENROU'	CO	7	0.025	0.6	0.05
6113	'GENROU'	G1	8.8	0.04	0.7	0.1
6114	'GENROU'	G2	8.8	0.04	0.7	0.1
6127	'GENSAL'	G6	5.3	0.038	0.149	0.971
6128	'GENROU'	G3	5	0.05	0.7	0.1
6129	'GENROU'	G4	5	0.05	0.7	0.1
6130	'GENROU'	G5	5	0.05	0.7	0.1

6090	'GENSAL'	E1	7	0.06	0.09	2.44
6091	'GENSAL'	E2	7	0.06	0.09	2.44
6094	'GENSAL'	L1	7	0.06	0.09	2.44
6095	'GENSAL'	L2	7	0.06	0.09	2.44
6097	'GENSAL'	F1	9	0.06	0.09	4.5
6098	'GENSAL'	F2	9	0.06	0.09	4.5
6099	'GENSAL'	F3	9	0.06	0.09	4.5
6101	'GENSAL'	B1	4	0.02	0.02	2.69
6102	'GENSAL'	B2	4	0.02	0.02	2.69
6106	'GENSAL'	M1	4.6	0.035	0.031	0.93
6106	'GENSAL'	M2	4.6	0.035	0.031	0.93
6106	'GENSAL'	M3	4.6	0.035	0.031	0.93
6107	'GENSAL'	M4	4.6	0.035	0.031	0.93
6107	'GENSAL'	M5	4.6	0.035	0.031	0.93
6107	'GENSAL'	M6	4.6	0.035	0.031	0.93
6110	'GENSAL'	B3	5	0.07	0.08	2.96
6134	'GENSAL'	G1	5	0.02	0.09	1.398
6135	'GENSAL'	G2	5	0.02	0.09	1.398
6136	'GENSAL'	G3	5	0.02	0.09	1.398
6140	'GENSAL'	G1	5	0.02	0.09	2.233
6140	'GENSAL'	G2	5	0.02	0.09	2.233
6140	'GENSAL'	G3	5	0.02	0.09	2.233
6140	'GENSAL'	G4	5	0.02	0.09	2.21
6140	'GENSAL'	G5	5	0.02	0.09	1.991
6140	'GENSAL'	G6	5	0.02	0.09	1.991
6155	'GENSAL'	G7	6.428	0.04244	0.1555	0.83
6155	'GENSAL'	G8	6.428	0.04244	0.1555	0.83
6156	'GENSAL'	G1	5.3	0.038	0.149	0.971
6157	'GENSAL'	G2	5.3	0.038	0.149	0.971
6172	'GENSAL'	P1	5.3	0.038	0.149	0.971
6172	'GENSAL'	P2	5.3	0.038	0.149	0.781
6172	'GENSAL'	P3	5.3	0.038	0.149	0.971
6176	'GENSAL'	E1	5.65	0.08	0.16	3.18
6177	'GENSAL'	E2	5.65	0.08	0.16	3.18
6264	'GENSAL'	G1	7.1	0.14	0.27	3.59
6265	'GENSAL'	G2	7.1	0.14	0.27	3.59
6268	'GENSAL'	G3	5	0.02	0.09	1.398
6271	'GENSAL'	G1	6.2	0.029	0.12	0.82
6271	'GENSAL'	G2	6.2	0.029	0.12	0.82
6271	'GENSAL'	G3	6.2	0.029	0.12	0.82
6271	'GENSAL'	G4	6.2	0.029	0.12	0.82
6271	'GENSAL'	G5	6.2	0.029	0.12	0.82
6272	'GENSAL'	G0	6.2	0.029	0.12	0.82
6272	'GENSAL'	G6	6.2	0.029	0.12	0.82
6272	'GENSAL'	G7	6.2	0.029	0.12	0.82
6272	'GENSAL'	G8	6.2	0.029	0.12	0.82
6272	'GENSAL'	G9	6.2	0.029	0.12	0.82
6281	'GENSAL'	G1	2.06	0.0203	0.017	0.93
6281	'GENSAL'	G2	2.06	0.0203	0.017	0.93
6281	'GENSAL'	G3	2.06	0.0203	0.017	0.93

6281	'GENSAL'	G4	2.06	0.0203	0.017	0.93
6282	'GENSAL'	G5	2.06	0.0203	0.017	0.93
6282	'GENSAL'	G6	2.06	0.0203	0.017	0.93
6282	'GENSAL'	G7	2.06	0.0203	0.017	0.93
6282	'GENSAL'	G8	2.06	0.0203	0.017	0.93
6291	'GENROU'	G1	6.566	0.023	0.487	0.049
6292	'GENROU'	G2	3.839	0.032	0.328	0.077
6293	'GENROU'	G3	9	0.032	0.328	0.077
6311	'GENROU'	A1	1.3778	0.0225	0.75	0.0225
6311	'GENROU'	A2	1.3778	0.0225	0.75	0.0225
6321	'GENROU'	M1	7	0.06	0.02	0.09
6321	'GENROU'	M2	7	0.06	0.02	0.09
6333	'GENSAL'	G1	7	0.06	0.09	2.44
6334	'GENSAL'	G2	7	0.06	0.09	2.44
6335	'GENSAL'	G1	7	0.06	0.1	2.44
6336	'GENSAL'	G2	7	0.06	0.1	2.44
6361	'GENSAL'	G1	7	0.06	0.09	3.5
6362	'GENSAL'	G2	7	0.06	0.09	3.5
6364	'GENSAL'	G1	7	0.06	0.09	3.5
6365	'GENSAL'	G2	7	0.06	0.09	3.5
6367	'GENSAL'	G1	7	0.06	0.09	3.5
6368	'GENSAL'	G2	7	0.06	0.09	3.5
6384	'GENSAL'	G1	3.8412	0.0338	0.1598	2.44
6384	'GENSAL'	G2	3.8412	0.0338	0.1598	2.44
6385	'GENSAL'	G1	3.5476	0.0257	0.1087	2.44
6385	'GENSAL'	G2	3.5476	0.0257	0.1087	2.44
6510	'GENSAL'	G1	7	0.06	0.09	2.44
6511	'GENSAL'	G2	7	0.06	0.09	2.44
6520	'GENSAL'	P1	7	0.06	0.09	2.44
6530	'GENSAL'	G1	3.42	0.013	0.022	2.55
6530	'GENSAL'	G2	3.42	0.013	0.022	2.55
6541	'GENSAL'	G1	4.6	0.035	0.031	0.93
6542	'GENSAL'	G2	4.6	0.035	0.031	0.93
6543	'GENSAL'	G3	4.6	0.035	0.031	0.93
6544	'GENSAL'	G4	4.6	0.035	0.031	0.93
6545	'GENSAL'	G5	4.6	0.035	0.031	0.93
6546	'GENSAL'	G6	4.6	0.035	0.031	0.93
6552	'GENSAL'	G1	4.6	0.035	0.031	0.93
6553	'GENSAL'	G2	4.6	0.035	0.031	0.93
6554	'GENSAL'	G3	4.6	0.035	0.031	0.93
6555	'GENSAL'	G4	4.6	0.035	0.031	0.93
6560	'GENSAL'	G1	7	0.06	0.09	2.44
6570	'GENSAL'	G1	3.5476	0.0257	0.1087	2.44
6570	'GENSAL'	G2	3.5476	0.0257	0.1087	2.44
6600	'GENSAL'	G1	3.42	0.013	0.022	2.55
6621	'GENSAL'	G1	3.42	0.013	0.022	2.55
6621	'GENSAL'	G2	3.42	0.013	0.022	2.55
6623	'GENSAL'	G1	3.42	0.013	0.022	2.55
6623	'GENSAL'	G2	3.42	0.013	0.022	2.55
6631	'GENSAL'	G1	4.9312	0.0489	0.0408	1.124

6631	'GENSAL'	G2	4.9312	0.0489	0.0408	1.124
6641	'GENSAL'	G1	3.42	0.013	0.022	2.55
6641	'GENSAL'	G2	3.42	0.013	0.022	2.55
6651	'GENSAL'	G1	3.42	0.013	0.022	2.55
6661	'GENSAL'	G1	3.42	0.013	0.022	2.55
6671	'GENSAL'	G1	7	0.06	0.09	2.44
6672	'GENSAL'	G2	7	0.06	0.09	2.44
6681	'GENSAL'	G1	7	0.06	0.09	3.5
6682	'GENSAL'	G2	7	0.06	0.09	3.5
6692	'GENSAL'	G1	4.32	0.08	0.22	2.5
6693	'GENSAL'	G2	4.32	0.08	0.22	2.5
6694	'GENSAL'	G3	4.32	0.08	0.22	2.5
6696	'GENSAL'	G1	4.66	0.0387	0.09	1.7
6697	'GENSAL'	G2	4.66	0.0387	0.09	1.7
6699	'GENSAL'	G1	4.66	0.0387	0.09	1.7
6700	'GENSAL'	G2	4.66	0.0387	0.09	1.7
6701	'GENSAL'	G3	4.66	0.0387	0.09	1.7
6711	'GENSAL'	G1	3.42	0.013	0.022	2.55
6721	'GENSAL'	G1	3.42	0.013	0.022	2.55
6721	'GENSAL'	G2	3.42	0.013	0.022	2.55
6731	'GENSAL'	G1	3.42	0.013	0.022	2.55
6731	'GENSAL'	G2	3.42	0.013	0.022	2.55
6741	'GENSAL'	G1	3.42	0.013	0.022	2.55
6741	'GENSAL'	G2	3.42	0.013	0.022	2.55
6750	'GENSAL'	G1	7	0.06	0.09	2.44
6750	'GENSAL'	G2	7	0.06	0.09	2.44
6750	'GENSAL'	G3	7	0.06	0.09	2.44
6763	'GENSAL'	G1	3.42	0.013	0.022	2.55
6763	'GENSAL'	G2	3.42	0.013	0.022	2.55
6765	'GENSAL'	G1	3.42	0.013	0.022	2.55
6765	'GENSAL'	G2	3.42	0.013	0.022	2.55
6767	'GENSAL'	G1	3.42	0.013	0.022	2.55
6767	'GENSAL'	G2	3.42	0.013	0.022	2.55
6769	'GENSAL'	G1	3.42	0.013	0.022	2.55
6769	'GENSAL'	G2	3.42	0.013	0.022	2.55
6771	'GENSAL'	G1	3.42	0.013	0.022	2.55
6771	'GENSAL'	G2	3.42	0.013	0.022	2.55
6781	'GENSAL'	G1	3.42	0.013	0.022	2.55
6781	'GENSAL'	G2	3.42	0.013	0.022	2.55
6791	'GENSAL'	G1	7	0.06	0.09	3.5
6792	'GENSAL'	G2	7	0.06	0.09	3.5
6821	'GENSAL'	G1	3.42	0.013	0.022	2.55
6831	'GENSAL'	G1	3.42	0.013	0.022	2.55
6831	'GENSAL'	G2	3.42	0.013	0.022	2.55
6841	'GENSAL'	G1	4.66	0.0387	0.09	1.7
6842	'GENSAL'	G2	4.66	0.0387	0.09	1.7
6843	'GENSAL'	G3	4.66	0.0387	0.09	1.7
6851	'GENSAL'	G1	3.42	0.013	0.022	2.55
6861	'GENSAL'	G1	7	0.06	0.09	2.44
6861	'GENSAL'	G2	7	0.06	0.09	2.44

6861	'GENSAL'	G3	7	0.06	0.09	2.44
6871	'GENROU'	G1	7	0.06	0.7	0.09
6871	'GENROU'	G2	7	0.06	0.7	0.09
6881	'GENSAL'	G1	7.1	0.14	0.27	3.59
6882	'GENSAL'	G2	7.1	0.14	0.27	3.59
6921	'GENROU'	C1	3.9	0.04	1	0.04
6922	'GENROU'	C2	3.9	0.04	1	0.04
6923	'GENROU'	C1	3.9	0.04	1	0.04
6924	'GENROU'	C2	3.9	0.04	1	0.04

H	D	Xd	Xq	X'd	X'q	X''d
4.45	0	1.41	1.35	0.156	0.6	0.12

D	Xd	Xq	X'd	X''d	Xl	S(1.0)
0	1.53	0.83	0.332	0.223	0.14	0.1

4.45	0	1.41	1.35	0.156	0.6	0.12
4.45	0	1.41	1.35	0.156	0.6	0.12
4.45	0	1.41	1.35	0.156	0.6	0.12
1.45	0	2.01	1.3	0.171	0.6	0.116
1.45	0	2.01	1.3	0.171	0.6	0.116
1.45	0	2.078	1.931	0.188	0.377	0.129
1.887	0	1.72	1.61	0.2	0.6	0.16
1.35	0	2.5	2.3	0.25	0.4	0.2
3	0	2.01	1	0.684	0.8	0.561
3	0	2.01	1	0.684	0.8	0.561
0	1.53	0.83	0.332	0.223	0.14	0.1
3.12	0	1.95	1.89	0.33	0.33	0.15
4.73	0	1.95	1.95	0.3	0.3	0.16
1.45	0	1.8	1.8	0.2	0.2	0.15

1	1.09	0.62	0.2	0.11	0.1	0.1
1	1.09	0.62	0.2	0.11	0.1	0.1
1	1.09	0.62	0.2	0.11	0.1	0.1
1	1.09	0.62	0.2	0.11	0.1	0.1
1	1.02	0.54	0.3	0.155	0.12	0.2
1	1.02	0.54	0.3	0.155	0.12	0.2
1	1.02	0.54	0.3	0.155	0.12	0.2
1	0.99	0.833	0.3452	0.26	0.16	0.19
1	0.99	0.833	0.3452	0.26	0.16	0.19
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
1	0.9	0.57	0.4	0.24	0.1	0.92
1	1.09	0.84	0.47	0.36	0.14	0.19
1	1.09	0.84	0.47	0.36	0.14	0.19
1	1.09	0.84	0.47	0.36	0.14	0.19
1	1.01	0.63	0.33	0.33	0.12	0.19
1	1.01	0.63	0.33	0.33	0.12	0.19
1	1.01	0.63	0.33	0.33	0.12	0.19
1	1.01	0.78	0.38	0.38	0.12	0.19
1	1.1	0.78	0.38	0.38	0.12	0.19
1	1.1	0.78	0.38	0.38	0.12	0.19
0	1.533	0.845	0.325	0.179	0.268	1.156
0	1.533	0.845	0.325	0.179	0.268	1.156
0	1.53	0.83	0.332	0.223	0.14	0.1
0	1.53	0.83	0.332	0.223	0.14	0.1
0	1.53	0.83	0.332	0.223	0.14	0.1
0	1.53	0.83	0.332	0.223	0.14	0.1
0	1.53	0.83	0.332	0.223	0.14	0.1
1	1.05	0.73	0.37	0.3	0.21	1.05
1	1.05	0.73	0.37	0.3	0.21	1.05
1	1.1	0.69	0.3	0.19	0.2	0.2
1	1.1	0.69	0.3	0.19	0.2	0.2
1	1.09	0.84	0.47	0.36	0.14	0.19
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.52	0.768	0.257	0.156	0.122	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1

