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LAMPIRAN

Lampiran 1 Nilai Momen Inersia Dari Beberapa Jenis Mesin Listrik

Berikut ini adalah nilai momen inersia dari beberapa jenis mesin listrik yang dapat dilihat pada dibawah ini:

Tabel Nilai momen inersia (H) dari beberapa jenis mesin listrik

Jenis Mesin	H (MJ/MVA)
1. Turbine generator :	
a. Full condensing stream turbine generator	4-9
b. Non-Condensing steam turbine generator	3 – 4
2. Waterwheel Generator :	
a. Slow-speed <200 rpm	2 – 3
b. High-speed >200 rpm	2 – 4
3. Syncronous condenser	2 – 5
a. Large	1,25
b. Small	1,00
4. Diesel generator	
a. Low-speed	1-3
b. With flywheel	4-5
4. Syncronous motor whit load variying from 1,0 to 5,00 and higher for heavy flywheels	2,00

Lampiran 2 Data Sistem Sulbagsel

1) Rating tegangan, arus dan panjang saluran transmisi

Berikut ini adalah data rating tegangan, arus dan panjang saluran transmisi yang diinput ke dalam sistem sulbagsel yang dapat dilihat pada dibawah ini:

Tabel Rating tegangan, arus, dan panjang saluran transmisi Sulbagsel

Nama Saluran	Rating Tegangan (KV)	Rating Arus (KA)	Panjang(KM)
Barru - Balusu	150	0,638	22
Bakaru - Polmas	150	0,638	50,01
Bulukumba - Sinjai	150	0,638	63,866
Bolangi - Maros	150	1,836	31,9
Baru - Pare-pare	150	0,638	44,841
Bontoloa - Tanjung Bunga	150	0,6	6
Bone - Bulukumba	150	0,638	137,2
Bosowa - Pangkep	150	0,638	20,92
Enrekang - Makale	150	0,918	54,8
Jeneponto - Bulukumba	150	0,638	46,4
Jeneponto - Bantaeng New	150	0,638	23,02
Jeneponto - Tolo	150	0,638	30
Kima - Pangkep	150	0,638	43
Kolaka - Lasusu	150	1,276	90,2
Kolaka - Unaha	150	1,276	98,8
Kendari - Maramo	150	1,276	28,6
Kendari - Puwatu	150	1,276	7,2
Kendari - Unaha	150	1,276	66,7
Lasusu - Malili	150	1,276	118,797
Latupa - Palopo	150	1,276	26,43
Latupa - Pamona	275	1,836	212
Latupa - Wotu	275	1,836	97
Mandai - Daya	70	0,775	5
Maros - Sidrap	150	1,836	126,37
Majene - Mamuju	150	0,638	114,304
Makale - Palopo	150	0,638	37,4
Malili - Wotu	150	1,276	46,545
Mamuju - PLTU Mamuju	150	1,2	83,179
Mamuju - Topoyo	150	0,638	90,75
Nii Tanasa - Puwatu	70	0,775	7,3
Pare-pare - Polmas	150	0,638	90,27
Pare-pare - Pinrang	150	0,638	26,057
Pare - Suppa	150	0,638	7,5
Punagaya - Jeneponto	150	0,638	24,5
Polmas - Majene	150	0,638	50,16
Palopo - Siwa	150	1,276	89,711
Sidrap - PLTB Sidrap	150	1,836	13
Pamona - Poso	150	0,638	43,57
Pangkep - Barru	150	0,638	44,376
Pankep - Mandai	70	0,775	39,7
Pangkep - Tonasa III	70	0,409	3,7
Poso - Sidera	150	0,638	141,5
Pare - Sidrap	150	0,638	17,5

Nama Saluran	Rating Tegangan (KV)	Rating Arus (KA)	Panjang(KM)
Pinrang - Bakaru	150	0,638	58,65
Pasangkayu - Silae	150	0,638	87,96
Sidera - Silae	150	0,638	28,9
Sidera - Talise	70	0,775	20,2
Sidrap - Enrekang	150	0,918	53
Sidrap - Makale	150	0,918	105,5
Sidrap - Sengkang	150	1,836	62,33
Sidrap - Soppeng	150	0,638	53,078
Sungguminasa - Bolangi	150	1,836	9,79
Sungguminasa - Maros	150	1,836	41,69
Sungguminasa - Talasa	150	1,836	27,5
Sengkang - Siwa	150	1,276	66,52
Sengkang - soppeng	150	0,785	35,579
Sinjai - Bone	150	0,638	74,006
Sinjai - Tangka Manipi	20	0,6	40
Soppeng - Bone	150	0,638	43,322
Tanjung Bunga - Punagaya	150	1,836	59,39
Tanjung Bunga - Sungguminasa	150	1,836	11,9
Tello - Borongloe	70	0,409	12,4
Tello - Bosowa	150	0,638	34,42
Tello - Barawaja	30	0,409	3,4
Tello - Daya	70	0,775	7,3
Tello - Kima	150	0,638	6
Tello - Mandai	70	0,775	12,3
Tello - Panakukang	150	1,836	4,2
Tello - Sungguminasa	150	1,836	10,934
Tello Lama - Bontoala	150	0,6	10
Tello Lama - Bontoala 70kv	70	0,533	4,2
Tello Lama - Tello	150	1,129	6,4
Talasa - Jeneponto	150	1,836	22,06
Talasa - Punagaya	150	1,836	22,06
Talise - Parigi	70	0,775	17,6
Topoyo - Pasang Kayu	150	0,638	90,75
Wotu - Pamona	275	1,836	115

