

AMORTECIMENTO DE MODOS ELETROMECAÑICOS UTILIZANDO ESTABILIZADORES EM ELOS HVDC CONSIDERANDO-SE DIFERENTES ESTRATÉGIAS DE CONTROLE

Grupo GAT

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- AMORTECIMENTO DE MODOS ELETROMECAˆNICOS UTILIZANDO ESTABILIZADORES
EM ELOS HVDC CONSIDERANDO-SE DIFERENTES ESTRATGIAS DE CONTROLE

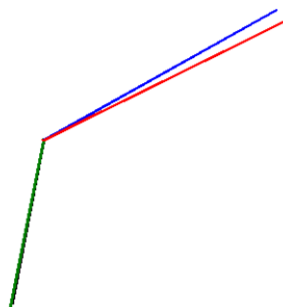
INVERSOR EM CONTROLE DE AREA MÍNIMA

	Real	Imaginary	Module	Freq. (Hz)	Damp (%)	Part. Factor
1	0,1628	2,3756	2,3812	0,3781	-6,8351	DELT Barra3 # 3
2	0,1628	-2,3756	2,3812	-0,3781	-6,8351	
3	-1,55105e-013	3,48227e-007	3,48227e-007	5,54221e-008	0,00004	x 0017 DMCVMD03 # 2
4	-1,55105e-013	-3,48227e-007	3,48227e-007	-5,54221e-008	0,00004	
5	-0,8818	6,6677	6,7257	1,0612	13,111	DELT Barra4 # 4
6	-0,8818	-6,6677	6,7257	-1,0612	13,111	
7	1,0373	7,1000	7,1833	1,1300	15,000	DELT Barra2 # 2

Fatores de Observabilidade do modo p_1

Input:
Output: WW
Eigen: +0,16276 +J2,3756

— Barra4 # 4
— Barra3 # 3
— Barra2 # 2
— Barra1 # 1

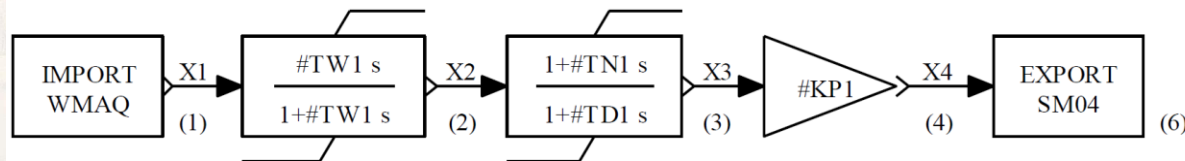
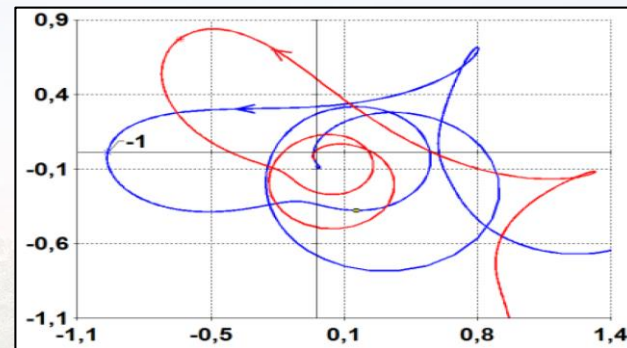


Fatores de Observabilidade de p_1

Module	Phase	Bus Name
1,0000	26,219	Barra4 # 4
0,9978	29,138	Barra3 # 3
0,6401	-101,29	Barra2 # 2
0,6251	-100,99	Barra1 # 1

Fatores de participação do modo p_1 .