0	1.53	1.49	0.31	0.22	0.157	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1
0	1.53	1.49	0.31	0.22	0.157	0.1
7.8	0	2.06	1.964	0.271	0.42	0.178
8.1	0	1.87	1.802	0.259	0.596	0.24
2.01	0	1.31	1.802	0.13	0.596	0.1
0.53	0	1.01	1.09	0.29	0.29	0.16
0.53	0	1.01	1.09	0.29	0.29	0.16
0.86	0	1.09	0.62	0.2	0.62	0.11
0.86	0	1.09	0.62	0.2	0.62	0.11
1	1.09	0.62	0.2	0.3	0.1	0.1
1	1.09	0.62	0.2	0.3	0.1	0.1
1	1.09	0.62	0.3	0.3	0.1	0.11
1	1.09	0.62	0.3	0.3	0.1	0.11
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.375	0.828	0.331	0.174	0.1	0.1
1	1.375	0.828	0.331	0.174	0.1	0.1
1	1.283	0.739	0.274	0.182	0.1	0.1
1	1.283	0.739	0.274	0.182	0.1	0.1
1	1.09	0.62	0.2	0.38	0.1	0.1
1	1.09	0.62	0.2	0.38	0.1	0.1
1	1.09	0.62	0.2	0.38	0.1	0.1
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
0	1.46	0.8	0.334	0.2576	0.157	0.1
1	1.09	0.62	0.2	0.38	0.1	0.1
1	1.283	0.739	0.274	0.182	0.1	0.1
1	1.283	0.739	0.274	0.182	0.1	0.1
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
1	1.574	0.938	0.269	0.217	0.907	0.1

1	1.574	0.938	0.269	0.217	0.907	0.1
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
1	1.09	0.62	0.2	0.11	0.1	0.1
1	1.09	0.62	0.2	0.11	0.1	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
0	1.25	0.76	0.31	0.24	0.2	0.08
0	1.25	0.76	0.31	0.24	0.2	0.08
0	1.25	0.76	0.31	0.24	0.2	0.08
1	1.74	1.046	0.425	0.204	0.018	0.1
1	1.74	1.046	0.425	0.204	0.018	0.1
1	1.74	1.046	0.425	0.204	0.018	0.1
1	1.74	1.046	0.425	0.204	0.018	0.1
1	1.74	1.046	0.425	0.204	0.018	0.1
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
1	1.09	0.62	0.2	0.3	0.1	0.1
1	1.09	0.62	0.2	0.3	0.1	0.1
1	1.09	0.62	0.2	0.3	0.1	0.1
0.161	1.557	0.936	0.294	0.19	0.023	1.056
0.161	1.557	0.936	0.294	0.19	0.023	1.056
0.161	1.557	0.936	0.294	0.178	0.023	1.056
0.161	1.557	0.936	0.294	0.178	0.023	1.056
0.16	1.557	0.936	0.294	0.178	0.023	1.056
0.16	1.557	0.936	0.294	0.178	0.023	1.056
0.16	1.557	0.936	0.294	0.178	0.023	1.056
0.16	1.557	0.936	0.294	0.178	0.023	1.056
0.16	1.557	0.936	0.294	0.15	0.023	1.056
0.16	1.557	0.936	0.294	0.15	0.023	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
1	1.09	0.62	0.19	0.3	0.13	0.1
1	1.09	0.62	0.19	0.3	0.13	0.1
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
1	1.74	1.046	0.425	0.204	0.018	0.1
1	1.74	1.046	0.425	0.204	0.018	0.1
1	1.74	1.046	0.425	0.204	0.018	0.1
0.161	1.557	0.936	0.294	0.178	0.02297	1.056
1	1.6	0.62	0.25	0.18	0.16	0.1
1	1.6	0.62	0.25	0.18	0.16	0.1

1	1.6	0.62	0.25	0.18	0.16	0.1
4.88	1	1.09	0.62	0.2	0.2	0.11
4.88	1	1.09	0.62	0.2	0.2	0.11
1	1.1	0.69	0.3	0.19	0.2	0.2
1	1.1	0.69	0.3	0.19	0.2	0.2
3.5	0	2.42	2.22	0.203	0.24	0.146
3.5	0	2.42	2.22	0.203	0.24	0.146
3.5	0	2.42	2.22	0.203	0.24	0.146
3.5	0	2.42	2.22	0.203	0.24	0.146

Xl	S(1.0)	S(1.2)
0.06	0.1	0.5/

S(1.2)
0.5/

0.06	0.1	0.5/
0.06	0.1	0.5/
0.06	0.1	0.5/
0.06	0.1	0.5/
0.06	0.1	0.5/
0.162	0.1	0.5/
0.145	0.1	0.4/
0.06	0.1	0.5/
0.06	0.1	0.5/
0.06	0.1	0.5/
0.5/		
0.055	0.1	0.5/
0.05	0.1	0.5/
0.068	0.1	0.5/

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0.148	0.1	0.5/
0.197	0.1	0.5/
0.1	0.1	0.5/
0.255	0.1	0.4/
0.255	0.1	0.4/
0.1	0.1	0.4/
0.1	0.1	0.4/
0.5/		
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1.393/
0.5/
0.5/

0.5/		
0.025	0.1	0.5/
0.025	0.1	0.5/
0.67/		
0.67/		
0.1	0.086	0.454/
0.1	0.086	0.454/
0.1	0.086	0.454/
0.1	0.086	0.454/

MODELO DE GOBERNADORES

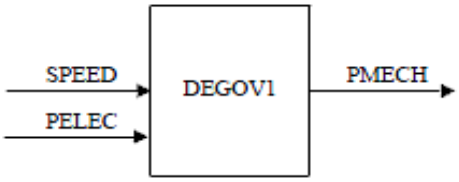
Interpretación:

IBUS	DEGOV1'	I	Droop Control	T1	T2	T3
6106	'DEGOV1'	M1	0	5	0.05	0.95

H.3 DEGOV1

Woodward Diesel Governor

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and ICON #_____ M,
and STATEs starting with #_____ K,
and VARs starting with #_____ L.



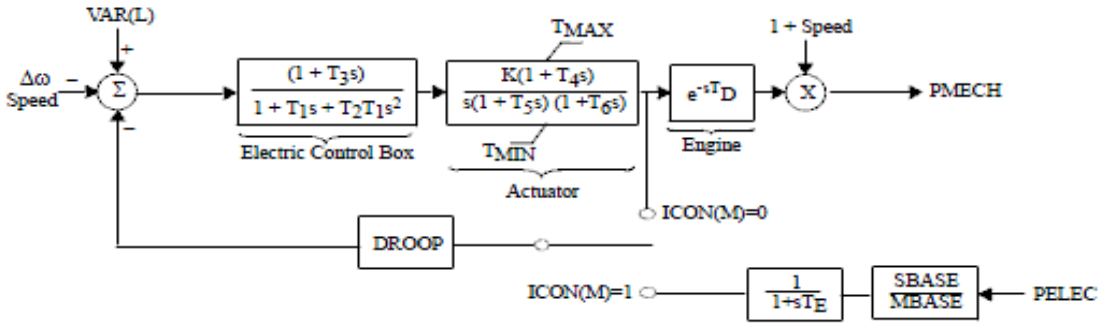
CONs	#	Value	Description	CONs	#	Value	Description
J			T_1 (sec)	J+6			T_6 (sec)
J+1			T_2 (sec)	J+7			T_D ($0 \le T_D \le 12 * DELT$) (sec)
J+2			T_3 (sec)	J+8			T_{MAX}
J+3			K	J+9			T_{MIN}
J+4			T_4 (sec)	J+10			Droop
J+5			T_5 (sec)	J+11			T_E

STATEs	#	Description
K		Electric control box 1
K+1		Electric control box 2
K+2		Actuator 1
K+3		Actuator 2
K+4		Actuator 3
K+5		Power transducer

VARs	#	Description
L		Reference
L+1		Delay table
. . .		
L+13		

ICON	#	Value	Description
M			Droop control: 0 = Throttle feedback 1 = Electric power feedback

IBUS, 'DEGOV1', I, Droop Control, T_1, T_2, T_3, K, T_4, T_5, T_6, T_D, T_{MAX}, T_{MIN}/, Droop, T_E/



IBUS	GAST'	I	R	T1	T2	T3
6075	'GAST'	J5	0.04	0.1	0.1	3

H.4 GAST

Gas Turbine-Governor

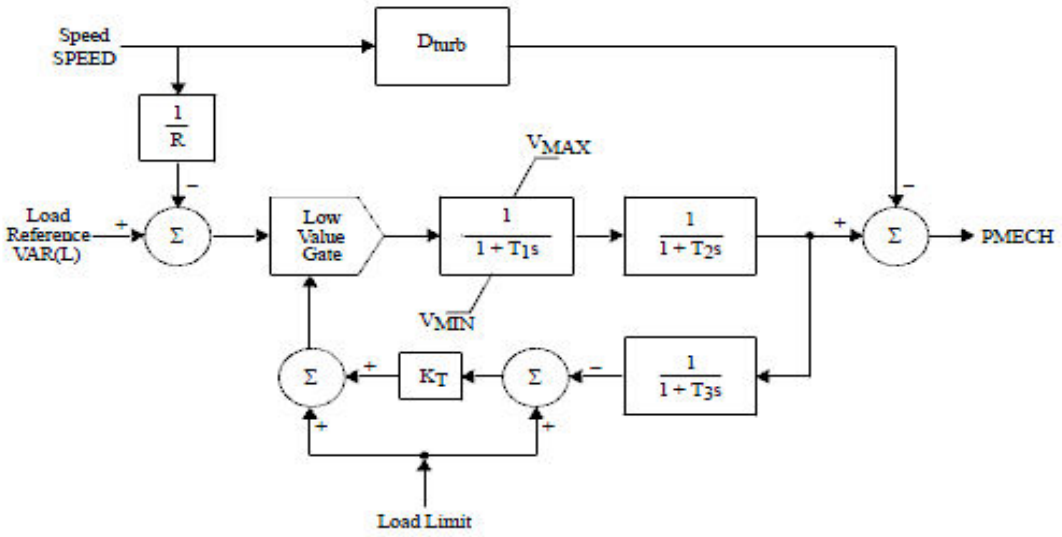
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L.

CONs	#	Value	Description	CONs	#	Value	Description
J			R (speed droop)	J+5			K_T
J+1			T_1 (>0) (sec)	J+6			V_{MAX}
J+2			T_2 (>0) (sec)	J+7			V_{MIN}
J+3			T_3 (>0) (sec)	J+8			D_{turb}
J+4			Ambient temperature load limit, AT				

STATEs	#	Description
K		Fuel valve
K+1		Fuel flow
K+2		Exhaust temperature

VAR	#	Description
L		Load reference

IBUS, 'GAST', I, R, T_1, T_2, T_3, AT, K_T, V_{MAX}, V_{MIN}, D_{turb}/



IBUS	HYGOV'	I	R	r	Tr	Tf
6091	'HYGOV'	E2	0.03	1	16	0.025

H.8 HYGOV

Hydro Turbine Governor

Hydro Turbine-Governor

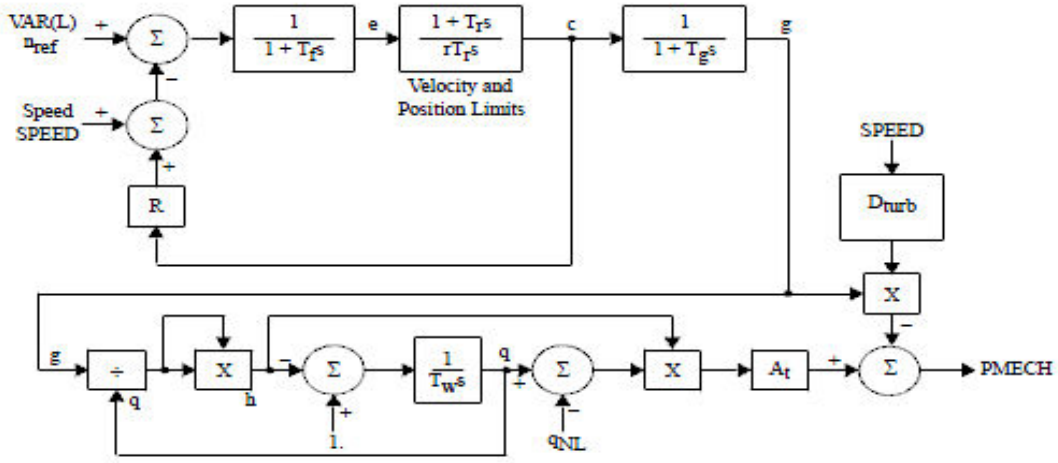
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VARs starting with #_____ L.

CONs	#	Value	Description	CONs	#	Value	Description
J			R, permanent droop	J+6			G_{MAX}, maximum gate limit
J+1			r, temporary droop	J+7			G_{MIN}, minimum gate limit
J+2			T_r (>0) governor time constant	J+8			T_W (>0) water time constant
J+3			T_f (>0) filter time constant	J+9			A_t, turbine gain
J+4			T_g (>0) servo time constant	J+10			D_{turb}, turbine damping
J+5			± VELM, gate velocity limit	J+11			q_{NL}, no load flow

STATEs	#	Description
K		e, filter output
K+1		c, desired gate
K+2		g, gate opening
K+3		q, turbine flow

VARs	#	Description
L		Speed reference
L+1		h, turbine head

IBUS, 'HYGOV', I, R, r, T_r, T_f, T_g, VELM, G_{MAX}, G_{MIN}, T_W, A_t, D_{turb}, q_{NL}/

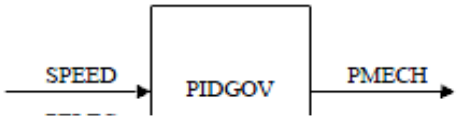


IBUS	PIDGOV'	I	Feedback Signal	Rperm	Treg	Kp
6692	'PIDGOV'	G1	1	0.04	0	3

H.13 PIDGOV

Hydro Turbine and Governor

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,



and ICON #_____ M, PELEC

and STATEs starting with #_____ K,

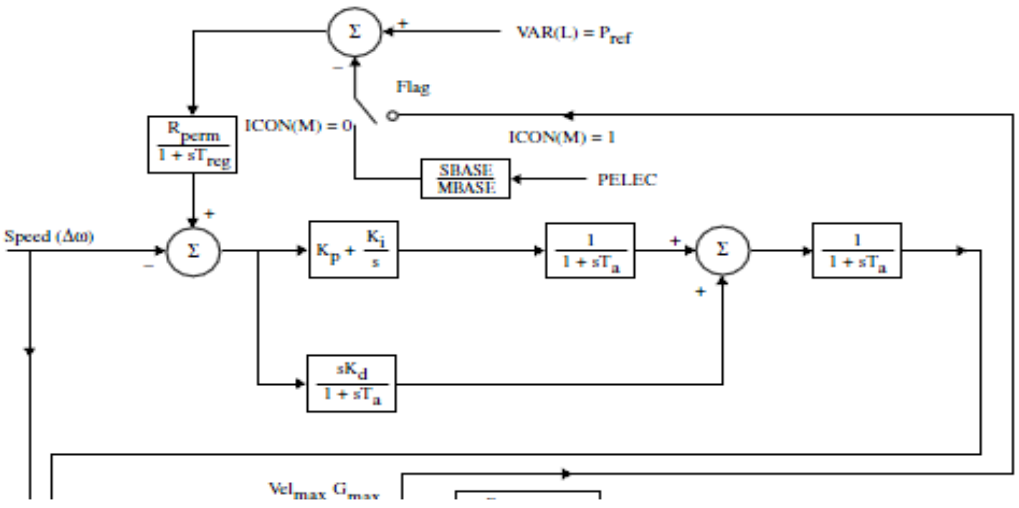
and VARs starting with #_____ L.