2) Impedansi saluran transmisi

Data Impedansi saluran transmisi pada sistem sulbagsel dapat dilihat pada tabel berikut ini:

Tabel Data impedansi saluran transmisi pada sistem Sulbagsel

Nama Saluran	R'(AC,20°C) Ohm/km	X' Ohm/km	R0'(AC) Ohm/km	X0' Ohm/km
Barru - Balusu	0,123	0,404	0,266	0,923
Bakaru - Polmas	0,12	0,4	0,3	0,9
Bulukumba - Sinjai	0,134	0,44	0,317	1,089
Bolangi - Maros	0,0345	0,2875	0,2371	1,2176
Barru - Pare-pare	0,123	0,404	0,266	0,923
Bontoloa - Tanjung Bunga	0,236	0,4333	0,268	1,272
Bone - Bulukumba	0,122	0,408	0,258	0,933
Bosowa - Pangkep	0,12	0,4	0,3	0,9

Nama Saluran	R'(AC,20°C) Ohm/km	X' Ohm/km	R0'(AC) Ohm/km	X0' Ohm/km
Enrekang - Makale	0,073	0,394	0,189	0,931
Jeneponto - Bulukumba	0,134	0,44	0,317	1,089
Jeneponto - Bantaeng New	0,134	0,44	0,317	1,089
Jeneponto - Tolo	0,134	0,44	0,317	1,089
Kima - Pangkep	0,12	0,4	0,3	0,9
Kolaka - Lasusu	0,084	0,346	0,262	0,809
Kolaka - Unaha	0,084	0,346	0,262	0,809
Kendari - Maramo	0,084	0,346	0,262	0,809
Kendari - Puwatu	0,084	0,346	0,262	0,809
Kendari - Unaha	0,084	0,346	0,262	0,809
Lasusu - Malili	0,084	0,346	0,262	0,809
Latupa - Palopo	0,084	0,346	0,262	0,809
Latupa - Pamona	0,0345	0,2875	0,2371	1,2176
Latupa - Wotu	0,0345	0,2875	0,2371	1,2176
Mandai - Daya	0,263	0,3	0,632	1,56
Maros - Sidrap	0,0345	0,2875	0,2371	1,2176
Majene - Mamuju	0,129	0,396	0,28	0,953
Makale - Palopo	0,073	0,394	0,189	0,931
Malili - Wotu	0,084	0,346	0,262	0,809
Mamuju - PLTU Mamuju	0,084	0,346	0,262	0,809
Mamuju - Topoyo	0,12	0,4	0,3	0,9
Nii Tanasa - Puwatu	0,263	0,3	0,632	1,56
Pare-pare - Polmas	0,12	0,4	0,3	0,9
Pare-pare - Pinrang	0,123	0,404	0,313	0,993
Pare - Suppa	0,117	0,409	0,329	1,009
Punagaya - Jeneponto	0,134	0,44	0,317	1,089
Polmas - Majene	0,121	0,396	0,272	0,99
Palopo - Siwa	0,084	0,346	0,262	0,809
Sidrap - PLTB Sidrap	0,0345	0,2875	0,2371	1,2176
Pamona - Poso	0,12	0,4	0,3	0,9
Pangkep - Barru	0,123	0,404	0,266	0,923
Pankep - Mandai	0,263	0,3	0,632	1,56
Pangkep - Tonasa III	0,236	0,433	0,268	1,272
Poso - Sidera	0,12	0,4	0,3	0,9
Pare - Sidrap	0,122	0,399	0,285	1,028
Pinrang - Bakaru	0,12	0,4	0,3	0,9
Pasangkayu - Silae	0,12	0,4	0,3	0,9
Sidera - Silae	0,12	0,4	0,3	0,9
Sidera - Talise	0,263	0,3	0,632	1,56
Sidrap - Enrekang	0,073	0,394	0,189	0,931
Sidrap - Makale	0,073	0,394	0,189	0,931
Sidrap - Sengkang	0,0345	0,2875	0,2371	1,2176
Sidrap - Soppeng	0,121	0,4	0,233	0,861
Sungguminasa - Bolangi	0,0345	0,2875	0,2371	1,2176
Sungguminasa - Maros	0,0345	0,2875	0,2371	1,2176
Sungguminasa - Talasa	0,0345	0,2875	0,2371	1,2176
Sengkang - Siwa	0,084	0,346	0,262	0,809
Sengkang - soppeng	0,072	0,372	0,151	0,502
Sinjai - Bone	0,116	0,391	0,286	0,915
Sinjai - Tangka Manipi	0,2344	0,3158	0,2824	1,6034
Soppeng - Bone	0,119	0,386	0,259	0,973
Tanjung Bunga - Punagaya	0,0345	0,2875	0,2371	1,2176
Tanjung Bunga - Sungguminasa	0,0345	0,2875	0,2371	1,2176