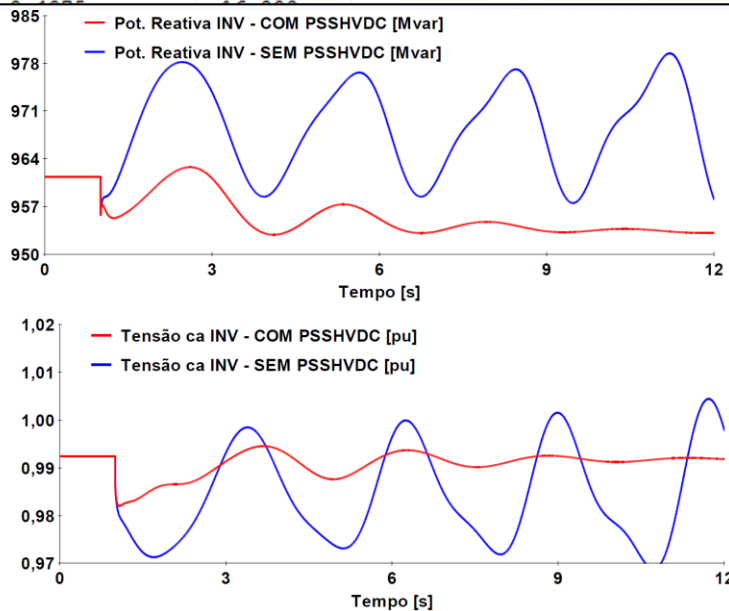
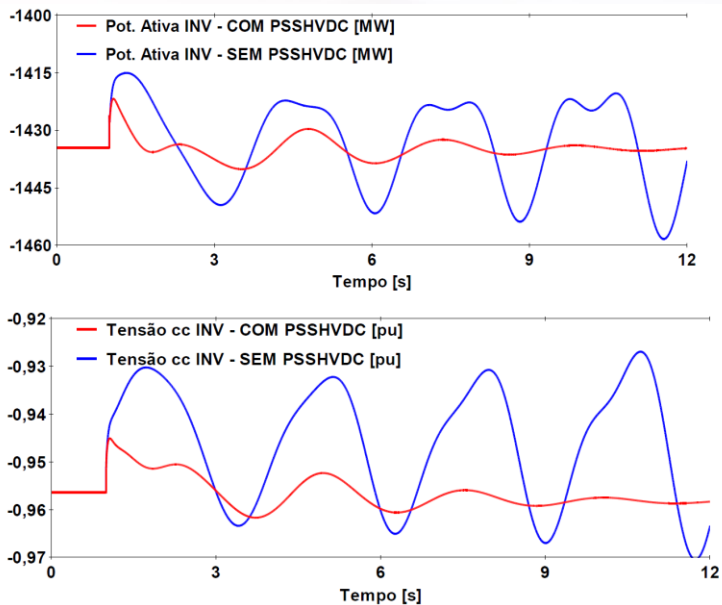
Module	Phase	Bus Name	Var
1,0000	0.	Barra3 # 3	DELT
1,0000	3,18055e-014	Barra3 # 3	WW
0,5972	-111,91	DMCVMD03 # 1	x 0007
0,4084	69,804	Barra1 # 1	DELT



DPAR	Valor
Parametro	
#TW1	10.
#TN1	.8421469
#TD1	.1777987
#KP1	-2.238103

INVERSOR EM CONTROLE DE AREA MÍNIMA

	Real	Imaginary	Module	Freq. (Hz)	Damp(%)	Part. Factor		
1	1,74809e-007	0.	1,74809e-007	0.	-100,00	x 0017 DMCVMD03	#	2
2	-0,8256	6,8431	6,8927	1,0891	11,977	WW Barra4	#	4
3	-0,8256	-6,8431	6,8927	-1,0891	11,977			
4	-0,9427	7,0813	7,1438	1,1270	13,197	DELT Barra2	#	2
5	-0,9427	-7,0813	7,1438	-1,1270	13,197			
6	-0,4151	2,5607	2,5941	0,4075	16,000	x 0007 DMCVMD03	#	1



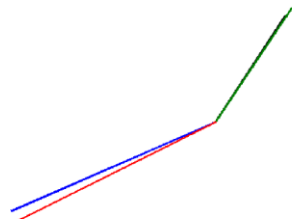
INVERSOR EM CONTROLE DE GAMA MÍNIMO

	Real	Imaginary	Module	Freq. (Hz)	Damp (%)	Part. Factor
1	2,86350e-007	0.	2,86350e-007	0.	-100,00	x 0017 DMCVMD03 # 2
2	0,1424	2,4638	2,4680	0,3921	-5,7696	DELT Barra3 # 3
3	0,1424	-2,4638	2,4680	-0,3921	-5,7696	
4	-0,8890	6,6959	6,7547	1,0657	13,161	WW Barra4 # 4
5	-0,8890	-6,6959	6,7547	-1,0657	13,161	
6	-1,0123	7,1236	7,1951	1,1337	14,069	DELT Barra2 # 2
7	-1,0123	-7,1236	7,1951	-1,1337	14,069	
8	-0,8474	1,8384	2,0243	0,2926	41,863	x 0007 DMCVMD03 # 1