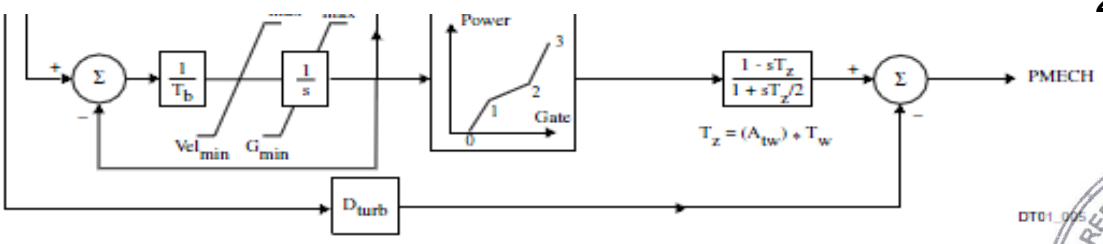
CONs	#	Value	Description
J			R_{perm}, permanent drop, pu
J+1			T_{reg} (sec), speed detector time constant
J+2			K_p, proportional gain, pu/sec
J+3			K_I, reset gain, pu/sec
J+4			K_d, derivative gain, pu
J+5			T_a (sec) > 0, controller time constant
J+6			T_b (sec) > 0, gate servo time constant
J+7			D_{turb}, turbine damping factor, pu
J+8			G_0, gate opening at speed no load, pu
J+9			G_1, intermediate gate opening, pu
J+10			P_1, power at gate opening G_1, pu
J+11			G_2, intermediate gate opening, pu
J+12			P_2, power at gate opening G_2, pu
J+13			P_3, power at full opened gate, pu
J+14			G_{max}, maximum gate opening, pu
J+15			G_{min}, minimum gate opening, pu
J+16			A_{tw} > 0, factor multiplying T_w, pu
J+17			T_w (sec) > 0, water inertia time constant
J+18			Vel_{max}, minimum gate opening velocity, pu/sec
J+19			Vel_{min} < 0, minimum gate closing velocity, pu/sec

STATEs	#	Description
K		Input sensor
K+1		PI controller
K+2		First regulator
K+3		Derivative controller
K+4		Second regulator
K+5		Gate position
K+6		Water inertia

VARs	#		Description
L			Reference
ICONs	**#**	**Value**	**Description**
M			Feedback signal: 0 = Electrical power feedback 1 = Gate position

IBUS, 'PIDGOV', I, Feedback Signal, R_{perm}, T_{reg}, K_p, K_I, K_d, T_a, T_b, D_{turb}, G_0, G_1, P_1, G_2, P_2, P_3, G_{max}, G_{min}, A_{tw}, T_w, Vel_{max}, Vel_{min}/





IBUS	TGOV1'	I	R	T1	Vmax	Vmin
6071	'TGOV1'	V2	0.06	0.05	0.851	0

H.15 TGOV1

Steam Turbine-Governor

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L.

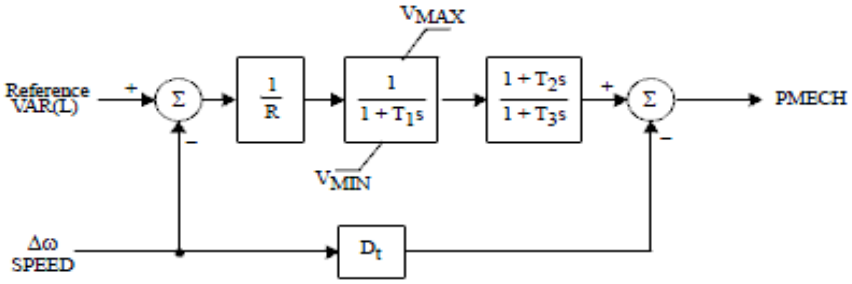
CONs	#	Value	Description
J			R
J+1			T_1 (>0) (sec)
J+2			V_{MAX}
J+3			V_{MIN}
J+4			T_2 (sec)
J+5			T_3 (>0) (sec)
J+6			D_t

Note: V_{MAX}, V_{MIN}, D_t are in per unit on generator base.
T_2/T_3 = high-pressure fraction.
T_3 = reheater time constant.

STATEs	#	Description
K		Valve opening
K+1		Turbine power

VARs	#	Description
L		Reference

IBUS, 'TGOV1', I, R, T_1, V_{MAX}, V_{MIN}, T_2, T_3, D_t/



IBUS	WPIDHY'	I	Treg	REG	Kp	KI

6530	'WPIDHY'	G1	0.01	0.05	0.1	0.05

H.21 WPIDHY

Woodward PID Hydro Governor

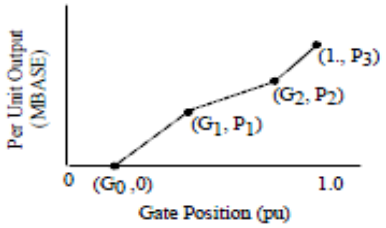
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L.

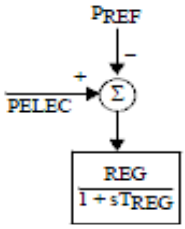
CONs	#	Value	Description	CONs	#	Value	Description
J			T_{REG} (sec)	J+11			T_W (>0) (sec)
J+1			REG	J+12			P_{MAX}
J+2			K_P	J+13			P_{MIN}
J+3			K_I	J+14			D
J+4			K_D	J+15			G_0
J+5			T_A (>0) (sec)	J+16			G_1
J+6			T_B (>0) (sec)	J+17			P_1
J+7			VELMX	J+18			G_2
J+8			VELMN (<0)	J+19			P_2
J+9			GATMX	J+20			P_3
J+10			GATMN				

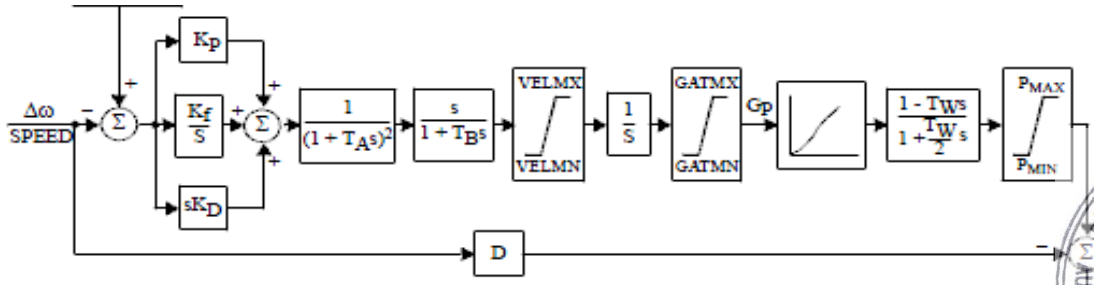
STATEs	#	Description
K		Measured electrical power deviation
K+1		PID controller
K+2		First lag
K+3		Second lag
K+4		Rate
K+5		Gate
K+6		Mechanical power

VAR	#	Description
L		Electrical power reference

IBUS, 'WPIDHY', I, T_{REG}, REG, K_P, K_I, K_D, T_A, T_B, VELMX, VELMN, GATMX, GATMN, T_W, P_{MAX}, P_{MIN}, D, G_0, G_1,P_1, G_2, P_2, P_3/







Información de Base de Datos:

6090	'HYGOV'	E1	0.03	1	16	0.025
6091	'HYGOV'	E2	0.03	1	16	0.025
6094	'HYGOV'	L1	0.03	1	14	0.025
6095	'HYGOV'	L2	0.03	1	14	0.025
6097	'HYGOV'	F1	0.03	0.5	11.8	0.03
6098	'HYGOV'	F2	0.03	0.5	11.8	0.03
6099	'HYGOV'	F3	0.03	0.5	11.8	0.03
6101	'HYGOV'	B1	0.03	0.8	14.5	0.03
6102	'HYGOV'	B2	0.03	0.8	14.5	0.03
6110	'HYGOV'	B3	0.03	0.8	14.5	0.03
6134	'HYGOV'	G1	0.03	1	16	0.025
6135	'HYGOV'	G2	0.03	1	16	0.025
6136	'HYGOV'	G3	0.03	1	16	0.025
6176	'HYGOV'	E1	0.03	0.8	4	0.03
6177	'HYGOV'	E2	0.03	0.8	4	0.03
6071	'TGOV1'	V2	0.06	0.05	0.851	0
6072	'TGOV1'	V3	0.06	0.05	0.851	0
6073	'TGOV1'	V4	0.06	0.05	0.851	0
6128	'TGOV1'	G3	0.03	0.05	0.74	0.327
6129	'TGOV1'	G4	0.03	0.05	0.77	0.1
6078	'TGOV1'	V9	0.06	0.05	0.859	0
6075	'GAST'	J5	0.04	0.1	0.1	3
6076	'GAST'	J6	0.04	0.1	0.1	3
6077	'GAST'	T8	0.04	0.1	0.1	3
6104	'GAST'	CO	0.03	0.015	0.2	5
6113	'GAST'	G1	0.04	0.4	0.1	3
6114	'GAST'	G2	0.04	0.4	0.1	3
6130	'GAST'	G5	0.03	0.01	0.05	3
6106	'DEGOV1'	M1	0	5	0.05	0.95
6106	'DEGOV1'	M2	0	5	0.05	0.95
6106	'DEGOV1'	M3	0	5	0.05	0.95
6107	'DEGOV1'	M4	0	5	0.05	0.95
6107	'DEGOV1'	M5	0	5	0.05	0.95
6107	'DEGOV1'	M6	0	5	0.05	0.95

6127	'DEGOV1'	G6	0	5	0.05	0.95
6155	'DEGOV1'	G7	0	5	0.05	0.95
6155	'DEGOV1'	G8	0	5	0.05	0.95
6156	'DEGOV1'	G1	0	5	0.05	0.95
6157	'DEGOV1'	G2	0	5	0.05	0.95
6172	'DEGOV1'	P1	0	5	0.05	0.95
6172	'DEGOV1'	P2	0	5	0.05	0.95
6172	'DEGOV1'	P3	0	5	0.05	0.95
6264	'HYGOV'	G1	0.05	0.5	10	0.1
6265	'HYGOV'	G2	0.05	0.5	10	0.1
6268	'HYGOV'	G3	0.03	1	16	0.025
6271	'DEGOV1'	G1	0	5	0.05	0.95
6271	'DEGOV1'	G2	0	5	0.05	0.95
6271	'DEGOV1'	G3	0	5	0.05	0.95
6271	'DEGOV1'	G4	0	5	0.05	0.95
6271	'DEGOV1'	G5	0	5	0.05	0.95
6272	'DEGOV1'	G0	0	5	0.05	0.95
6272	'DEGOV1'	G6	0	5	0.05	0.95
6272	'DEGOV1'	G7	0	5	0.05	0.95
6272	'DEGOV1'	G8	0	5	0.05	0.95
6272	'DEGOV1'	G9	0	5	0.05	0.95
6281	'DEGOV1'	G1	1	5	0.05	0.95
6281	'DEGOV1'	G2	1	5	0.05	0.95
6281	'DEGOV1'	G3	1	5	0.05	0.95
6281	'DEGOV1'	G4	1	5	0.05	0.95
6282	'DEGOV1'	G5	1	5	0.05	0.95
6282	'DEGOV1'	G6	1	5	0.05	0.95
6282	'DEGOV1'	G7	1	5	0.05	0.95
6282	'DEGOV1'	G8	1	5	0.05	0.95
6291	'DEGOV1'	G1	0	5	0.05	0.95
6292	'DEGOV1'	G2	0	5	0.05	0.95
6293	'GAST'	G3	0.04	0.05	0.05	3
6321	'HYGOV'	M1	0.03	1	14.28	0.025
6321	'HYGOV'	M2	0.03	1	14.28	0.025
6333	'HYGOV'	G1	0.03	1	14	0.025
6334	'HYGOV'	G2	0.03	1	14	0.025
6335	'HYGOV'	G1	0.04	0.5	14	0.05
6336	'HYGOV'	G2	0.04	0.5	14	0.05
6361	'HYGOV'	G1	0.03	0.8	4	0.03
6362	'HYGOV'	G2	0.03	0.8	4	0.03
6364	'HYGOV'	G1	0.03	0.8	4	0.03
6365	'HYGOV'	G2	0.03	0.8	4	0.03
6367	'HYGOV'	G1	0.03	0.8	4	0.03
6368	'HYGOV'	G2	0.03	0.8	4	0.03
6384	'HYGOV'	G1	0.03	1	14.28	0.025
6384	'HYGOV'	G2	0.03	1	14.28	0.025
6385	'HYGOV'	G1	0.03	0.8	14.28	0.025

6385	'HYGOV'	G2	0.03	0.8	14.28	0.025
6510	'HYGOV'	G1	0.03	1	16	0.025
6511	'HYGOV'	G2	0.03	1	16	0.025
6520	'HYGOV'	P1	0.03	1	16	0.025
6530	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6530	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6541	'DEGOV1'	G1	0	5	0.05	0.95
6542	'DEGOV1'	G2	0	5	0.05	0.95
6543	'DEGOV1'	G3	0	5	0.05	0.95
6544	'DEGOV1'	G4	0	5	0.05	0.95
6545	'DEGOV1'	G5	0	5	0.05	0.95
6546	'DEGOV1'	G6	0	5	0.05	0.95
6552	'DEGOV1'	G1	0	5	0.05	0.95
6553	'DEGOV1'	G2	0	5	0.05	0.95
6554	'DEGOV1'	G3	0	5	0.05	0.95
6555	'DEGOV1'	G4	0	5	0.05	0.95
6560	'HYGOV'	G1	0.03	1	16	0.025
6570	'HYGOV'	G1	0.03	0.8	14.28	0.025
6570	'HYGOV'	G2	0.03	0.8	14.28	0.025
6600	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6621	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6621	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6623	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6623	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6631	'HYGOV'	G1	0.03	0.8	14.28	0.025
6631	'HYGOV'	G2	0.03	0.8	14.28	0.025
6641	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6641	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6651	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6661	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6671	'HYGOV'	G1	0.03	0.8	14.5	0.03
6672	'HYGOV'	G2	0.03	0.8	14.5	0.03
6681	'HYGOV'	G1	0.03	0.8	4	0.03
6682	'HYGOV'	G2	0.03	0.8	4	0.03
6692	'PIDGOV'	G1	1	0.04	0	3
6693	'PIDGOV'	G2	1	0.04	0	3
6694	'PIDGOV'	G3	1	0.04	0	3
6696	'HYGOV'	G1	0.03	0.8	4	0.03
6697	'HYGOV'	G2	0.03	0.8	4	0.03
6699	'HYGOV'	G1	0.03	0.8	4	0.03
6700	'HYGOV'	G2	0.03	0.8	4	0.03
6701	'HYGOV'	G3	0.03	0.8	4	0.03
6711	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6721	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6721	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6731	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6731	'WPIDHY'	G2	0.01	0.05	0.1	0.05

6741	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6741	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6750	'HYGOV'	G1	0.03	1	16	0.025
6750	'HYGOV'	G2	0.03	1	16	0.025
6750	'HYGOV'	G3	0.03	1	16	0.025
6763	'HYGOV'	G1	3.00E-02	1	16	2.50E-02
6763	'HYGOV'	G2	3.00E-02	1	16	2.50E-02
6765	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6765	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6767	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6767	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6769	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6769	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6771	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6771	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6781	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6781	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6791	'HYGOV'	G1	0.03	0.8	4	0.03
6792	'HYGOV'	G2	0.03	0.8	4	0.03
6821	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6831	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6831	'WPIDHY'	G2	0.01	0.05	0.1	0.05
6841	'HYGOV'	G1	0.03	0.8	4	0.03
6842	'HYGOV'	G2	0.03	0.8	4	0.03
6843	'HYGOV'	G3	0.03	0.8	4	0.03
6851	'WPIDHY'	G1	0.01	0.05	0.1	0.05
6861	'HYGOV'	G1	0.03	1	14.28	0.025
6861	'HYGOV'	G2	0.03	1	14.28	0.025
6861	'HYGOV'	G3	0.03	1	14.28	0.025
6871	'HYGOV'	G1	0.03	1	16	0.025
6871	'HYGOV'	G2	0.03	1	16	0.025
6881	'HYGOV'	G1	0.05	0.5	10	0.1
6882	'HYGOV'	G2	0.05	0.5	10	0.1