Nama Saluran	R'(AC,20°C) Ohm/km	X' Ohm/km	R0'(AC) Ohm/km	X0' Ohm/km
Tello - Borongloe	0,236	0,433	0,268	1,272
Tello - Bosowa	0,12	0,4	0,3	0,9
Tello - Barawaja	0,236	0,433	0,268	1,272
Tello - Daya	0,263	0,3	0,632	1,56
Tello - Kima	0,12	0,4	0,3	0,9
Tello - Mandai	0,263	0,3	0,632	1,56
Tello - Panakukang	0,0345	0,2875	0,2371	1,2176
Tello - Sungguminasa	0,0345	0,2875	0,2371	1,2176
Tello Lama - Bontoala	0,056	0,1147	0,056	0,1147
Tello Lama - Bontoala 70kv	0,236	0,4333	0,268	1,272
Tello Lama - Tello	0,084	0,346	0,262	0,809
Talasa - Jeneponto	0,0345	0,2875	0,2371	1,2176
Talasa - Punagaya	0,0345	0,2875	0,2371	1,2176
Talise - Parigi	0,263	0,3	0,632	1,56
Topoyo - Pasang Kayu	0,12	0,4	0,3	0,9
Wotu - Pamona	0,12	0,4	0,3	0,9

3) Pembangkit sistem Sulbagsel

Data pembangkit sistem sulbagsel dapat dilihat pada tabel berikut ini:

Tabel Data pembangkit sistem Sulbagsel pada beban puncak siang dan beban puncak malam

Nama Pembangkit	Beban Puncak Siang		Beban Puncak Malam		Inertia Constant
	MW	MVar	MW	MVar	H
PLTG GE 1	0	0	0	0	5,1
PLTG GE 2	0	0	0	0	5,1
PLTU BARRU 1	39,11	5,68	40,13	5,57	5
PLTU BARRU 2	11,43	4,98	11,4	2,06	5
PLTA BILI-BILI 14MVA	9	-2	9	-2	2,97
PLTA BILI-BILI 6MVA	0	0	0	0	2,97
PLTG ALSTHOM 1	0	0	0	0	5,5
PLTG ALSTHOM 2	0	0	0	0	5,5
PLTD MITSUBISHI 1	0	0	0	0	1,02
PLTD MITSUBISHI 2	0	0	0	0	1,02
PLTD SWD 1	0	0	0	0	1,02
PLTD SWD2	0	0	0	0	1,02
PLTG WESCAN	0	0	0	0	5
PLTG GT 11	29,76	0	26,09	0	5,56
PLTG GT 12	29,53	0	26,06	0	5,56
PLTGU GT 18	33,94	0	31,78	0	5,56
PLTG GT 21	34,52	5,95	34,32	5,4	5,56
PLTG GT 22	0	0	0	0,12	5,56
PLTGU GT 28	17,62	-2,99	17,58	-3,73	5,56
PLTA BAKARU1	30	0	45	0	2,97
PLTA BAKARU2	30	0	45	0	2,97
PLTA MALEA 1 3-35MW	2,155	0,575	2,64	0,52	2,97
PLTA POSO 1 #2	0	0	26,5	0	2,97
PLTA POSO 1 #3	28,6	0	26,4	0	2,97
PLTA POSO 2 #1	0	0	50	0	2,97
PLTA POSO 2 #2	43,7	2,56	50,5	0	2,97
PLTA POSO 2 #3	38,6	3,73	52,7	0	2,97
PLTA TANGKA 3MVA	2	0,18	2	0,22	2,97