Fatores de Observabilidade do modo p_2

Input:
Output: WW
Eigen: +0,14239 +j2,4638

— Barra3 # 3
— Barra4 # 4
— Barra2 # 2
— Barra1 # 1

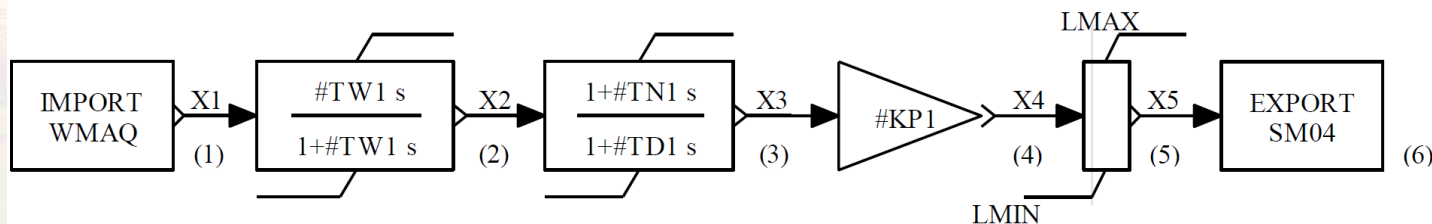
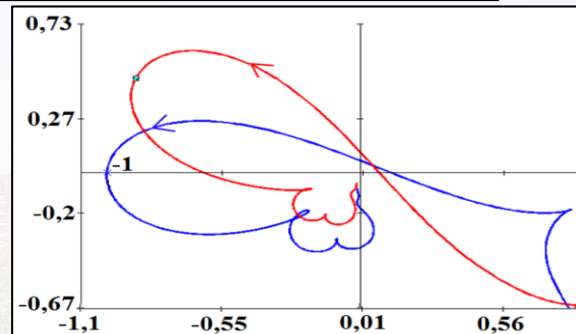


Fatores de Observabilidade de p_2

Module	Phase	Bus Name
1,0000	-155,31	Barra3 # 3
0,9886	-158,13	Barra4 # 4
0,5819	54,011	Barra2 # 2
0,5376	54,597	Barra1 # 1

Fatores de participação do modo p_2

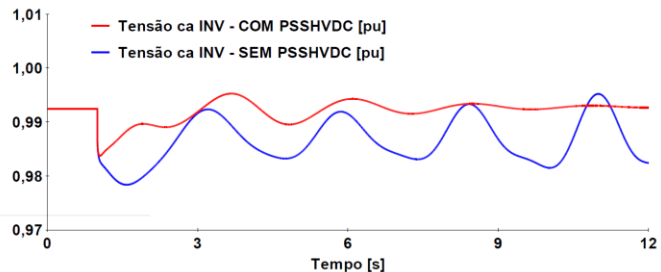
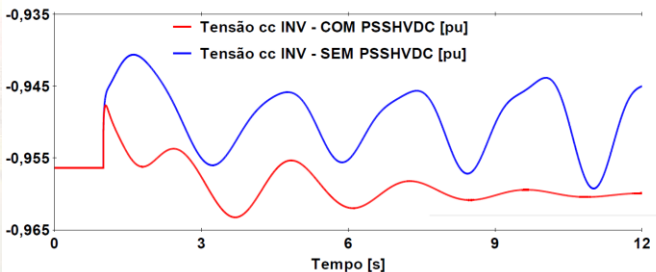
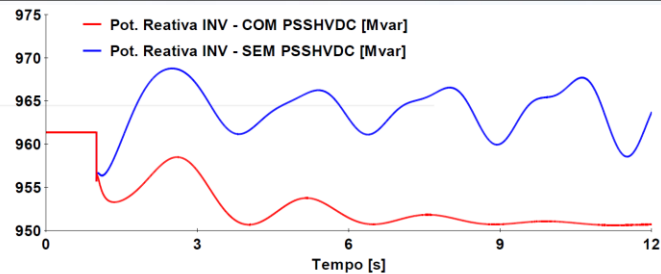
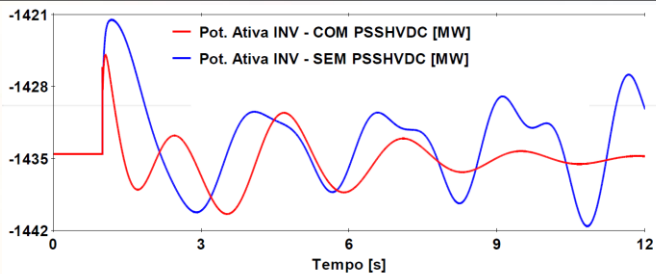
Module	Phase	Bus Name	Var
1,0000	1,27222e-014	Barra3 # 3	DELT
1,0000	0.	Barra3 # 3	WW
0,3825	39,280	Barra1 # 1	DELT
0,2109	40,551	Barra1 # 1	WW



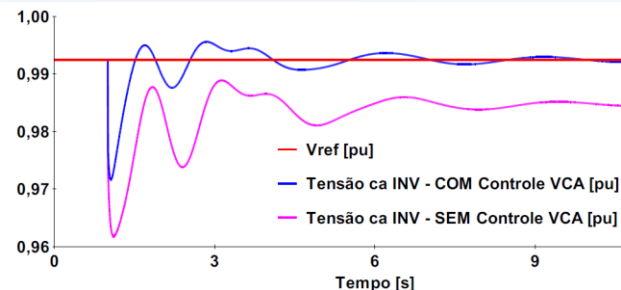
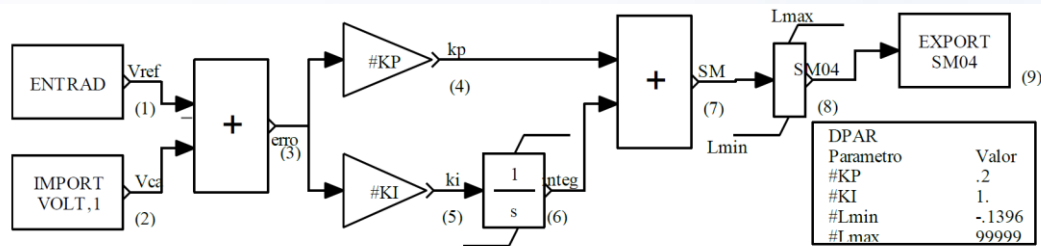
DPAR	Parametro	Valor
#TW1	10.	
#TN1	.5499297	
#TD1	.2504188	
#KP1	-10.59324	
#LMIN	-0.1	
#LMAX	0.1	