K	T4	T5	T6	TD	Tmax	Tmin
15	5.1	0.322	0	0.002	0.8	0.387

AT	KT	VMAX	VMIN	Dturb
1	2	0.84	0.05	0.5/

Tg	VELM	GMAX	GMIN	TW	At	Dturb
0.2	0.167	0.88	0.05	2.52	1.05	0.5

Ki	Kd	Ta	Tb	Dturb	G0	G1
0.7	0	0.01	0.02	0	0	0.5

T2	T3	Dt
1	3	0/

KD	TA	TB	VELMX	VELMN	GATMX	GATMN

0	0.02	0.01	0.05	-0.05	1	0.545

0.2	0.167	1	0.005	2.52	1.05	0.5
0.2	0.167	1	0.005	2.52	1.05	0.5
0.2	0.167	1.07	0.005	2.8	1.05	0.5
0.2	0.167	1.07	0.005	2.8	1.05	0.5
0.2	0.167	0.95	0.05	1.85	1.05	0.5
0.2	0.167	0.95	0.05	1.85	1.05	0.5
0.2	0.167	0.95	0.05	1.85	1.05	0.5
1	0.167	0.893	0.266	1.15	1.36	0.5
1	0.167	0.893	0.266	1.15	1.36	0.5
1	0.167	0.87	0.26	1.15	1.36	0.5
0.2	0.167	0.923	0.05	2.52	1.05	0.5
0.2	0.167	0.923	0.05	2.52	1.05	0.5
0.2	0.167	0.923	0.05	2.52	1.05	0.5
0.2	0.167	0.87	0.4	1	1.2	0.5
0.2	0.167	0.87	0.4	1	1.2	0.5
1	3	0/				
1	3	0/				
1	3	0/				
1	3	0/				
1	3	0/				
1	3	0/				
1	2	0.84	0.05	0.5/		
1	2	0.84	0.05	0.5/		
1	2	0.7	0.05	0.5/		
1.05	0.67	0.84	0	0.5/		
1	2	0.69	0.05	0.5/		
1	2	0.69	0.05	0.5/		
1	2	0.7	0.05	0.5/		
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387

15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
0.1	0.167	0.95	0.05	1	1.25	0.5
0.1	0.167	0.95	0.05	1	1.25	0.5
0.2	0.167	0.95	0.05	2.52	1.05	0.5
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.03
15	5.1	0.322	0	0.002	0.8	0.03
15	5.1	0.322	0	0.002	0.8	0.03
15	5.1	0.322	0	0.002	0.8	0.03
15	5.1	0.322	0	0.002	1.2	0.3
15	5.1	0.322	0	0.002	1.2	0.3
15	5.1	0.322	0	0.002	1.2	0.3
15	5.1	0.322	0	0.002	1.2	0.3
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
1	2	1	0.05	0/		
0.2	0.167	0.923	0.05	0.357	1.05	0.5
0.2	0.167	0.923	0.05	0.357	1.05	0.5
0.2	0.167	1.2	0.01	2.8	1.05	0.5
0.2	0.167	1.2	0.01	2.8	1.05	0.5
0.5	0.167	1	0	1	1.2	0
0.5	0.167	1	0	1	1.2	0
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.2	0.167	0.95	0.45	0.357	1.05	0.5

0.2	0.167	0.95	0.45	0.357	1.05	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
15	5.1	0.322	0	0.002	0.8	0.387
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.2	0.167	1	0.25	0.357	1.05	0.5
0.2	0.167	1	0.25	0.357	1.05	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0.2	0.167	0.95	0.45	0.357	1.05	0.5
0.2	0.167	0.95	0.45	0.357	1.05	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
1	0.167	0.95	0.53	1.15	1.36	0.5
1	0.167	0.95	0.53	1.15	1.36	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0.7	0	0.01	0.02	0	0	0.5
0.7	0	0.01	0.02	0	0	0.5
0.7	0	0.01	0.02	0	0	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545

0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0.2	0.167	0.8	0.05	2.52	1.05	0.5
0.2	0.167	0.8	0.05	2.52	1.05	0.5
0.2	0.167	0.8	0.05	2.52	1.05	0.5
0.2	0.167	1	0.00E+00	2.52	1.05	0.5
0.2	0.167	1	0.00E+00	2.52	1.05	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0.2	0.167	0.87	0.45	1	1.2	0.5
0.2	0.167	0.87	0.45	1	1.2	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0	0.02	0.01	0.05	-0.05	1	0.545
0.2	0.17	1	0.45	1	1.2	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0.2	0.17	1	0.45	1	1.2	0.5
0	0.02	0.01	0.05	-0.05	1	0.545
0.2	0.167	1	0.01	0.357	1.05	0.5
0.2	0.167	1	0.01	0.357	1.05	0.5
0.2	0.167	1	0.01	0.357	1.05	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.2	0.167	1.2	0.01	2.52	1.05	0.5
0.1	0.167	0.95	0.05	1	1.25	0.5
0.1	0.167	0.95	0.05	1	1.25	0.5

Droop	TE
0.03	0.05/


REPUBLICA DE PANAMA
AUTORIDAD NACIONAL DE LOS SERVICIOS PUBLICOS

qNL
0.08/

P1	G2	P2	P3	Gmax	Gmin	Atw
0.5	0.75	0.75	1	1	0	1

Tw	Pmax	Pmin	D	G0	G1	P1

1.4	0.954	0.3826	0.161	0.3	0.545	0.4

0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/

0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/

0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.125/	
0.125/	
0.08/	
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.03	0.05/
0.04	0.05/
0.04	0.05/
0.04	0.05/
0.04	0.05/
0.04	0.05/
0.04	0.05/
0.04	0.05/
0.04	0.05/
0.03	0.05/
0.03	0.05/

0.08/
0.08/
0.08/
0.08/
0.1/
0.1/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/
0.08/

0.08/						
0.08/						
0.08/						
0.08/						
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.03	0.05/					
0.08/						
0.08/						
0.08/						
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
0.08/						
0.08/						
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
0.08/						
0.08/						
0.08/						
0.08/						
0.5	0.75	0.75	1	1	0	1
0.5	0.75	0.75	1	1	0	1
0.5	0.75	0.75	1	1	0	1
0.08/						
0.08/						
0.08/						
0.08/						
0.08/						
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4

1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
0.08/						
0.08/						
0.08/						
0.80000E-01/						
0.80000E-01/						
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	0.954	0.383	0.161	0.3	0.545	0.4
1.4	1.5	0.1	0.161	0.3	0.545	0.4
1.4	1.5	0.1	0.161	0.3	0.545	0.4
0.08/						
0.08/						
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
0.08/						
0.08/						
0.08/						
1.4	0.954	0.3826	0.161	0.3	0.545	0.4
0.08/						
0.08/						
0.08/						
0.08/						
0.08/						
0.125/						
0.125/						

Tw	Velmax	Velmin
0.2	0.16	0.0/


REPUBLICA DE PANAMA
AUTORIDAD NACIONAL DE LOS SERVICIOS PUBLICOS

G2	P2	P3

0.827	0.83	1/

0.827	0.83	1/
0.827	0.83	1/

0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/

0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/

0.2	0.16	0.0/
0.2	0.16	0.0/
0.2	0.16	0.0/

0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/

0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1.000/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/
0.827	0.83	1/

MODELO DE EXCITADORES

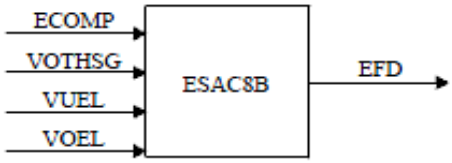
Interpretación:

IBUS	ESAC8B'	I	TR	KP	KI	KD
6106	'ESAC8B'	M1	0	170	130	60

G.7 ESAC8B

Basler DECS

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L.

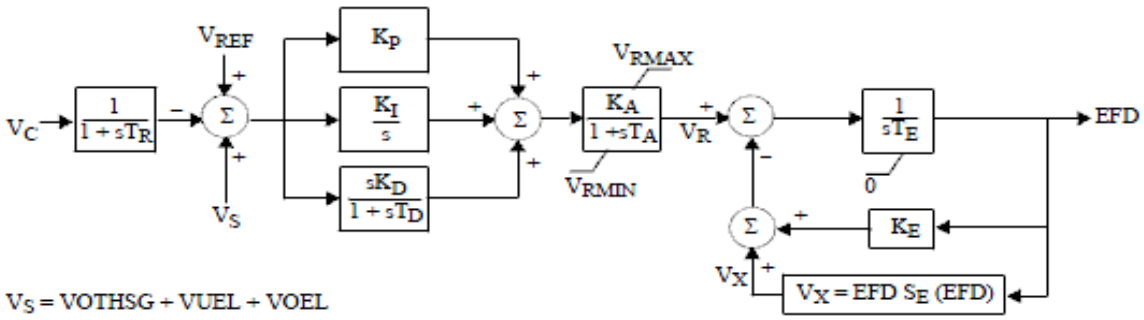


CONs	#	Value	Description	CONs	#	Value	Description
J			T_R (sec)	J+8			V_{RMIN}
J+1			K_P	J+9			$T_E > 0$ (sec)
J+2			K_I	J+10			K_E or zero
J+3			K_D	J+11			E_1
J+4			T_D (sec)	J+12			$S_E(E_1)$
J+5			K_A	J+13			E_2
J+6			T_A	J+14			$S_E(E_2)$
J+7			V_{RMAX} or zero				

STATEs	#	Description
K		Sensed V_T
K+1		Integral controller
K+2		Derivative controller
K+3		Voltage regulator
K+4		Exciter output, EFD

VARs	#	Description
L		K_E

IBUS, 'ESAC8B', I, T_R, K_P, K_I, K_D, T_D, K_A, T_A, V_{RMAX}, V_{RMIN}, T_E, K_E, E_1, $S_E(E_1)$, E_2, $S_E(E_2)$/



V_S = VOTHSG + VUEL + VOEL

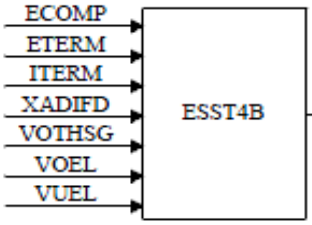
IBUS	ESST4B'	I	TR	Kpr	Kir	VRMAX

6077	'ESST4B'	T8	0	3.38	3.38	1

G.13 ESST4B

IEEE Type ST4B Potential or Compounded Source-Controlled Rectifier Exciter

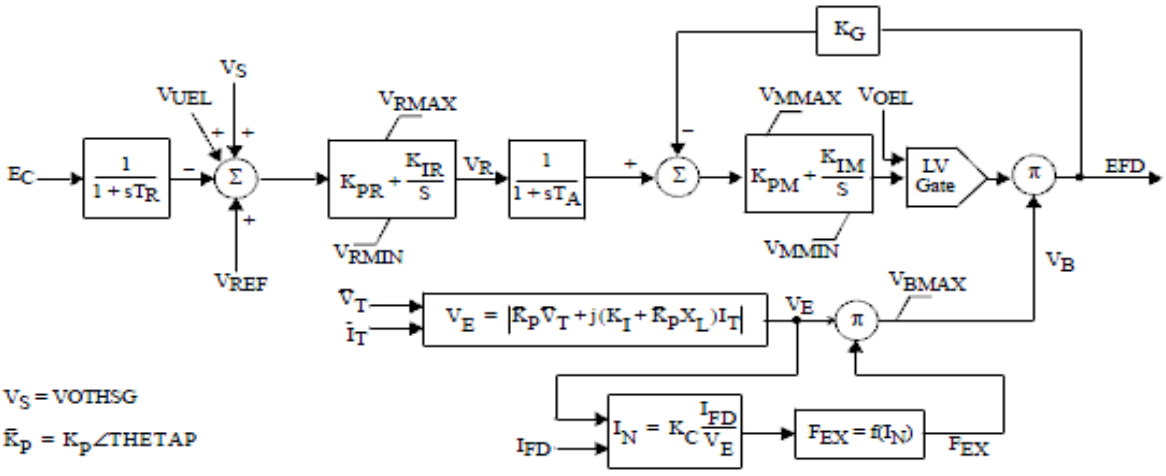
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.

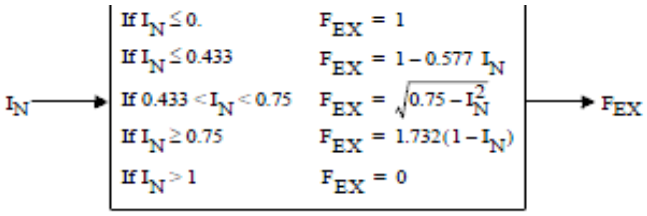


CONs	#	Value	Description	CONs	#	Value	Description
J			T_R (sec)	J+9			V_{MMIN}
J+1			K_{PR}	J+10			K_G
J+2			K_{IR}	J+11			K_P
J+3			V_{RMAX}	J+12			K_I
J+4			V_{RMIN}	J+13			V_{BMAX}
J+5			T_A (sec)	J+14			K_C
J+6			K_{PM}	J+15			X_L
J+7			K_{IM}	J+16			THETAP
J+8			V_{MMAX}				

STATEs	#	Description
K		Sensed V_T
K+1		Regulator integrator
K+2		Regulator output, V_R
K+3		V_M

IBUS, 'ESST4B', I, T_R, K_{PR}, K_{IR}, V_{RMAX}, V_{RMIN}, T_A, K_{PM}, K_{IM}, V_{MMAX}, V_{MMIN}, K_G, K_P, K_I, V_{BMAX}, K_C, X_L, THETAP/



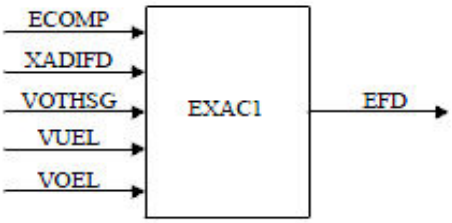


IBUS	EXAC1'	I	TR	TB	TC	KA
6104	'EXAC1'	CO	0	1	1	4000

G.15 EXAC1

IEEE Type AC1 Excitation System

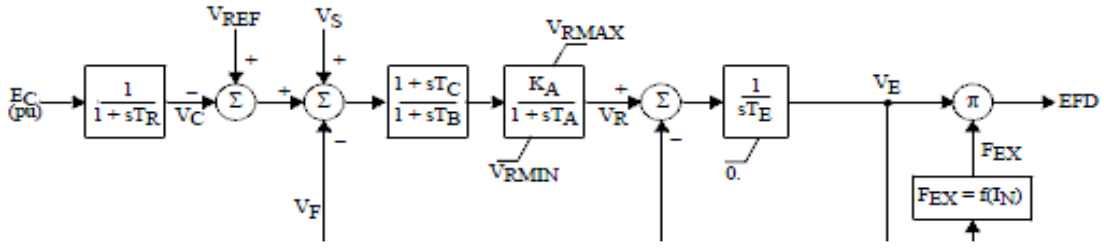
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.