Nama Pembangkit	Beban Puncak Siang		Beban Puncak Malam		Inertia Constant
	MW	MVar	MW	MVar	H
PLTA TANGKA 6MVA	0	0	0	0	2,97
PLTD ALTRAC	0	0	0	0	1,02
PLTD SABILAMBO 2MW	0,9	0	1,95	0	1,02
PLTD SILAE 1	0	0	0	0	1,02
PLTD SILAE 2	0	0	0	0	1,02
PLTD TELLO LAMA	0	0	0	0	1,02
PLTM BUNGIN	0	0	0	0	2,97
PLTMG NIITANASA 1	5,5	0	5,49	0	5,1
PLTMG NIITANASA 2	0	0	0	0	5,1
PLTMG NIITANASA 3	0	0	0	0	5,1
PLTMG NIITANASA 4	0	0	0	0	5,1
PLTMG NIITANASA 5	0	0	0	0	5,1
PLTMG NIITANASA 6	0	0	0	0	5,1
PLTMH MIKUASI 500VA	0,38	0	0,38	0	2,97
PLTMH SIBUANG	0,6	0,02	0,8	0,04	2,97
PLTMH SITEBA	2,25	1,23	2,33	1,21	2,97
PLTU JENEPONTO 1	57,57	23,67	57,59	23,82	5
PLTU JENEPONTO 1 EXP	100,29	18,23	95,39	16,16	5
PLTU JENEPONTO 2	55,35	25,44	55,97	25,65	5
PLTU JENEPONTO 2 EXP	100,52	17,9	95,76	16,96	5
PLTU MAMUJU 1	20,06	7,73	24,81	8,85	5
PLTU MAMUJU 2	20,44	8,33	25	9,5	5
PLTU MORAMO 1	39,81	0	50	0	5
PLTU MORAMO 2	41,47	0	50	0	5
PLTU NIITANASA 1	9,1	0	9,8	0	5
PLTU NIITANASA 2	4,7	0	4,6	0	5
PLTU NIITANASA 3	10,6	0	11,1	0	5
PLTU PUNAGAYA 1	99,34	10,6	100	10,6	5
PLTU PUNAGAYA 2	99,49	8,47	99,98	8,47	5
PLTU BARAWAJA 1	0	0	0	0	5
PLTU BARAWAJA 2	0	0	0	0	5
PLTM SAWITTO	0,81	0	0,81	0	2,97
PLTD SUPPA 1	0	0	0	0	1,02
PLTD SUPPA 2	0	0	0	0	1,02
PLTD SUPPA 3	0	0	0	0	1,02
PLTD SUPPA 4	0	0	0	0	1,02
PLTD SUPPA 5	0	0	0	0	1,02
PLTD SUPPA 6	0	0	0	0	1,02

4) Transformator

Adapun data spesifikasi transformator yang ada pada sistem transmisi sulbagsel dapat dilihat pada Tabel berikut ini:

Tabel Data transformator sistem Sulbagsel

Nama	rtd. Power MVA	Nominal Freq. Hz	HV-rtd. Volt. kV	LV-rtd. Volt. kV
DIS BARRU 20MVA	20	50	150	20
DIS BARRU 5MVA	5	50	150	20
DIS BKARU	20	50	150	20
DIS BKMBA1 20MVA	20	50	150	20
DIS BKMBA2 30MVA	30	50	150	20
DIS BKMBA3 60MVA	60	50	150	20
DIS BLNGI	60	50	150	20
DIS BLUSU 6MVA	6,3	50	150	20
DIS BNTNG NEW	30	50	150	20
DIS BONE 20MVA	20	50	150	20
DIS BONE 30MVA	30	50	150	20
DIS BRLOE 10MVA	10	50	70	20
DIS BRLOE 20MVA	20	50	70	20
DIS DAYA1 20MVA	20	50	70	20
DIS DAYA2 20MVA	20	50	70	20
DIS ERKNG 30MVA	30	50	150	20
DIS JNPTO 20MVA	20	50	150	20
DIS JNPTO 30MVA	30	50	150	20
DIS KLAKA 30MVA	30	50	150	20
DIS KNDRI 60MVA	60	50	150	20
DIS LSUSU 30MVA	30	50	150	20
DIS MAROS1	30	50	150	20
DIS MAROS2	30	50	150	20
DIS MJENE 20MVA	20	50	150	20
DIS MKALE 20MVA	20	50	150	20
DIS MKALE 30MVA	30	50	150	20
DIS MMUJU 16MVA	16	50	150	23.1
DIS MMUJU 20MVA	20	50	150	11
DIS MMUJU 30MVA	30	50	150	20
DIS MNDAI1 20MVA	20	50	70	20
DIS MNDAI2 20MVA	20	50	70	20
DIS MRAMO 60MVA	60	50	150	20
DIS NTNSA 1 10MVA	12	50	70	20
DIS NTNSA 2 10MVA	12	50	70	20
DIS NTNSA 3 10MVA	12	50	70	20
DIS NTNSA 4 10MVA	12	50	70	20
DIS PARE 16MVA	16	50	150	20
DIS PARE 30MVA	30	50	150	20
DIS PGAYA 30MVA	30	50	150	20
DIS PLMAS 20MVA	20	50	150	20
DIS PLMAS 30MVA	30	50	150	20
DIS PLOPO1 20MVA	20	50	150	20
DIS PLOPO1 30MVA	30	50	150	20
DIS PLOPO2 20MVA	20	50	150	20
DIS PLOPO2 30MVA	30	50	150	20
DIS PMONA 10MVA	10	50	150	20