INVERSOR EM CONTROLE DE GAMA MÍNIMO

	Real	Imaginary	Module	Freq. (Hz)	Damp(%)	Part. Factor		
1	1,96969e-007	0.	1,96969e-007	0.	-100,00	x 0017 DMCVMD03	#	2
2	-0,8878	6,6493	6,7083	1,0583	13,234	DELT Barra4	#	4
3	-0,8878	-6,6493	6,7083	-1,0583	13,234			
4	-1,0053	7,1035	7,1743	1,1306	14,013	DELT Barra2	#	2
5	-1,0053	-7,1035	7,1743	-1,1306	14,013			
6	-0,4312	2,6600	2,6947	0,4234	16,000	x 0007 DMCVMD03	#	1
7	-0,4312	-2,6600	2,6947	-0,4234	16,000			
8	-0,8620	2,3158	2,4710	0,3686	34,884	x 0007 DMCVMD03	#	1



INVERSOR EM CONTROLE DE TENSÃO CA



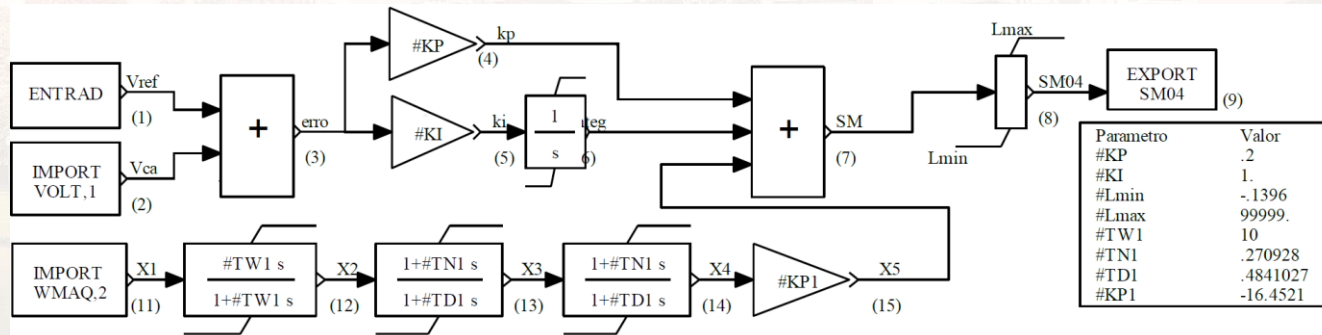
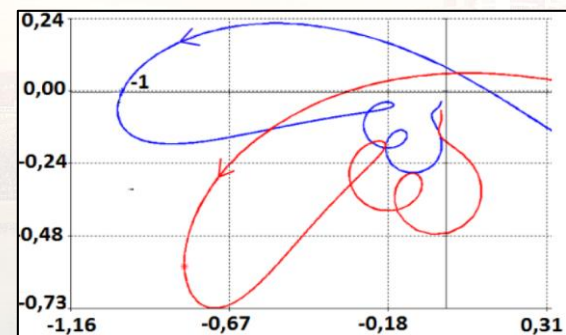
	Real	Imaginary	Module	Freq. (Hz)	Damp (%)	Part. Factor
1	4,66 e-007	0.	4,66 e-007	0.	-100,00	x 0017 DMCVMD03 # 2
2	0,1278	2,5828	2,5860	0,4111	-4,9407	WW Barra3 # 3
3	0,1278	-2,5828	2,5860	-0,4111	-4,9407	
4	-0,8754	6,7284	6,7851	1,0709	12,902	WW Barra4 # 4
5	-0,8754	-6,7284	6,7851	-1,0709	12,902	
6	-1,0261	7,1098	7,1835	1,1316	14,284	WW Barra2 # 2

Fatores de Observab. de p_3

Module	Phase	Bus Name
1,0000	-34,297	Barra3 # 3
0,9757	-36,603	Barra4 # 4
0,5136	150,45	Barra2 # 2
0,4213	148,89	Barra1 # 1