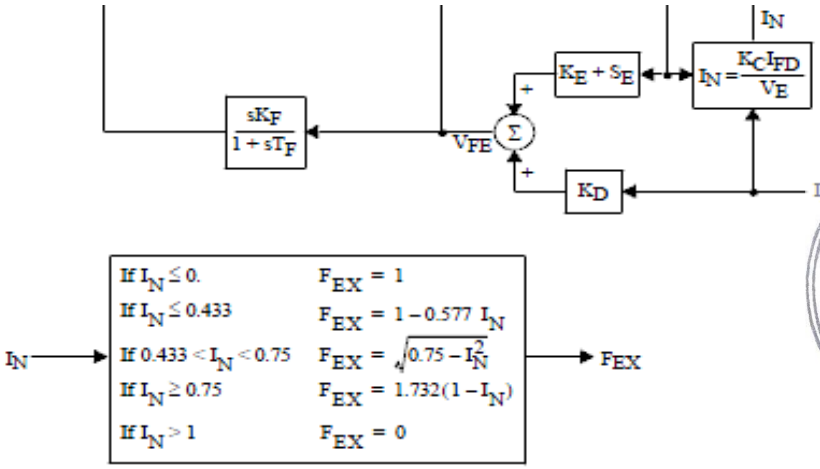


CONs	#	Value	Description	CONs	#	Value	Description
J			T_R (sec)	J+9			$T_F > 0$ (sec)
J+1			T_B (sec)	J+10			K_C
J+2			T_C (sec)	J+11			K_D
J+3			K_A	J+12			K_E
J+4			T_A (sec)	J+13			E_1
J+5			V_{RMAX}	J+14			$S_E(E_1)$
J+6			V_{RMIN}	J+15			E_2
J+7			$T_E > 0$ (sec)	J+16			$S_E(E_2)$
J+8			K_F				

STATEs	#	Description
K		Sensed E_T
K+1		Lead lag
K+2		Regulator output
K+3		V_E
K+4		Feedback output

IBUS, 'EXAC1', I, T_R, T_B, T_C, K_A, T_A, V_{RMAX}, V_{RMIN}, T_E, K_F, T_F, K_C, K_D, K_E, E_1, $S_E(E_1)$, E_2, $S_E(E_2)$/





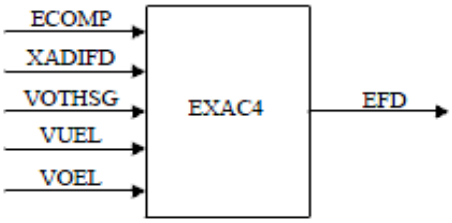
$V_S = VOTHSG + VUEL + VOEL$

IBUS	EXAC4'	I	TR	VIMAX	VIMIN	TC
6078	'EXAC4'	V9	0	0.2	-0.2	1.149

G.19 EXAC4

IEEE Type AC4 Excitation System

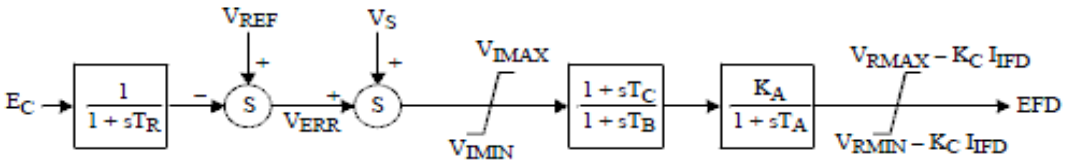
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.



CONs	#	Value	Description
J			T_R
J+1			V_{IMAX}
J+2			V_{IMIN}
J+3			T_C
J+4			T_B (sec)
J+5			K_A
J+6			T_A
J+7			V_{RMAX}
J+8			V_{RMIN}
J+9			K_C

STATEs	#	Description
K		$V_{measured}$
K+1		Lead lag
K+2		V_R

IBUS, 'EXAC4', I, T_R, V_{IMAX}, V_{IMIN}, T_C, T_B, K_A, T_A, V_{RMAX}, V_{RMIN}, K_C/



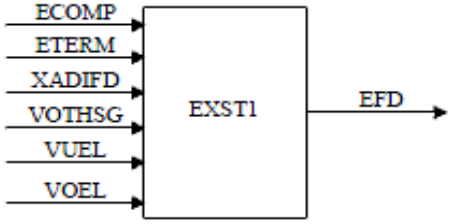
VS = VOTHSG + VUEL + VOEL

IBUS	EXST1'	I	TR	VIMAX	VIMIN	TC
6090	'EXST1'	E1	0.025	3	-3	0.005

G.24 EXST1

IEEE Type ST1 Excitation System

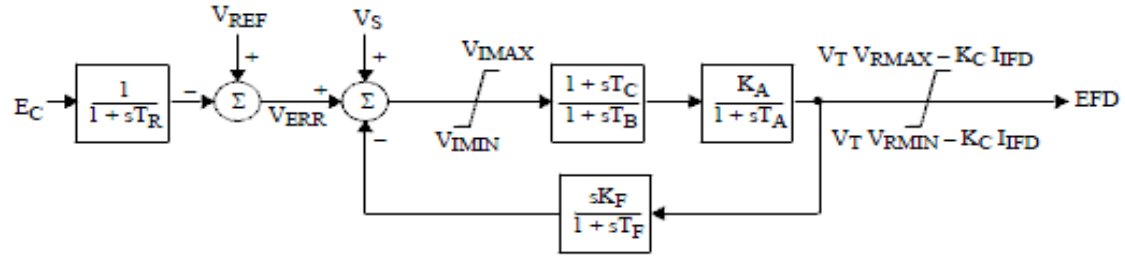
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.



CONs	#	Value	Description	CONs	#	Value	Description
J			T_R	J+6			T_A (sec)
J+1			V_{IMAX}	J+7			V_{RMAX}
J+2			V_{IMIN}	J+8			V_{RMIN}
J+3			T_C	J+9			K_C
J+4			T_B (sec)	J+10			K_F
J+5			K_A	J+11			T_F (> 0) (sec)

STATEs	#	Description
K		$V_{measured}$
K+1		Lead lag
K+2		V_R
K+3		Feedback

IBUS, 'EXST1', I, T_R, V_{IMAX}, V_{IMIN}, T_C, T_B, K_A, T_A, V_{RMAX}, V_{RMIN}, K_C, K_F, T_F



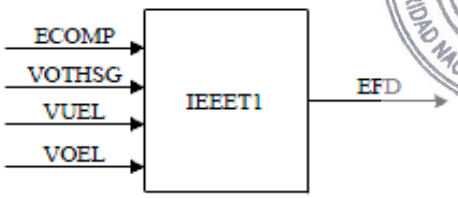
VS = VOTHSG + VUEL + VOEL

IBUS	IEEET1'	I	TR	KA	TA	VRMAX
6072	'IEEET1'	V3	0	126.37	1	2

G.28 IEEET1

IEEE Type 1 Excitation System

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L.

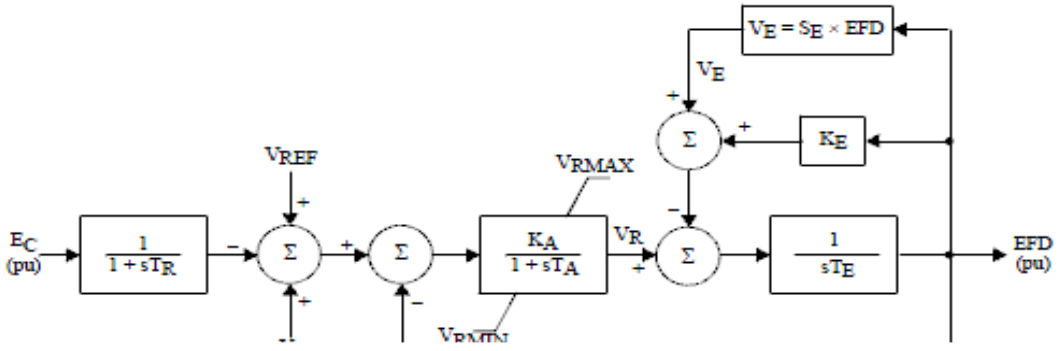


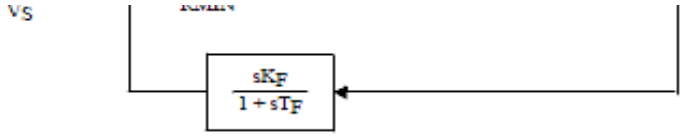
CONs	#	Value	Description
J			T_R (sec)
J+1			K_A
J+2			T_A (sec)
J+3			V_{RMAX} or zero
J+4			V_{RMIN}
J+5			K_E or zero
J+6			T_E (>0) (sec)
J+7			K_F
J+8			T_F (>0) (sec)
J+9		0	Switch
J+10			E_1
J+11			$S_E(E_1)$
J+12			E_2
J+13			$S_E(E_2)$

STATEs	#	Description
K		Sensed V_T
K+1		Regulator output, V_R
K+2		Exciter output, EFD
K+3		Rate feedback integrator

VARs	#	Description
L		K_E

IBUS, 'IEEET1', I, T_R, K_A, T_A, V_{RMAX}, V_{RMIN}, K_E, T_E, K_F, T_F, 0., E_1, $S_E(E_1)$, E_2, $S_E(E_2)$/





$V_S = VOTHSG + VUEL + VOEL$

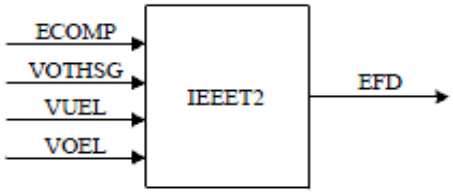
Note: S_E is the saturation function

IBUS	IEEET2'	I	TR	KA	TA	VRMAX
6075	'IEEET2'	J5	0.025	400	0.1	6.59

G.29 IEEET2

IEEE Type 2 Excitation System

This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L.

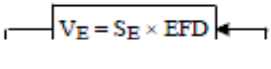


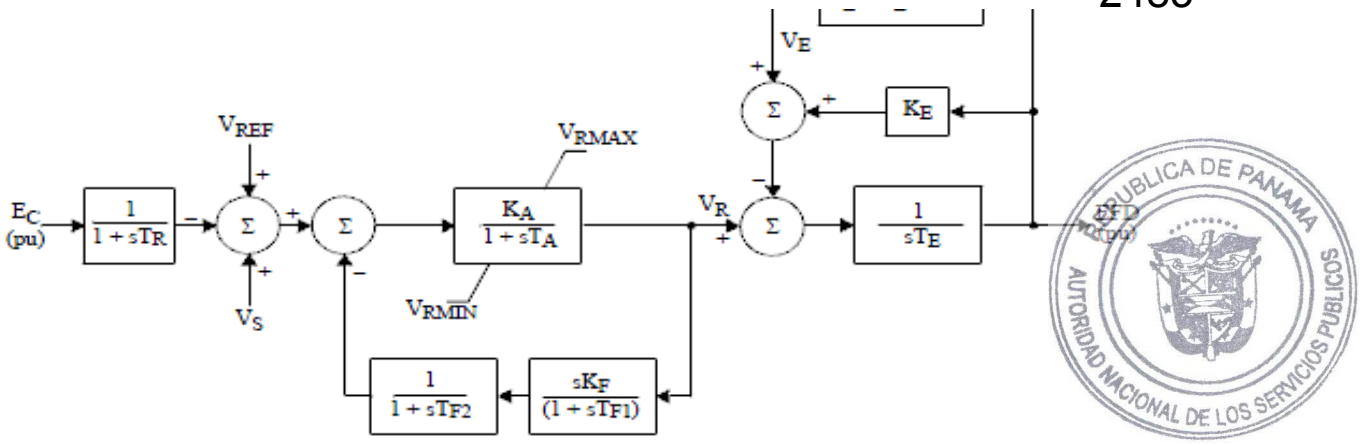
CONs	#	Value	Description
J			T_R (sec)
J+1			K_A
J+2			T_A (sec)
J+3			V_{RMAX} or zero
J+4			V_{RMIN}
J+5			K_E
J+6			T_E (>0) (sec)
J+7			K_F
J+8			T_{F1} (>0) (sec)
J+9			T_{F2} (>0) (sec)
J+10			E_1
J+11			$S_E(E_1)$
J+12			E_2
J+13			$S_E(E_2)$

STATEs	#	Description
K		Sensed V_T
K+1		Regulator output, V_R
K+2		Exciter output, EFD
K+3		First feedback integrator
K+4		Second feedback integrator

VARs	#	Description
L		K_E

IBUS, 'IEEET2', I, T_R, K_A, T_A, V_{RMAX}, V_{RMIN}, K_E, T_E, K_F, T_{F1}, T_{F2}, E_1, $S_E(E_1)$, E_2, $S_E(E_2)$/





$V_S = VOTHSG + VUEL + VOEL$

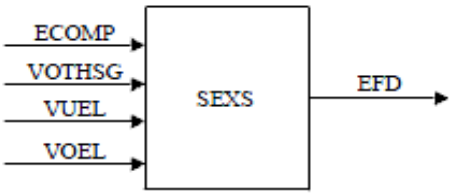
Note: S_E is the saturation function.

IBUS	SEXS'	I	TA/TB	TB	K	TE
6113	'SEXS'	G1	0.1	10	100	0.05

G.42 SEXS

Simplified Excitation System

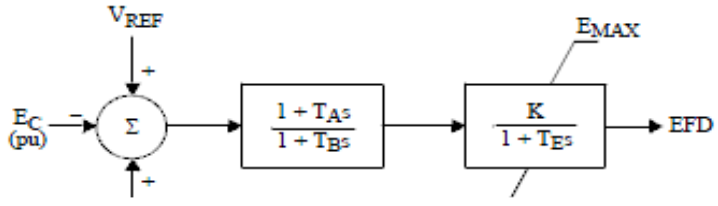
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.