Nama	rtd. Power MVA	Nominal Freq. Hz	HV-rtd. Volt. kV	LV-rtd. Volt. kV
DIS PNKEP 20MVA	20	50	150	20
DIS PNKEP 30MVA	30	50	150	20
DIS PNKEP2 30MVA	30	50	150	20
DIS POSO 30MVA	30	50	150	20
DIS PRANG 16MVA	16	50	150	20
DIS PRANG 30MVA	30	50	150	20
DIS PRIGI 10MVA	10	50	70	20
DIS PRIGI 20MVA	20	50	70	20
DIS PRIGI 30MVA	30	50	70	20
DIS PSKYU 30MVA	30	50	150	20
DIS PUWATU 20MVA	20	50	70	20
DIS PWATU1 30MVA	30	50	70	20
DIS PWATU2 30MVA	30	50	70	20
DIS SDERA 30MVA	30	50	150	20
DIS SDERA 60MVA	60	50	150	20
DIS SDRAP 20MVA	20	50	150	20
DIS SDRAP 30MVA	30	50	150	20
DIS SGMSA1	60	50	150	20
DIS SGMSA2	60	50	150	20
DIS SILAE 30MVA	30	50	150	20
DIS SILAE 60MVA	60	50	150	20
DIS SIWA 30MVA	30	50	150	20
DIS SKANG 20MVA	20	50	150	20
DIS SKANG 30MVA	30	50	150	20
DIS SNJAI 20MVA	20	50	150	20
DIS SNJAI 30MVA	30	50	150	20
DIS SPENG 20MVA	20	50	150	20
DIS SPENG1 30MVA	30	50	150	20
DIS SPENG2 60MVA	60	50	150	20
DIS TBNGA1	60	50	150	20
DIS TBNGA2	60	50	150	20
DIS TLASA 30MVA	30	50	150	20
DIS TLASA 60MVA	60	50	150	20
DIS TLISE 10MVA	12	50	70	20
DIS TPOYO 30MVA	30	50	150	20
DIS UNNHA 30MVA	30	50	150	20
DIS-BNTLA1-30MVA	30	50	70	20
DIS-BNTLA2-30MVA	30	50	70	20
DIS-BNTLA3-60MVA	60	50	150	20
DIS-BNTLA4-60MVA	60	50	150	20
DIS-BWAJA-10MVA	10	50	30	20
DIS-KIMA1-30MVA	30	50	150	20
DIS-KIMA2-60MVA	60	50	150	20
DIS-PKANG-30MVA	30	50	150	20
DIS-PKANG1-60MVA	60	50	150	20
DIS-PKANG2-60MVA	60	50	150	20
DIS-TELLO1-60MVA	60	50	150	20
DIS-TELLO2-60MVA	60	50	150	20
DIS-TLAMA1	30	50	150	20
DIS-TLAMA2	30	50	150	20
DIS-TLAMA3	60	50	150	20
HUADI 40MVA	40	50	150	33
IBT PNKEP1 31MVA	31,5	50	150	70

Nama	rtd. Power MVA	Nominal Freq. Hz	HV-rtd. Volt. kV	LV-rtd. Volt. kV
IBT PNKEP2 31MVA	31,5	50	150	70
IBT PNKEP3 31MVA	31,5	50	150	70
IBT PWATU 60MVA	60	50	150	70
IBT SDERA 30MVA	30	50	150	70
IBT-TELLO-20MVA	20	50	150	70
IBT-TELLO1-31.5MVA	31,5	50	150	70
IBT-TELLO2-31.5MVA	31,5	50	150	70
IBT-TLAMA1	31,5	50	150	70
IBT-TLAMA2	31,5	50	150	70
IBT1 LTUPA	90	50	275	150
IBT1 PMONA	90	50	275	150
IBT1 WOTU	90	50	275	150
IBT2 LTUPA	90	50	275	150
IBT2 PMONA	90	50	275	150
IBT2 WOTU	90	50	275	150
IBT3 LTUPA	90	50	275	150
IBT4 LTUPA	90	50	275	150
MLILI 30MVA	30	50	150	20
TG BARRU1 70MVA	70	50	150	11
TG BARRU2 70MVA	70	50	150	11
TG BILI1	20	50	20	11
TG BILI2	20	50	20	11
TG BKARU1 80MVA	80	50	150	11
TG BKARU2 80MVA	80	50	150	11
TG GT 11	70	50	150	11
TG GT 12	70	50	150	11
TG GT 18	80	50	150	11
TG GT 21	90	50	150	11
TG GT 22	90	50	150	11
TG GT 28	90	50	150	11
TG JNPTO1 125MVA	125	50	150	11
TG JNPTO2 125MVA	125	50	150	11
TG MKUSI 700VA	0,7	50	20	0.4
TG MMUJU1	31,25	50	150	11
TG MMUJU2	31,25	50	150	11
TG MRAMO1 75MVA	75	50	150	11
TG MRAMO2	75	50	150	11
TG NTNSA1 40MVA	40	50	70	11
TG NTNSA2 40MVA	40	50	70	11
TG PGAYA1	125	50	150	11
TG PGAYA2	125	50	150	11
TG PLTB SDRP1	50	50	150	33
TG PLTB SDRP2	50	50	150	33
TG PLTB TOLO2	45	50	150	33
TG PLTD TOLO1	45	50	150	33
TG PLTU EXP1 140MVA	140	50	150	11
TG PLTU EXP2 140MVA	140	50	150	11
TG POSO1	80	50	275	11
TG POSO2	80	50	275	11
TG POSO3	80	50	275	11
TG SBLMB 1MVA	3	50	20	6.3
TG SILAE1	30	50	70	20
TG SILAE2	30	50	70	20