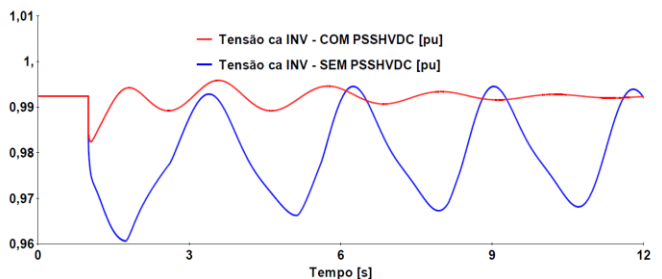
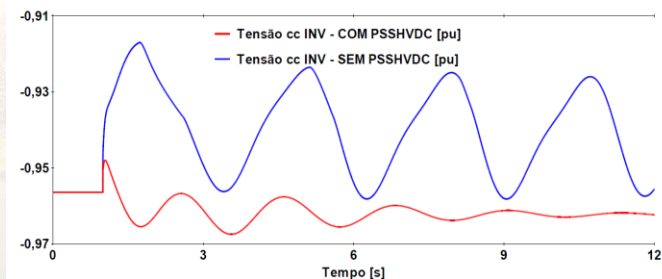
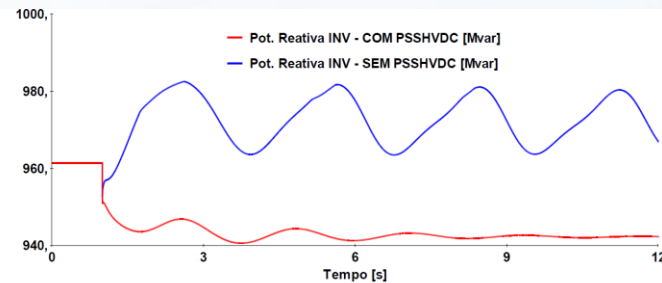
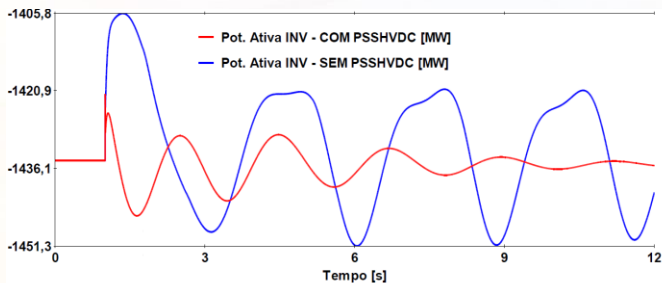
Fatores de particip. de p_3

Module	Phase	Bus Name	Var
1,0000	-3,18 e-015	Barra3 # 3	WW
1,0000	0.	Barra3 # 3	DELT
0,2982	-4,1444	Barra1 # 1	DELT

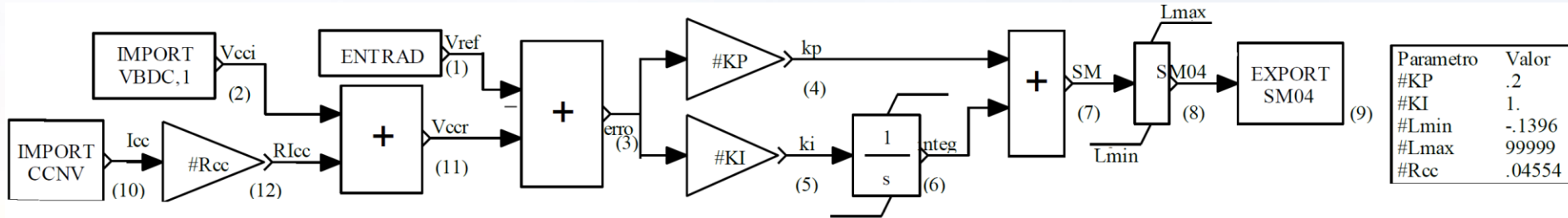


INVERSOR EM CONTROLE DE TENSÃO CA

	Real	Imaginary	Module	Freq. (Hz)	Damp (%)	Part. Factor
1	3,67131e-007	0.	3,67131e-007	0.	-100,00	x 0017 DMCVMD03 # 2
2	-0,8901	6,7074	6,7662	1,0675	13,156	DELT Barra4 # 4
3	-0,8901	-6,7074	6,7662	-1,0675	13,156	
4	-1,0279	7,1006	7,1746	1,1301	14,327	DELT Barra2 # 2
5	-1,0279	-7,1006	7,1746	-1,1301	14,327	
6	-0,4142	2,7300	2,7612	0,4345	15,000	x 0007 DMCVMD03 # 1
7	-0,4142	-2,7300	2,7612	-0,4345	15,000	
8	-0,8592	2,9262	3,0497	0,4657	28,175	x 0007 DMCVMD03 # 1
9	-0,8592	-2,9262	3,0497	-0,4657	28,175	