CONs	#	Value	Description
J			T_A/T_B
J+1			T_B (>0) (sec)
J+2			K
J+3			T_E (sec)
J+4			E_{MIN} (pu on EFD base)
J+5			E_{MAX} (pu on EFD base)

STATEs	#	Description
K		First integrator
K+1		Second integrator

IBUS, 'SEXS', I, T_A/T_B, T_B, K, T_E, E_{MIN}, E_{MAX}/



V_S E_{MIN}

$V_S = VOTHSG + VUEL + VOEL$

Información de Base de Datos:

6071	'IEEET1'	V2	0	217.03	1	2
6072	'IEEET1'	V3	0	126.37	1	2
6073	'IEEET1'	V4	0	126.37	1	2
6281	'IEEET1'	G1	0	200	0.014	7.3
6281	'IEEET1'	G2	0	200	0.014	7.3
6281	'IEEET1'	G3	0	200	0.014	7.3
6281	'IEEET1'	G4	0	200	0.014	7.3
6282	'IEEET1'	G5	0	400	0.02	7.3
6282	'IEEET1'	G6	0	400	0.02	7.3
6282	'IEEET1'	G7	0	400	0.02	7.3
6282	'IEEET1'	G8	0	400	0.02	7.3
6075	'IEEET2'	J5	0.025	400	0.1	6.59
6076	'IEEET2'	J6	0.025	400	0.1	6.59
6090	'EXST1'	E1	0.025	3	-3	0.005
6091	'EXST1'	E2	0.025	3	-3	0.005
6094	'EXST1'	L1	0.025	3	-3	0.005
6095	'EXST1'	L2	0.025	3	-3	0.005
6097	'EXST1'	F1	0.025	3	-3	1
6098	'EXST1'	F2	0.025	3	-3	1
6099	'EXST1'	F3	0.025	3	-3	1
6101	'EXST1'	B1	0.025	3	-3	0.005
6102	'EXST1'	B2	0.025	3	-3	0.005
6176	'EXST1'	E1	0.02	10	-10	0.025
6177	'EXST1'	E2	0.02	10	-10	0.025
6110	'EXST1'	B3	0.025	4	-1	0.0075
6106	'ESAC8B'	M1	0	170	130	60
6106	'ESAC8B'	M2	0	170	130	60
6106	'ESAC8B'	M3	0	170	130	60
6107	'ESAC8B'	M4	0	170	130	60
6107	'ESAC8B'	M5	0	170	130	60
6107	'ESAC8B'	M6	0	170	130	60
6155	'ESAC8B'	G7	0	170	130	60
6155	'ESAC8B'	G8	0	170	130	60
6156	'ESAC8B'	G1	0	170	130	60
6157	'ESAC8B'	G2	0	170	130	60
6172	'ESAC8B'	P1	0	170	130	60
6172	'ESAC8B'	P2	0	170	130	60
6172	'ESAC8B'	P3	0	170	130	60
6271	'ESAC8B'	G1	0	100	150	25
6271	'ESAC8B'	G2	0	100	150	25

6271	'ESAC8B'	G3	0	100	150	25
6271	'ESAC8B'	G4	0	100	150	25
6271	'ESAC8B'	G5	0	100	150	25
6272	'ESAC8B'	G0	0	100	150	25
6272	'ESAC8B'	G6	0	100	150	25
6272	'ESAC8B'	G7	0	100	150	25
6272	'ESAC8B'	G8	0	100	150	25
6272	'ESAC8B'	G9	0	100	150	25
6127	'ESAC8B'	G6	0	170	130	60
6077	'ESST4B'	T8	0	3.38	3.38	1
6078	'EXAC4'	V9	0	0.2	-0.2	1.149
6104	'EXAC1'	CO	0	1	1	4000
6113	'SEXS'	G1	0.1	10	100	0.05
6114	'SEXS'	G2	0.1	10	100	0.05
6128	'SEXS'	G3	0.1	10	100	0.05
6129	'SEXS'	G4	0.1	10	100	0.05
6130	'SEXS'	G5	0.1	10	100	0.05
6134	'SEXS'	G1	0.1	10	100	0.05
6135	'SEXS'	G2	0.1	10	100	0.05
6136	'SEXS'	G3	0.1	10	100	0.05
6140	'SEXS'	G1	0.1	10	100	0.05
6140	'SEXS'	G2	0.1	10	100	0.05
6140	'SEXS'	G3	0.1	10	100	0.05
6140	'SEXS'	G4	0.1	10	100	0.05
6140	'SEXS'	G5	0.1	10	100	0.05
6140	'SEXS'	G6	0.1	10	100	0.05
6264	'EXST1'	G1	0.025	3	-3	1
6265	'EXST1'	G2	0.025	3	-3	1
6268	'EXST1'	G3	0.025	3	-3	0.008
6291	'ESAC8B'	G1	0	100	150	25
6292	'ESAC8B'	G2	0	100	150	25
6293	'ESAC8B'	G3	0	100	150	25
6321	'EXST1'	M1	0.025	3	-3	0.005
6321	'EXST1'	M2	0.025	3	-3	0.005
6333	'EXST1'	G1	0.025	3	-3	0.008
6334	'EXST1'	G2	0.025	3	-3	0.008
6335	'EXST1'	G1	0	3	-3	1
6336	'EXST1'	G2	0	3	-3	1
6361	'ESAC8B'	G1	0	100	150	25
6362	'ESAC8B'	G2	0	100	150	25
6364	'ESAC8B'	G1	0	100	150	25
6365	'ESAC8B'	G2	0	100	150	25
6367	'EXST1'	G1	0.025	3	-3	0.008
6368	'EXST1'	G2	0.025	3	-3	0.008
6384	'EXST1'	G1	0.025	3	-3	0.005
6384	'EXST1'	G2	0.025	3	-3	0.005
6385	'EXST1'	G1	0.025	3	-3	0.005

6385	'EXST1'	G2	0.025	3	-3	0.005
6510	'EXST1'	G1	0.025	3	-3	0.008
6511	'EXST1'	G2	0.025	3	-3	0.008
6520	'EXST1'	P1	0.025	3	-3	0.008
6530	'ESAC8B'	G1	0.05	2430	3530	250
6530	'ESAC8B'	G2	0.05	2430	3530	250
6541	'ESAC8B'	G1	0	170	130	60
6542	'ESAC8B'	G2	0	170	130	60
6543	'ESAC8B'	G3	0	170	130	60
6544	'ESAC8B'	G4	0	170	130	60
6545	'ESAC8B'	G5	0	170	130	60
6546	'ESAC8B'	G6	0	170	130	60
6552	'ESAC8B'	G1	0	170	130	60
6553	'ESAC8B'	G2	0	170	130	60
6554	'ESAC8B'	G3	0	170	130	60
6555	'ESAC8B'	G4	0	170	130	60
6560	'EXST1'	G1	0.025	3	-3	0.008
6570	'EXST1'	G1	0.025	3	-3	0.005
6570	'EXST1'	G2	0.025	3	-3	0.005
6600	'ESAC8B'	G1	0.05	2430	3530	250
6621	'ESAC8B'	G1	0.05	2430	3530	250
6621	'ESAC8B'	G2	0.05	2430	3530	250
6623	'ESAC8B'	G1	0.05	2430	3530	250
6623	'ESAC8B'	G2	0.05	2430	3530	250
6631	'EXST1'	G1	0.025	3	-3	0.005
6631	'EXST1'	G2	0.025	3	-3	0.005
6641	'ESAC8B'	G1	0.05	2430	3530	250
6641	'ESAC8B'	G2	0.05	2430	3530	250
6651	'ESAC8B'	G1	0.05	2430	3530	250
6661	'ESAC8B'	G1	0.05	2430	3530	250
6671	'EXST1'	G1	0.025	2	-2	0.008
6672	'EXST1'	G2	0.025	2	-2	0.008
6681	'EXST1'	G1	0.025	3	-3	0.008
6682	'EXST1'	G2	0.025	3	-3	0.008
6692	'ESAC8B'	G1	0	100	150	25
6693	'ESAC8B'	G2	0	100	150	25
6694	'ESAC8B'	G3	0	100	150	25
6696	'ESAC8B'	G1	0	100	150	25
6697	'ESAC8B'	G2	0	100	150	25
6699	'ESAC8B'	G1	0	100	150	25
6700	'ESAC8B'	G2	0	100	150	25
6701	'ESAC8B'	G3	0	100	150	25
6711	'ESAC8B'	G1	0.05	2430	3530	250
6721	'ESAC8B'	G1	0.05	2430	3530	250
6721	'ESAC8B'	G2	0.05	2430	3530	250
6731	'ESAC8B'	G1	0.05	2430	3530	250
6731	'ESAC8B'	G2	0.05	2430	3530	250

6741	'ESAC8B'	G1	0.05	2430	3530	250
6741	'ESAC8B'	G2	0.05	2430	3530	250
6750	'EXST1'	G1	0.025	3	-3	0.008
6750	'EXST1'	G2	0.025	3	-3	0.008
6750	'EXST1'	G3	0.025	3	-3	0.008
6763	'ESAC8B'	G1	0.05	2430	3530	250
6763	'ESAC8B'	G2	0.05	2430	3530	250
6765	'ESAC8B'	G1	0.05	2430	3530	250
6765	'ESAC8B'	G2	0.05	2430	3530	250
6767	'ESAC8B'	G1	0.05	2430	3530	250
6767	'ESAC8B'	G2	0.05	2430	3530	250
6769	'ESAC8B'	G1	0.05	2430	3530	250
6769	'ESAC8B'	G2	0.05	2430	3530	250
6771	'ESAC8B'	G1	0.05	2430	3530	250
6771	'ESAC8B'	G2	0.05	2430	3530	250
6781	'ESAC8B'	G1	0.05	2430	3530	250
6781	'ESAC8B'	G2	0.05	2430	3530	250
6791	'ESAC8B'	G1	0	100	150	25
6792	'ESAC8B'	G2	0	100	150	25
6821	'ESAC8B'	G1	0.05	2430	3530	250
6831	'ESAC8B'	G1	0.05	2430	3530	250
6831	'ESAC8B'	G2	0.05	2430	3530	250
6841	'ESAC8B'	G1	0	100	150	25
6842	'ESAC8B'	G2	0	100	150	25
6843	'ESAC8B'	G3	0	100	150	25
6851	'ESAC8B'	G1	0.05	2430	3530	250
6861	'EXST1'	G1	0.025	3	-3	0.005
6861	'EXST1'	G2	0.025	3	-3	0.005
6861	'EXST1'	G3	0.025	3	-3	0.005
6871	'EXST1'	G1	0.025	3	-3	0.008
6871	'EXST1'	G2	0.025	3	-3	0.008
6881	'EXST1'	G1	0.025	3	-3	1
6882	'EXST1'	G2	0.025	3	-3	1
6921	'IEEET1'	C1	0	120	0.02	5
6922	'IEEET1'	C2	0	120	0.02	5
6923	'IEEET1'	C1	0	120	0.02	5
6924	'IEEET1'	C2	0	120	0.02	5

TD	KA	TA	VRMAX	VRMIN	TE	KE
0.03	1	0	10	0	1	1

VRMIN	TA	KPM	KIM	VMMAX	VMMIN	KG

-0.87	0.01	1	0	1	-0.87	0

TA	VRMAX	VRMIN	TE	KF	TF	KC
0.05	56	0	1.5	0.025	0.4	0.1

TB	KA	TA	VRMAX	VRMIN	KC
22.97	1000	0.002	5.236	-4.189	0/

TB	KA	TA	VRMAX	VRMIN	KC	KF
0.0937	100	0.0027	3	-3	0.02	0.1

VRMIN	KE	TE	KF	TF	0	E1
0	1	0.8	0.078	0.726	0	2.4

VRMIN	KE	TE	KF	TF1	TF2	E1
0	1	1.3	0.05	0.8	1.3	2.4

EMIN	EMAX
0	4/

0	1	0.8	0.078	0.726	0	2.4
0	1	0.8	0.078	0.726	0	2.4
0	1	0.8	0.078	0.726	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
-6.6	0.8	0.8	0.02	0.8	0	2.4
0	1	1.3	0.05	0.8	1.3	2.4
0	1	1.3	0.05	0.8	1.3	2.4
0.0937	100	0.0027	3	-3	0.02	0.1
0.0937	100	0.0027	3	-3	0.02	0.1
0.0937	80	0.0027	3	-3	0.02	0.1
0.0937	80	0.0027	3	-3	0.02	0.1
5	60	0.00133	6	-5.3	0	0
5	60	0.00133	6	-5.3	0	0
5	60	0.00133	6	-5.3	0	0
0.088	60	0.00133	6	-5.3	0.02	0.1
0.088	60	0.00133	6	-5.3	0.02	0.1
0.1	30	0.05	3.5	-3.1	0.06	0.1
0.1	30	0.05	3.5	-3.1	0.06	0.1
0.05	50	0.005	10	-10	0.02	0.1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1

0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
-0.87	0.01	1	0	1	-0.87	0
22.97	1000	0.002	5.236	-4.189	0/	
0.05	56	0	1.5	0.025	0.4	0.1
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
0	4/					
5	60	0.00133	6	-5.3	0	0
5	60	0.00133	6	-5.3	0	0
0.088	80	0.003	3	-3	0.02	0.01
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066
0.088	80	0.0027	3	-3	0.02	0.1
0.088	80	0.0027	3	-3	0.02	0.1
1	180	0.025	5	-5	0	0.002
1	180	0.025	5	-5	0	0.002
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.088	80	0.003	3	-3	0.02	0.01
0.088	80	0.003	3	-3	0.02	0.01
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066

0.0937	80	0.0027	3	-3	0.02	0.066
0.088	100	0.0027	3	-3	0.02	0.1
0.088	100	0.0027	3	-3	0.02	0.1
0.088	100	0.0027	3	-3	0.02	0.1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.088	100	0.0027	3	-3	0.02	0.1
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.088	50	0.002	3	-3	0	0
0.088	50	0.002	3	-3	0	0
0.088	80	0.003	3	-3	0.02	0.01
0.088	80	0.003	3	-3	0.02	0.01
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1

0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.088	100	0.0027	3	-3	0.02	0.1
0.088	100	0.0027	3	-3	0.02	0.1
0.088	100	0.0027	3	-3	0.02	0.1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	0.01	0.01	10	-10	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	0.01	0.01	7.53	0	0.2	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	1	0	10	0	1	1
0.03	0.01	0.01	7.53	0	0.2	1
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066
0.0937	80	0.0027	3	-3	0.02	0.066
0.088	100	0.0027	3	-3	0.02	0.1
0.088	100	0.0027	3	-3	0.02	0.1
5	60	0.00133	6	-5.3	0	0
5	60	0.00133	6	-5.3	0	0
-5	0	0.8	0.033	0.53	0	2.47
-5	0	0.8	0.033	0.53	0	2.47
-5	0	0.8	0.033	0.53	0	2.47
-5	0	0.8	0.033	0.53	0	2.47

E1	SE(E1)	E2	SE(E2)
3.8	1.36	4.5	1.5/

KP	KI	VBMAX	KC	KL	THETAP

5.92	0	7.4	0.11	0	2/

KD	KE	E1	SE(E1)	E2	SE(E2)
2	1	9	0.001	10	0.01/

TF
1.5/

SE(E1)	E2	SE(E2)
0.03	5	0.5/

SE(E1)	E2	SE(E2)
0.03	5	0.5/

0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
0.03	5	0.5/	
1.5/			
1.5/			
1.5/			
1.5/			
0.3/			
0.3/			
0.3/			
1.5/			
1.5/			
1.5/			
1.5/			
1.5/			
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/

3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
5.92	0	7.4	0.11	0	2/
2	1	9	0.001	10	0.01/

0.3/					
0.3/					
1.5/					
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
1.5/					
1.5/					
1.5/					
1.5/					
0.4/					
0.4/					
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
3.8	1.36	4.5	1.5/		
1.5/					
1.5/					
1.5/					
1.5/					
1.5/					

1.5/			
1.5/			
1.5/			
1.5/			
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
1.5/			
1.5/			
1.5/			
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
1.5/			
1.5/			
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
4.45	1.18	5.56	1.25/
3.45	1.18	4.56	1.25/
0.30/			
0.30/			
1.5/			
1.5/			
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
4.45	1.18	5.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/

3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
1.5/			
1.5/			
1.5/			
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.2500/
3.45	1.18	4.56	1.25/
3.45	1.18	4.56	1.25/
3.8	1.36	4.5	1.5/
3.8	1.36	4.5	1.5/
3.45	1.18	4.56	1.25/
4.45	1.18	5.56	1.25/
4.45	1.18	5.56	1.25/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.8	1.36	4.5	1.50/
3.45	1.18	4.56	1.25/
1.5/			
1.5/			
1.5/			
1.5/			
1.5/			
0.3/			
0.3/			
0.035	3.5	0.60/	
0.035	3.5	0.60/	
0.035	3.5	0.60/	
0.035	3.5	0.60/	

MODELO DE ESTABILIZADORES

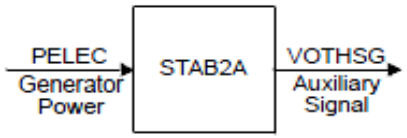
Interpretación:

IBUS	STAB2A'	I	K2	T2	K3	T3
6097	'STAB2A'	F1	1	4.4	10	1.8

F.8 STAB2A

Power Sensitive Stabilizing Unit (ASEA)

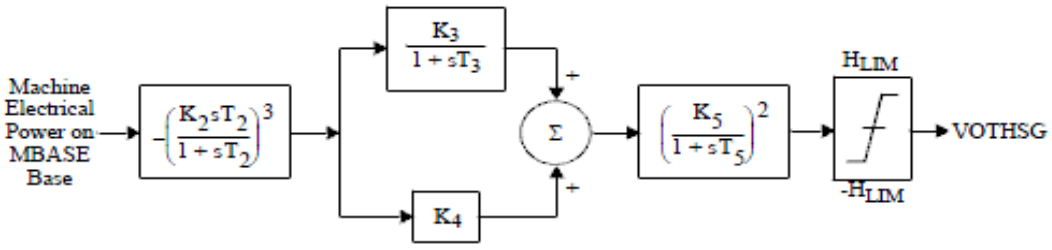
This model is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.