Nama	rtd. Power MVA	Nominal Freq. Hz	HV-rtd. Volt. kV	LV-rtd. Volt. kV
TG SUPPA1 45MVA	45	50	150	11
TG SUPPA2 45MVA	45	50	150	11
TG WOTU	30	50	150	20
TG-ALSTOM1-30MVA	30	50	30	6.3
TG-ALSTOM2-27MVA	27	50	70	11
TG-GE1	70	50	150	11
TG-GE2	70	50	150	11
TG-MITS1	15	50	150	6.3
TG-MITS2	15	50	150	6.3
TG-PLTU1	15	50	30	6.3
TG-PLTU2	15	50	30	6.3
TG-SWD1	15	50	150	6.3
TG-SWD2	15	50	150	6.3
TG-WESCAN1-18MVA	18,5	50	30	6.3

5) Beban puncak siang dan malam

Selanjutnya adalah data beban puncak siang dan beban puncak malam pada sistem Sulbagsel yang dapat dilihat pada tabel berikut ini:

Tabel Data beban puncak siang dan beban puncak malam sistem Sulbagsel

Transformator	Beban Puncak Siang		Beban Puncak Malam	
	MW	MVar	MW	MVar
BARRU1	0	0	0	0
BARRU2	7,2	2,5	9,3	1,7
BKARU	0	0	0,1	0
BKMBA1	8	3,8	12,3	3,3
BKMBA2	9,1	3,9	12,9	3,3
BKMBA3	5,9	1,9	6,2	1,5
BLNGI	21	7,6	23,6	6,4
BLUSU	2,5	0,9	3,3	0,6
BNTLA1	48,2	13,8	45,5	12,2
BNTLA2	0	0	0	0
BNTLA3	0	0	0	0
BNTLA4	0	0	0	0
BNTNG NEW	7,3	2,5	11,7	0,9
BONE1	12,9	4,6	15,6	3,5
BONE2	10,5	4,6	16,7	3,8
BRLOE	0	0	0,9	0
DAYA1	11	0	11,3	0
DAYA2	12,9	3,3	13,7	3,3
ERKNG	8,2	2,4	11,9	1,7
JNPTO1	5,7	1,9	8,8	1,7
JNPTO2	8,3	2,6	13,8	2,4
KIMA1	20,9	7,1	14,8	4,3
KIMA2	8,5	3,9	6,3	2,4
KLAKA	15,59	5	19,24	5
KNDRI	39,32	15,07	41,3	38,4
LSUSU	5,27	1,6	7,17	1,4

Transformator	Beban Puncak Siang		Beban Puncak Malam	
	MW	MVar	MW	MVar
MAROS1	9,6	3,6	12,3	2,3
MAROS2	8,4	2,5	9,2	2,2
MJENE	11,1	2,7	15,6	1,6
MKALE1	4,9	2,9	4,7	1,9
MKALE2	4,3	1,3	6,6	0,7
MLILI	4,52	1,32	5,37	1,01
MMUJU1	2,2	0,2	2,9	0,1
MMUJU2	12,8	3	12,8	2,6
MNDAI1	10,3	3,7	11,6	2,8
MNDAI2	13,1	0	15,6	0
MRAMO	11,02	0	12,05	3,34
NTNSA	4,3	0,2	6,2	0,4
PARE1	4,9	1,4	5,8	-0,5
PARE2	13,9	3,7	14,5	5,2
PGAYA	2,37	0,69	3,91	0,54
PKANG1	34,9	9,3	34,8	8,8
PKANG2	0	0	0	0
PKANG3	39,9	9,7	40	9,6
PLMAS1	8,4	3,1	10,8	3
PLMAS2	4,6	0,7	7,2	0,2
PLOPO1	11,1	3,3	11,9	3,3
PLOPO2	4,8	1,4	5,3	1,3
PLOPO3	11,2	5	15,1	5,8
PLOPO4	4,1	2	5,5	1,2
PMONA	0,6	0,38	1,61	-0,03
PNKEP1	8,9	3	10,4	2,2
PNKEP2	0	0	0	0
PNKEP3	10,6	4,8	10,2	2,2
POSO	9,69	3,1	12,55	2,79
PRANG1	7,9	2,3	9,5	0
PRANG2	16,4	9,2	20,1	0
PRIGI1	5,9	2,1	7,7	2,1
PRIGI2	5,3	1,8	8,4	2,4
PRIGI3	0	0	0	0
PSKYU	10,7	2,1	14	2,5
PWATU1	4,9	1,8	5,2	1,7
PWATU2	0	0	0	0
PWATU3	16,8	6,4	17,2	6,2
SDERA1	16,5	4,5	21,7	3,7
SDERA2	0	0	0	0
SDRAP 1	9,3	3	10	2,3
SDRAP 2	16,7	7,3	19,3	5,6
SGMSA1	20,2	6,2	27	7
SGMSA2	19,6	4,3	25,5	4,5
SILAE1	13,2	3,3	18,7	3,2
SILAE2	28,3	8,4	27,9	6,5
SINJAI1	6,1	4,3	10,8	1,5
SINJAI2	7,2	1,6	11,2	0,4
SIWA	6,1	2	8,6	1,3
SKANG1	7,3	2,4	8,5	2,1
SKANG2	13,8	5	18,9	4,1
SPENG1	0	0	0	0
SPENG2	9,8	2,4	9,7	1,9