INVERSOR EM CONTROLE DE TENSÃO CC



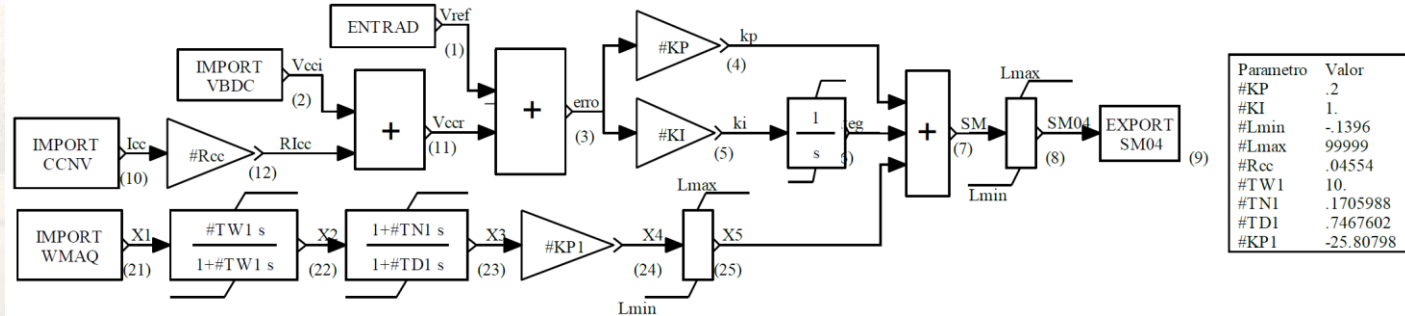
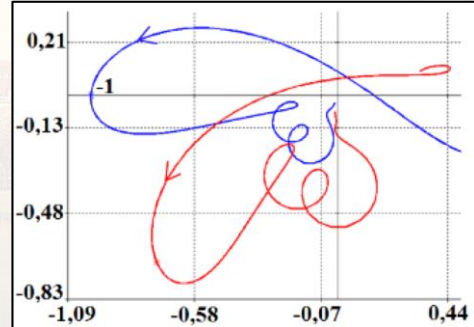
	Real	Imaginary	Freq. (Hz)	Damp (%)	Part. Factor
1	5,11231e-007	0.	0.	-100,00	x 0017 DMCVMD03 # 2
2	0,1248	2,5633	0,4080	-4,8621	DELT Barra3 # 3
3	0,1248	-2,5633	-0,4080	-4,8621	WW Barra4 # 4
4	-0,8787	6,7251	1,0703	12,956	DELT Barra2 # 2
5	-0,8787	-6,7251	-1,0703	12,956	x 0007 DMCVMD03 # 1
6	-1,0281	7,1128	1,1320	14,306	
7	-1,0281	-7,1128	-1,1320	14,306	
8	-1,5648	2,2851	0,3637	56,499	
9	-1,5648	-2,2851	-0,3637	56,499	

Fatores de Observab. de p_4

Module	Phase	Bus Name
1,0000	-36,381	Barra3 # 3
0,9771	-38,811	Barra4 # 4
0,5310	152,11	Barra2 # 2
0,4446	150,91	Barra1 # 1

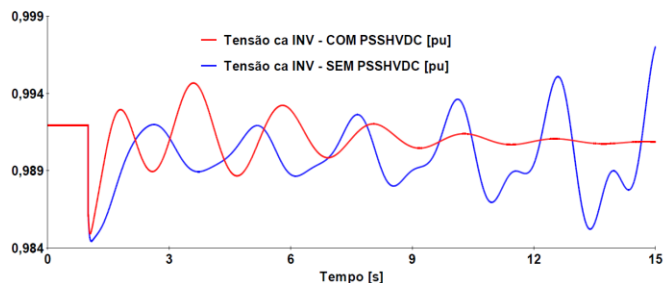
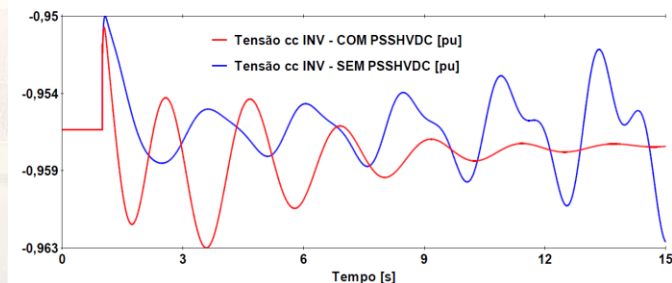
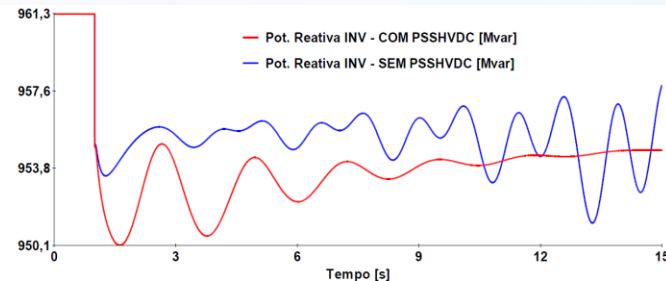
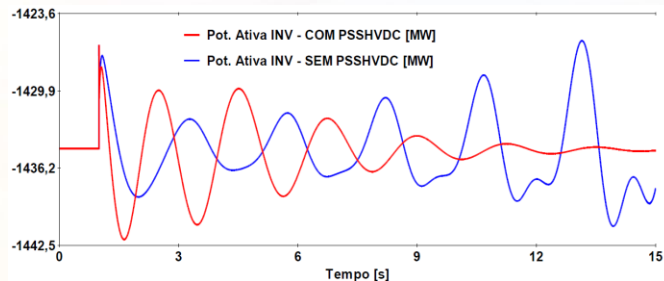
Fatores de particip. de p_4