CONs	#	Value	Description
J			K_2
J+1			T_2 (sec) (>0)
J+2			K_3
J+3			T_3 (sec) (>0)
J+4			K_4
J+5			K_5
J+6			T_5 (sec) (>0)
J+7			H_{LIM}

STATEs	#	Description
K		Implicit
K+1		Integration
K+2		State
K+3		Variables

IBUS, 'STAB2A', I, K_2, T_2, K_3, T_3, K_4, K_5, T_5, H_{LIM}/



Información de Base de Datos:

6097 'STAB2A' F1 1 4.4 10 1.8

6098	'STAB2A'	F2	1	4.4	10	1.8
6099	'STAB2A'	F3	1	4.4	10	1.8
6101	'STAB2A'	B1	1	4.4	7.85	1.8
6102	'STAB2A'	B2	1	4.4	7.85	1.8
6110	'STAB2A'	B3	1	4.5	25	2
6176	'STAB2A'	E1	1	4.4	10	2
6177	'STAB2A'	E2	1	4.4	10	2
6264	'STAB2A'	G1	1	4.4	10	1.8
6265	'STAB2A'	G2	1	4.4	10	1.8

K4	K5	T5	HLIM
1	1.41	0.01	0.05/

1 1.41 0.01 0.05/

1	1.41	0.01	0.05/
1	1.41	0.01	0.05/
0.785	1.41	0.01	0.03/
0.785	1.41	0.01	0.03/
5	1	0.01	0.03/
0.785	1.5	0.011	0.05/
0.785	1.5	0.011	0.05/
1	1.41	0.01	0.05/
1	1.41	0.01	0.05/

MODELO DE RELEVADORES

Interpretación:

I	LDSHxx'	LID	f1	t1	frac1	f2
6028	'LDSHBL'	30	59.3	0.1	1	0

I.10 LDSHBL, LDSHOW, LDSHZN, LDSHAR, LDSHAL

Underfrequency Load Shedding Model

DYRE Data Record:

I, 'LDSHxx', LID f_1, t_1, $frac_1$, f_2, t_2, $frac_2$, f_3, t_3, $frac_3$, T_b /

LID is an explicit load identifier or may be '*' for application to loads of any ID associated with the subsystem type.

Model suffix "xx"	"I" Description
BL	Bus number
OW	Owner number
ZN	Zone number
AR	Area number
AL	0

CONs	Value	Description
J		f_1, first load shedding point (Hz)
J+1		t_1, first point pickup time (sec)
J+2		$frac_1$, first fraction of load to be shed
J+3		f_2, second load shedding point (Hz)
J+4		t_2, second fraction pickup time (sec)
J+5		$frac_2$, second fraction of load to be shed
J+6		f_3, third load shedding point (Hz)
J+7		t_3, third point pickup time (sec)
J+8		$frac_3$, third fraction of load to be shed
J+9		T_b, breaker time (sec)

VARs	Description
L	First timer memory
L+1	Second timer memory
L+2	Third timer memory

Reserved ICONs	Description
N	First point delay flag
N+1	First point timeout flag
N+2	First timer status
N+3	Second point delay flag
N+4	Second point timeout flag
N+5	Second timer status
N+6	Third point delay flag
N+7	Third point timeout flag
N+8	Third timer status

I	LVSHxx'	LID	JBUS	V1	T1	F1
6033	'LVSHBL'	47	0	0.913	0.5	1

I.13 LVSHBL, LVSHOW, LVSHZN, LVSHAR, LVSHAL

Undervoltage Load Shedding Model

DYRE Data Record:

I, 'LVSHxx', LID, JBUS, V1, T1, F1, V2, T2, F2, V3, T3, F3, TB/

LID is an explicit load identifier or may be '*' for application to loads of any ID associated with the subsystem type.

Model suffix "xx"	"I" Description
BL	Bus number
OW	Owner number
ZN	Zone number
AR	Area number
AL	0

CONs	Value	Description	CONs	Value	Description
J		V1, first load shedding point (pu)	J+5		F2, second fraction of load to be shed
J+1		T1, first point pickup time (sec)			
J+2		F1, first fraction of load to be shed	J+6		V3, third load shedding point (pu)
J+3		V2, second load shedding point (pu)	J+7		T3, third point pickup time (sec)
J+4		T2, second fraction pickup time (sec)	J+8		F3, third fraction of load to be shed
			J+9		TB, breaker time (sec)

ICONs	Value	Description
M		JBUS, remote bus number where voltage is measured*

Reserved ICONs	Description
N	First point delay flag
N+1	First point timeout flag
N+2	First timer status
N+3	Second point delay flag
N+4	Second point timeout flag

VARs	Description
L	First timer memory
L+1	Second timer memory
L+2	Third timer memory

Reserved ICONs	Description
N+5	Second timer status
N+6	Third point delay flag
N+7	Third point timeout flag
N+8	Third timer status

* Set JBUS = 0, if remote bus is same as the local bus to which the load is connected.

Información de Base de Datos:

/* EDCXBF (ESQUEMA DE DESLIGUE DE CARGA POR BAJA FRECUENCIA)
/* PRIMERA ETAPA

6028	'LDSHBL'	30	59.3	0.1	1	0
6028	'LDSHBL'	28	59.3	0.1	1	0
6030	'LDSHBL'	33	59.3	0.1	1	0
6185	'LDSHBL'	86	59.3	0.1	1	0
6039	'LDSHBL'	44	59.3	0.1	1	0

6212	'LDSHBL'	4	59.3	0.1	1	0
/* SEGUNDA ETAPA						
6043	'LDSHBL'	5	59.1	0.1	1	0
6030	'LDSHBL'	32	59.1	0.1	1	0
6191	'LDSHBL'	93	59.1	0.1	1	0
6039	'LDSHBL'	45	59.1	0.1	1	0
6037	'LDSHBL'	36	59.1	0.1	1	0
6800	'LDSHBL'	87	59.1	0.1	1	0
/* TERCERA ETAPA						
6185	'LDSHBL'	84	58.75	0.1	1	0
6035	'LDSHBL'	54	58.75	0.1	1	0
6185	'LDSHBL'	83	58.75	0.1	1	0
6066	'LDSHBL'	1	58.75	0.1	0.175	58.65
6058	'LDSHBL'	3	58.75	0.1	1	0
6058	'LDSHBL'	2	58.75	0.1	1	0
/* CUARTA ETAPA						
6007	'LDSHBL'	2	58.65	0.1	1	0
6007	'LDSHBL'	3	58.65	0.1	0.57	58.45
6043	'LDSHBL'	10	58.65	0.1	1	0
6007	'LDSHBL'	1	58.65	0.1	0.623	0
6194	'LDSHBL'	12	58.65	0.1	1	0
6212	'LDSHBL'	2	58.65	0.1	1	0
6191	'LDSHBL'	94	58.65	0.1	1	0
6191	'LDSHBL'	92	58.65	0.1	1	0
6800	'LDSHBL'	81	58.65	0.1	1	0
/* QUINTA ETAPA						
6035	'LDSHBL'	53	58.55	0.1	1	0
6212	'LDSHBL'	5	58.55	0.1	1	0
6194	'LDSHBL'	9	58.55	0.1	1	0
6026	'LDSHBL'	60	58.55	0.1	1	0
6800	'LDSHBL'	89	58.55	0.1	1	0
6800	'LDSHBL'	82	58.55	0.1	1	0
/* SEXTA ETAPA						
6045	'LDSHBL'	3	58.45	0.1	1	0
6030	'LDSHBL'	34	58.45	0.1	1	0
6185	'LDSHBL'	85	58.45	0.1	1	0
6030	'LDSHBL'	35	58.45	0.1	1	0
6007	'LDSHBL'	13	58.45	0.1	0.636	0
6025	'LDSHBL'	57	58.45	0.1	1	0
6212	'LDSHBL'	3	58.45	0.1	1	0
6039	'LDSHBL'	42	58.45	0.1	1	0
6191	'LDSHBL'	95	58.45	0.1	1	0

/* EDCXBV (ESQUEMA DE DESLIGUE DE CARGA POR BAJO VOLTAJE)

/* PRIMERA ETAPA						
6033	'LVSHBL'	47	0	0.913	0.5	1
6033	'LVSHBL'	50	0	0.913	0.5	1

6035	'LVSHBL'	55	0	0.913	0.5	1
6035	'LVSHBL'	52	0	0.913	0.5	1
6188	'LVSHBL'	60	0	0.913	0.5	1
6188	'LVSHBL'	58	0	0.913	0.5	1
/* SEGUNDA ETAPA						
6020	'LVSHBL'	61	0	0.913	0.9	1
6020	'LVSHBL'	62	0	0.913	0.9	1
6020	'LVSHBL'	63	0	0.913	0.9	1
6020	'LVSHBL'	64	0	0.913	0.9	1
6022	'LVSHBL'	65	0	0.913	0.9	1
/* TERCERA ETAPA						
6041	'LVSHBL'	11	0	0.913	3	1
6041	'LVSHBL'	15	0	0.913	3	1
6043	'LVSHBL'	20	0	0.913	3	1
6041	'LVSHBL'	22	0	0.913	3	1

t2	f3	t3	frac3	Tb
0	0	0	0	0.066/

V2	T2	F2	V3	T3	F3	TB
0	0	0	0	0	0	0.066/

0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	reemplaza al 4-85
0	0	0	0	0	0.066/

0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	reemplaza al 5-96
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0.1	0.162	0	0	0	15-3 15-19 y 15-1(4 etapa)
0	0	0	0	0	0.066/
0	0	0	0	0	reemplaza al TOC-8
0	0	0	0	0	circuitos 16-13 y 16-11
0.1	0.43	0	0	0	uitos 16-14 y 16-12(6 etapa)
0	0	0	0	0	reemplaza al 2-16
0	0	0	0	0	circuito 15-24
0	0	0	0	0	reemplaza al 3-108
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	reemplaza al 4-29
0	0	0	0	0	reemplaza al 4-31
0	0	0	0	0	0.066/
0	0	0	0	0	circuito coronado 15-25
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/
0	0	0	0	0	0.066/

0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/

0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/
0	0	0	0	0	0	0.066/

MODELO DE MÁQUINA EÓLICA

Interpretación:

IBUS	WT3G1'	ID	ICON(M)	CON(J) to CON(J+		
6431	'WT3G1'	G1	100	0.8	30	0

N.1 WT3G1

Doubly-Fed Induction Generator (Type 3)

This model is located at system bus #_____ IBUS
machine #_____ ID
This model uses CONs starting with #_____ J
and STATEs starting with #_____ K
and VARs starting with #_____ L
and ICONs starting with #_____ M

CONs	#	Value	Description
J			Xeq, Equivalent reactance for current injection (pu)
J+1			Kpll, PLL first integrator gain
J+2			Kipll, PLL second integrator gain
J+3			PLLMX, PLL maximum limit
J+4			Prated, Turbine MW rating

STATEs	#	Description
K		Converter lag for Ipcmd
K+1		Converter lag for Eqcmd
K+2		PLL first integrator
K+3		PLL second integrator
ICONs	**#**	**Description**
M		Number of lumped wind turbines

VARs	#	Desc
L		Vx, Real compo generator ref. fr
L+1		Vy, Imaginary co Vterm in genera
L+2		Ixinj, Active com injected current
L+3		Iyinj, Reactive c injected current

IBUS, 'WT3G1', ID, ICON(M), CON(J) to CON(J+4) /

IBUS	WT3E1'	ID			ICON(M) to ICON(M+5)	
6431	'WT3E1'	G1	6431	0	0	6430

N.2 WT3E1

Electrical Control for Type-3 Wind Generator

This model is located at system bus	#_____	IBUS
machine	#_____	ID
This model uses CONs starting with	#_____	J
and STATEs starting with	#_____	K
and VARs starting with	#_____	L
and ICONs starting with	#_____	M

CONs	#	Value	Description
J			Tfv. Filter time constant in voltage regulator (sec)
J+1			Kpv, Proportional gain in voltage regulator (pu)
J+2			Kiv, Integrator gain in voltage regulator (pu)
J+3			Xc, Line drop compensation reactance (pu)
J+4			Tfp, Filter time constant in torque regulator
J+5			Kpp, Proportional gain in torque regulator (pu)
J+6			Kip, Integrator gain in torque regulator (pu)
J+7			PMX, Max limit in torque regulator (pu)
J+8			PMN, Min limit in torque regulator (pu)
J+9			QMX, Max limit in voltage regulator (pu)
J+10			QMN, Min limit in voltage regulator (pu)
J+11			IP_{max}, Max reactive current limit
J+12			Trv, Voltage sensor time constant
J+13			RPMX, Max power order derivative
J+14			RPMN, Min power order derivative
J+15			T_Power, Power filter time constant
J+16			Kqi, MVAR/Voltage gain
J+17			VMINCL, Min voltage limit
J+18			VMAXCL, Max voltage limit
J+19			Kqv, Voltage/MVAR gain
J+20			XIQmin, Min limit of diff. between Vterm and Eq"cmd
J+21			XIQmax, Max limit of diff. between Vterm and Eq"cmd
J+22			Tv, Lag time constant in WindVar controller
J+23			Tp, Pelec filter in fast PF controller
J+24			Fn, A portion of online wind turbines
J+25			WPMIN, Shaft speed at Pmin (pu)
J+26			Wp20, Shaft speed at 20% rated power (pu)
J+27			Wp40, Shaft speed at 40% rated power (pu)
J+28			Wp60, Shaft speed at 60% rated power (pu)

CONs	#	Value	Description
J+29			Pwp, Minimum power for operating at Wp100 speed (pu)
J+30			Wp100, Shaft speed at 100% rated power (pu)

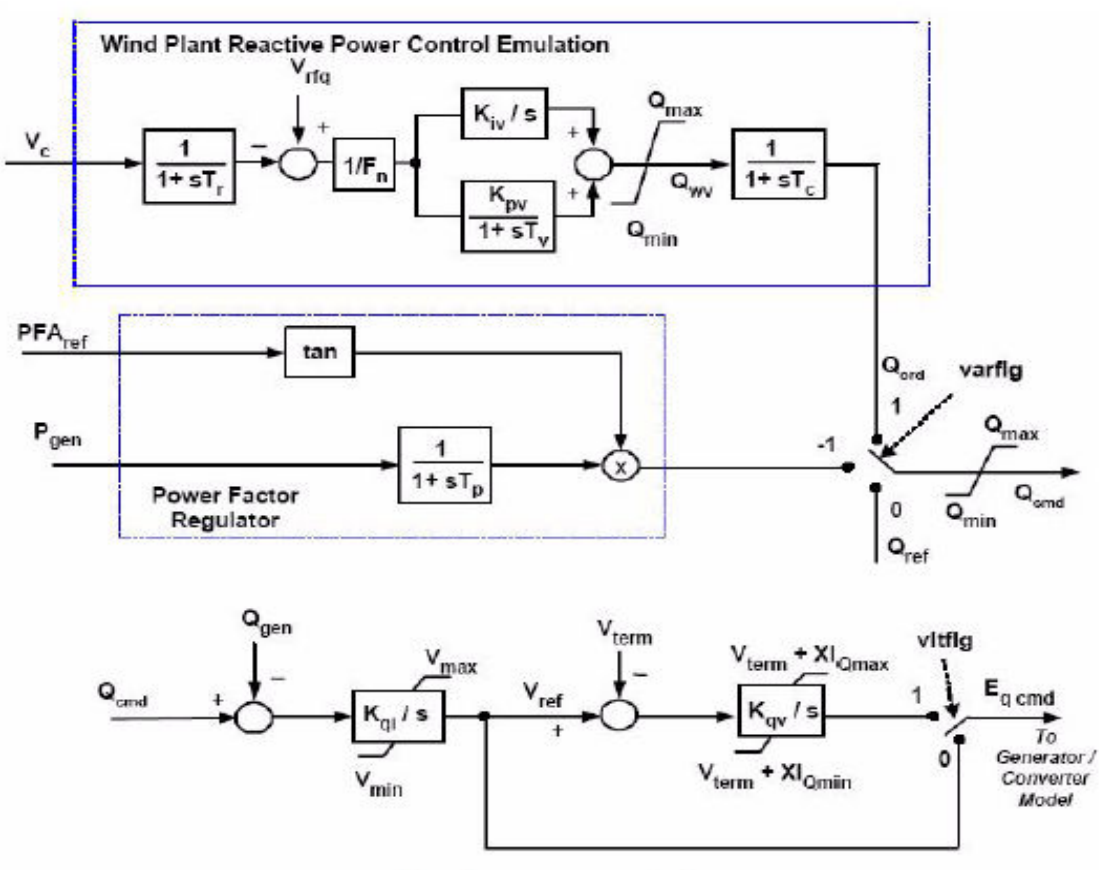
STATEs	#	Description
K		Filter in voltage regulator
K+1		Integrator in voltage regulator
		Filter in torque regulator