Transformator	Beban Puncak Siang		Beban Puncak Malam	
	MW	MVar	MW	MVar
SPENG3	5,8	2,1	6,8	1,4
TALISE1	0	0	0	0
TALISE2	23,7	7,5	25,3	6,3
TALISE3	3,8	0,9	4,1	0,9
TBNGA1	23,2	6,2	28,3	7,4
TBNGA2	26,8	6,6	27,9	8,2
TELLO1	19,6	4,8	19,2	4,6
TELLO2	32,5	8,4	35,9	7,5
TLAMA 1	3,1	0	0	0
TLAMA 2	15,4	4	12	3,5
TLAMA3	29,7	10,1	29,6	7,8
TLASA1	9,5	3	14,6	2,8
TLASA2	6	2,4	4,8	0,8
TNASA	22,7	4,7	22,3	0
TPOYO	7,1	0,76	11,1	1,6
UNNHA	13,58	5,83	19,66	4,78
WOTU	12,59	4,92	16,57	3,46
BSOWA	6,1	6	9,9	0
BWAJA	0	0	0	0

Lampiran 3 Hasil simulasi salah satu pusat pembangkit lepas

1) Simulasi PLTU Jeneponto ekspansi unit 1 lepas

Adapun hasil simulasi dari lepasnya PLTU Jeneponto ekspansi unit 1 dapat dilihat pada gambar dan tabel berikut ini:

Tabel Respon sudut rotor Saat PLTU Jeneponto ekspansi unit 1 lepas dari sistem

WAKTU (s)	*Sudut Rotor(Derajat)*							
	PLTMG NIITANASA 1		*PLTU NIITANASA 1*		*PLTU NIITANASA 3*		*PLTU JENEPONTO EXP 1*	
	bp. Siang	*bp. Malam*	*bp. Siang*	*bp. Malam*	*bp. Siang*	*bp. Malam*	*bp. Siang*	*bp. Malam*
0,900	23,095	-29,772	8,641	-3,502	12,388	-0,588	0,434	-5,797
1,900	23,095	-29,772	8,641	-3,502	12,388	-0,588	0,434	-5,797
2,900	30,793	-23,209	16,528	3,983	20,401	6,965	0,000	0,000
3,900	33,315	-21,392	19,018	6,097	22,965	9,110	0,000	0,000
4,900	30,402	-24,884	15,766	2,397	19,782	5,433	0,000	0,000
5,900	28,589	-27,506	13,622	-0,236	17,737	2,832	0,000	0,000
6,900	30,424	-26,617	15,320	0,992	19,572	4,106	0,000	0,000
7,900	32,462	-25,387	17,244	2,524	21,621	5,673	0,000	0,000
8,900	32,423	-26,135	16,961	1,833	21,445	5,004	0,000	0,000
9,900	31,920	-27,486	16,150	0,474	20,747	3,665	0,000	0,000
10,900	32,577	-27,762	16,539	0,288	21,264	3,502	0,000	0,000
11,900	33,691	-27,426	17,401	0,744	22,253	3,978	0,000	0,000
12,900	34,221	-27,556	17,633	0,655	22,601	3,903	0,000	0,000
13,900	34,444	-28,100	17,518	0,100	22,601	3,357	0,000	0,000
14,900	34,993	-28,422	17,725	-0,215	22,928	3,053	0,000	0,000
15,900	35,774	-28,426	18,162	-0,192	23,485	3,084	0,000	0,000
16,900	36,419	-28,471	18,437	-0,226	23,876	3,056	0,000	0,000
17,900	36,949	-28,683	18,568	-0,451	24,122	2,834	0,000	0,000
18,900	37,576	-28,883	18,781	-0,666	24,452	2,622	0,000	0,000
19,900	38,309	-28,963	19,083	-0,752	24,871	2,538	0,000	0,000
20,900	39,028	-29,009	19,348	-0,804	25,253	2,487	0,000	0,000
21,900	39,724	-29,102	19,564	-0,912	25,585	2,380	0,000	0,000
22,900	40,468	-29,211	19,801	-1,038	25,941	2,253	0,000	0,000
23,900	41,271	-29,284	20,073	-1,125	26,332	2,166	0,000	0,000
24,900	42,100	-29,329	20,340	-1,182	26,720	2,108	0,000	0,000
25,900	42,951	-29,380	20,594	-1,247	27,097	2,042	0,000	0,000
26,900	43,849	-29,440	20,859	-1,322	27,488	1,966	0,000	0,000
27,900	44,803	-29,491	21,140	-1,386	27,897	1,900	0,000	0,000
28,900	45,808	-29,527	21,426	-1,435	28,316	1,850	0,000	0,000
29,900	46,866	-29,561	21,715	-1,480	28,741	1,803	0,000	0,000
30,900	47,993	-29,596	22,014	-1,527	29,182	1,754	0,000	0,000
31,900	49,200	-29,630	22,328	-1,572	29,643	1,708	0,000	0,000
32,900	50,492	-29,657	22,654	-1,609	30,122	1,669	0,000	0,000
33,900	51,883	-29,680	22,992	-1,642	30,621	1,635	0,000	0,000
34,900	53,391	-29,703	23,346	-1,673	31,145	1,602	0,000	0,000
35,900	55,035	-29,725	23,720	-1,703	31,698	1,570	0,000	0,000
36,900	56,838	-29,744	24,115	-1,730	32,284	1,541	0,000	0,000