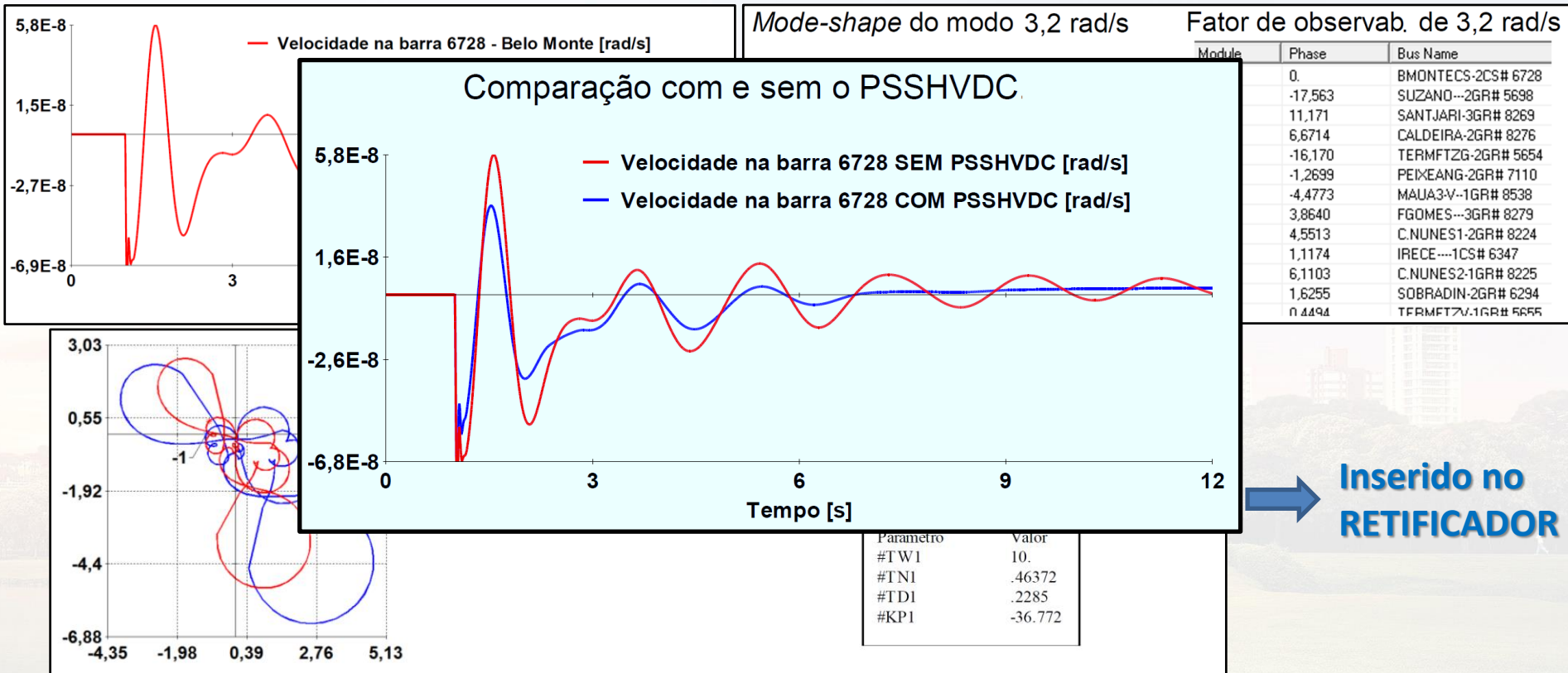
Module	Phase	Bus Name	Var
1,0000	1,59028e-015	Barra3 # 3	DELT
1,0000	-1,59028e-015	Barra3 # 3	WW
0,3202	2,8527	Barra1 # 1	DELT