VARs	#	Description
L		Remote bus ref voltage
L+1		MVAR order from MVAR emulator
		Q reference if PFAFLG=0 &

K+2		Filter in torque regulator
K+3		Integrator in torque regulator
K+4		Voltage sensor
K+5		Power filter
K+6		MVAR/Vref integrator
K+7		Verror/internal machine voltage integrator
K+8		Lag of the WindVar controller
K+9		Input filter of Pelec for PF fast controller

L+2		Q reference if PFAFLG=0 & VARFLG=0
L+3		PF angle reference if PFAFLG=1
L+4		Storage of MW for computation of compensated voltage
L+5		Storage of MVAr for computation of compensated voltage
L+6		Storage of MVA for computation of compensated voltage
ICONs	**#**	**Description**
M		Remote bus # for voltage control
M+1		VARFLG: 0 = Constant Q control 1 = Use Wind Plant reactive power control -1 = Constant power factor control
M+2		VLTFLG: 1 = Use closed loop terminal voltage control
M+3		'From' bus of the interconnection transformer
M+4		'ToFrom' bus of the interconnection transformer
M+5		Interconnection transformer ID (specify within quotes)

IBUS, 'WT3E1', ID, ICON(M) to ICON(M+5), CON(J) to CON(J+30)/



Reactive power controls

IBUS	WT3P1'	ID				CC
6431	'WT3P1'	G1	0.3	150	25	3

N.4 WT3P1

Pitch Control Model for Type-3 Wind Generator

This model is located at system bus #_____ IBUS
machine #_____ ID
This model uses CONs starting with #_____ J
and STATEs starting with #_____ K

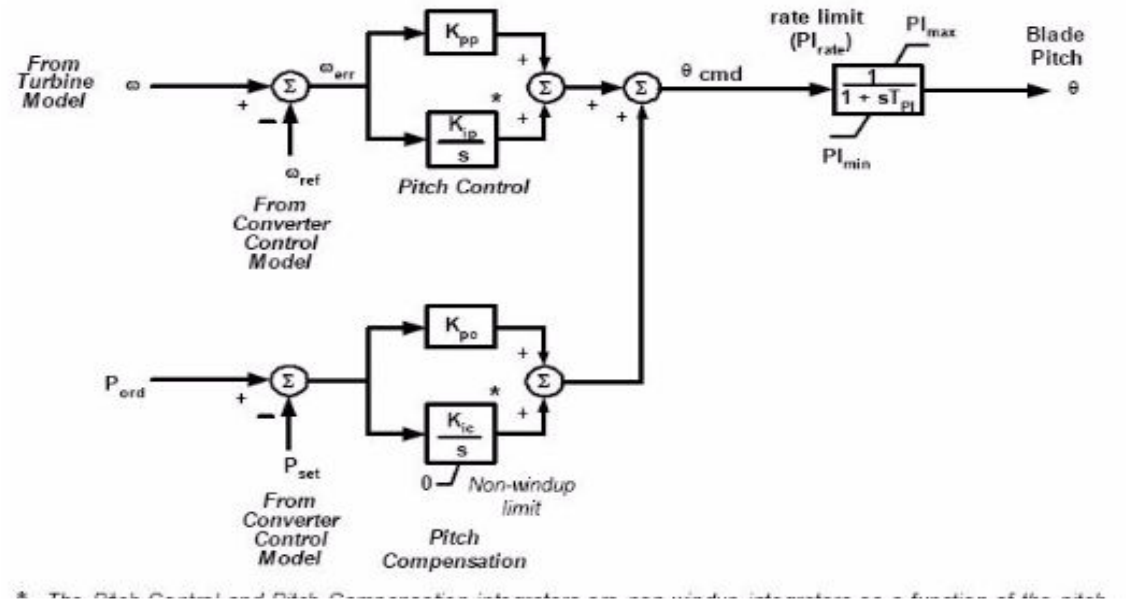
In blkmdl, this model requires one reserved ICON.

CONs	#	Value	Description
J			Tp, Blade response time constant
J+1			Kpp, Proportional gain of PI regulator (pu)
J+2			Kip, Integrator gain of PI regulator (pu)
J+3			Kpc, Proportional gain of the compensator (pu)
J+4			Kic, Integrator gain of the compensator (pu)
J+5			TetaMin, Lower pitch angle limit (degrees)
J+6			TetaMax, Upper pitch angle limit (degrees)
J+7			RTetaMax, Upper pitch angle rate limit (degrees/sec)
J+8			PMX, Power reference, pu on MBASE

Note: When a WT operates with a partial output, the DSTATE(K+2) may show INITIAL CONDITION SUSPECT. In this case no actions are needed.

STATEs	#	Description
K		Output lag
K+1		Pitch control
K+2		Pitch compensation

IBUS, 'WT3P1', ID, CON(J) through CON (J+8)/



The Pitch Control and Pitch Compensation integrators are non-windup integrators as a function of the pitch, i.e., the inputs of these integrators are set to zero when the pitch is in limits (Pimax or Pimin) and the integrator input tends to force the pitch command further against its limit. The outputs of these integrators are not limited except by the lower (zero) limit on the Pitch Compensation integrator.

IBUS	WT3T1'	ID				CONJUTO
6431	'WT3T1'	G1	1.25	4.95	0	0.007

N.3 WT3T1

Mechanical System Model for Type-3 Wind Generator

This model is located at system bus	#_____	IBUS
machine	#_____	ID
This model uses CONs starting with	#_____	J
and STATEs starting with	#_____	K
and VARs starting with	#_____	L

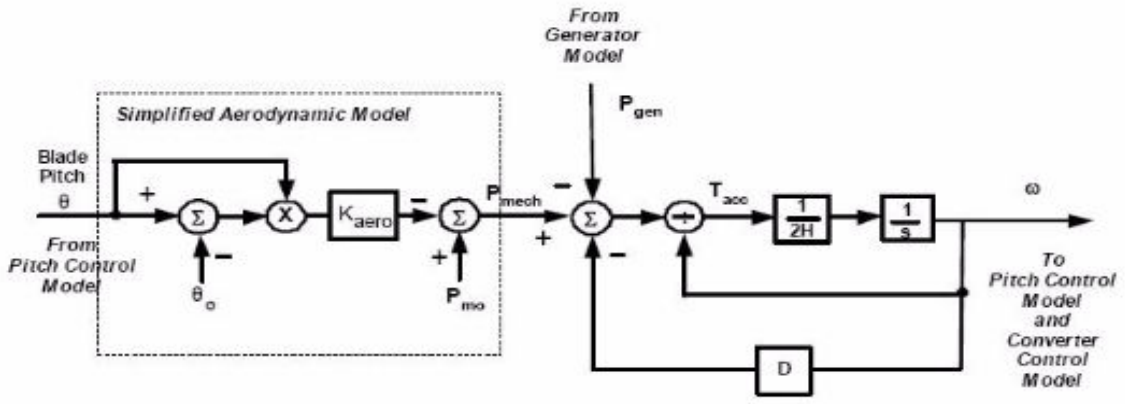
In blkmdl, this model requires one reserved ICON.

CONs	#	Value	Description
J			VW, Initial wind, pu of rated wind speed
J+1			H, Total inertia constant, MW*sec/MVA
J+2			DAMP, Machine damping factor, pu P/pu speed
J+3			Kaero, Aerodynamic gain factor
J+4			Theta2, Blade pitch at twice rated wind speed, deg.
J+5			Htfrac, Turbine inertia fraction (Hturb/H)
J+6			Freq1, First shaft torsional resonant frequency, Hz
J+7			DSHAFT, Shaft damping factor (pu)

STATEs	#	Description
K		Shaft twist angle, rad.
K+1		Turbine rotor speed deviation, pu
K+2		Generator speed deviation, pu
K+3		Generator rotor angle deviation, pu

VARs	#	Description
L		Paero on the rotor blade side, pu
L+1		Initial rotor slip
L+2		Initial internal angle
L+3		Initial pitch angle
L+4		Paero initial

IBUS, 'WT3T1', ID, CON(J) through CON (J+7) /

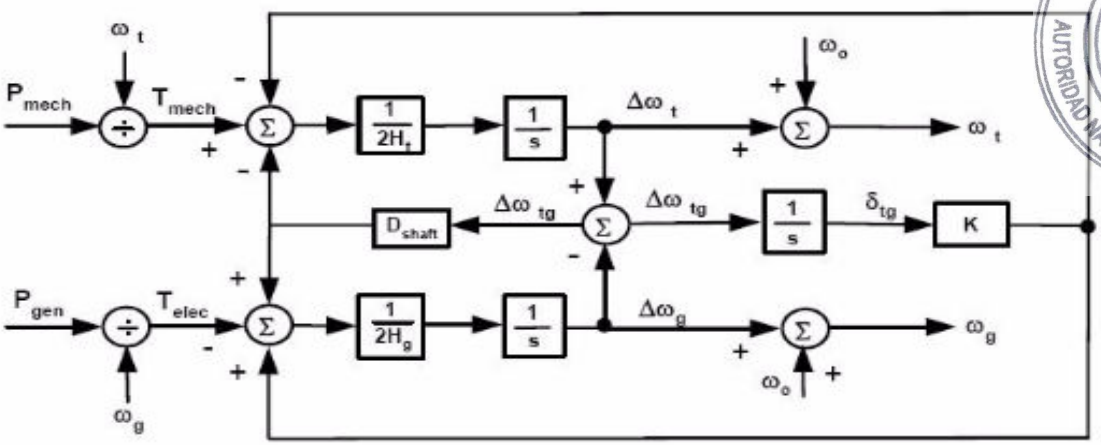


Wind Turbine Module for the single mass mechanical system

$H_t = H_{tfrac} * H$

$H_g = H - H_t$

$K = 2 * (2\pi \text{ Freq1})^2 * H_t * H_g / H$



Two-mass torsional module

Información de Base de Datos:

6431	'WT3G1'	G1	100	0.8	30	0
6431	'WT3E1'	G1	6431	0	0	6430
6431	'WT3T1'	G1	1.25	4.95	0	0.007
6431	'WT3P1'	G1	0.3	150	25	3

-4)	
0.1	1.50/

cription
nent of Vterm in ame
mponent of tor ref. frame
nponent of the
omponent of the

6431	T1	0.15	18	5	0.05	0.05

)N(J) to CON(J+8)				
30	0	27	10	1.00/

CON(J+7)			
21.98	0.875	1.8	1.50/

0.1	1.50/					
6431	T1	0.15	18	5	0.05	0.05
21.98	0.875	1.8	1.50/			
30	0	27	10	1.00/		

3	0.6	1.12	0.1	0.296	-0.436	1.1

3	0.6	1.12	0.1	0.296	-0.436	1.1

CON(J) to CON(J+30)						
0.05	0.45	-0.45	5	0	0.9	1.2

0.05	0.45	-0.45	5	0	0.9	1.2

40	-0.5	0.4	0.05	0.05	1	0.69

40	-0.5	0.4	0.05	0.05	1	0.69

0.78	0.98	1.12	0.74	1.2/

0.78	0.98	1.12	0.74	1.2/

MODELO DE SVC

Interpretación:

BUS	CSVGN4'	I	IB	K	T_1	T_2
6810	'CSVGN4'	1	6008	150	0	0

E.7 CSVGN4

Static Shunt Compensator

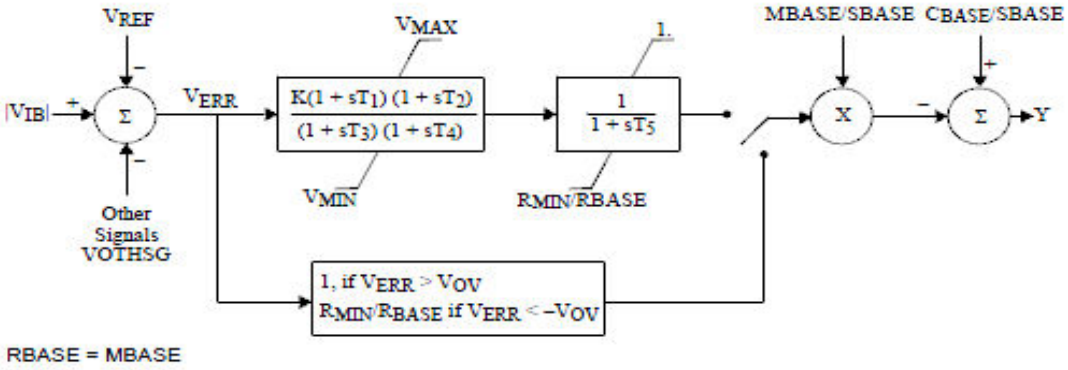
This device is located at system bus #_____ IBUS,
machine #_____ I,
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K,
and VAR #_____ L,
and ICONs starting with #_____ M.
The reactor Mvar base = _____ MBASE.

CONs	#	Value	Description	CONs	#	Value	Description
J			K	J+6			R_{MIN} (reactor minimum Mvar)
J+1			T_1	J+7			V_{MAX}
J+2			T_2	J+8			V_{MIN}
J+3			T_3 (>0)	J+9			C_{BASE} (capacitor Mvar)
J+4			T_4	J+10			V_{OV} (override voltage)
J+5			T_5				

STATEs	#	Description
K		First regulator
K+1		Second regulator
K+2		Thyristor

VARs	#		Description
L			Y (model output)
ICONs	**#**	**Value**	**Description**
M		X	IB, remote bus to regulate or zero to regulate terminal voltage
M+1			Memory

BUS, 'CSVGN4', I, IB, K, T_1, T_2, T_3, T_4, T_5, R_{MIN}, V_{MAX}, V_{MIN}, C_{BASE}, V_{OV}



RBASE = MBASE

Información de Base de Datos:

6810 'CSVGN4' 1 6008 150 0 0

6900	'CSVGN4'	1	6003	150	0	0

T_3	T_4	T_5	R_{MIN}	V_{MAX}	V_{MIN}	C_{BASE}
0.45	0	0.03	0.001	1	-1	300

0.45 0 3.00E-02 0.001 1 -1 300

0.45	0	3.00E-02	0.001	1	-1	300

V_{OV}/
0.10/

0.10/