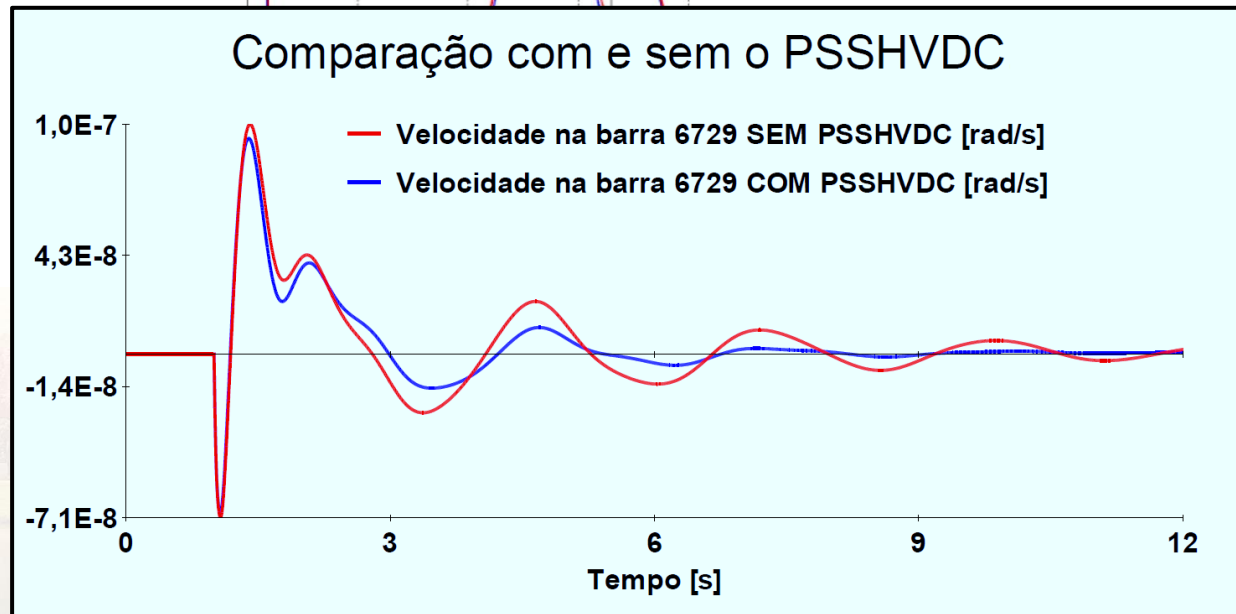
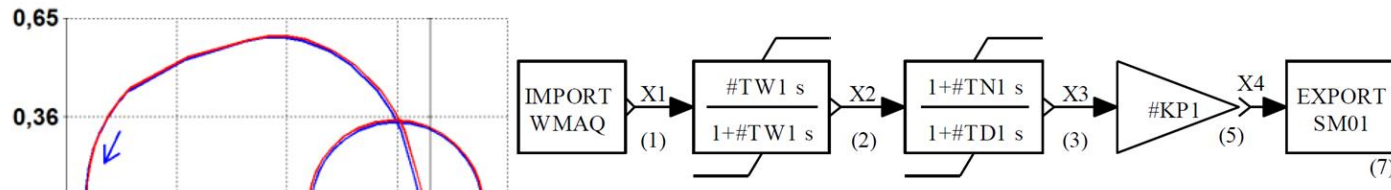
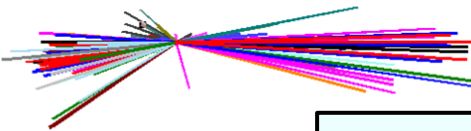
INVERSOR EM CONTROLE DE TENSÃO CC

	Real	Imaginary	Module	Freq. (Hz)	Damp(%)	Part. Factor
1	2,68412e-007	0.	2,68412e-007	0.	-100,00	x 0017 DMCVMD03 # 2
2	-0,8944	6,7039	6,7633	1,0670	13,225	DELT Barra4 # 4
3	-0,8944	-6,7039	6,7633	-1,0670	13,225	
4	-1,0306	7,1035	7,1779	1,1306	14,358	WW Barra2 # 2
5	-1,0306	-7,1035	7,1779	-1,1306	14,358	
6	-0,4203	2,7700	2,8017	0,4409	15,000	x 0007 DMCVMD03 # 1
7	-0,4203	-2,7700	2,8017	-0,4409	15,000	
8	-0,8975	2,7855	2,9266	0,4433	30,669	x 0007 DMCVMD03 # 1
9	-0,8975	-2,7855	2,9266	-0,4433	30,669	





Mode-shape do modo 2,41 rad/s




**Inserido no
RETIFICADOR**

- cenário de fluxo Norte-Sudeste como Sudeste-Norte
- abilizadores no SIN utilizou-se o controle no retificador e apenas um dos para amortecimento de oscilações
- SE isto iria requerer o envio por telecom. deste sinal para o terminal Estreito, a de utilização do sistema de telecom. do bipolo. A utilização de sinal local de PSSHVDC nos inversores não se mostraram eficazes nesta aplicação

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