WAKTU (s)	*Sudut Rotor(Derajat)*							
	PLTMG NIITANASA 1		*PLTU NIITANASA 1*		*PLTU NIITANASA 3*		*PLTU JENEPONTO EXP 1*	
	bp. Siang	*bp. Malam*	*bp. Siang*	*bp. Malam*	*bp. Siang*	*bp. Malam*	*bp. Siang*	*bp. Malam*
37,900	58,830	-29,761	24,534	-1,754	32,907	1,516	0,000	0,000
38,900	61,050	-29,777	24,981	-1,776	33,574	1,492	0,000	0,000
39,900	63,548	-29,792	25,462	-1,797	34,293	1,470	0,000	0,000
40,900	66,389	-29,805	25,981	-1,816	35,073	1,450	0,000	0,000
41,900	69,661	-29,817	26,547	-1,834	35,925	1,431	0,000	0,000
42,900	73,484	-29,829	27,169	-1,850	36,865	1,414	0,000	0,000
43,900	78,031	-29,839	27,859	-1,864	37,911	1,398	0,000	0,000
44,900	83,552	-29,849	28,632	-1,878	39,089	1,383	0,000	0,000
45,900	90,427	-29,857	29,508	-1,891	40,432	1,370	0,000	0,000
46,900	99,256	-29,866	30,515	-1,902	41,984	1,357	0,000	0,000
47,900	111,023	-29,873	31,685	-1,913	43,803	1,346	0,000	0,000
48,900	127,377	-29,880	33,053	-1,923	45,962	1,335	0,000	0,000
49,900	150,939	-29,887	34,629	-1,932	48,517	1,325	0,000	0,000

2) Tegangan bus saat PLTU Jeneponto ekspansi unit 1 lepas

Adapun Tegangan dari tiap busbar dapat dilihat pada tabel berikut ini:

Tabel tegangan tiap bus Saat PLTU Jeneponto ekspansi unit 1 lepas dari sistem

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
BRLOE\BRLOE	Busbar 70 KV	1,00713	0,95453	-0,0526
DAYA\DAYA	Busbar 70 KV	0,997261	0,945158	-0,052103
MNDAI\MNDAI	Busbar 70 KV	0,994858	0,943121	-0,051737
NTNSA\NTNSA	Busbar 70 KV	1,010421	0,9069	-0,103521
PNKEP7\PNKEP-70KV	Busbar 70 KV	1,0031	0,95286	-0,05024
PRIGI\PRIGI	Busbar 70 KV	0,943098	0,908286	-0,034812
PWATU7\PWATU 70KV	Busbar 70 KV	1,007456	0,905443	-0,102013
SDERA7\SDERA 70KV	Busbar 70 KV	0,991263	0,954673	-0,03659
TLISE7\TALISE 70KV	Busbar 70 KV	0,959233	0,923826	-0,035407
TELLO7\TELLO-70KV	Busbar 70 KV	1,003605	0,950817	-0,052788
TNASA\TNASA	Busbar 70 KV	1,000304	0,950204	-0,0501
BAR PLTB TOLO	Busbar 150 KV	1,000636	0,941607	-0,059029
BAR PLTU MMUJU	Busbar 150 KV	0,983427	0,950757	-0,03267
BARRU\BARRU	Busbar 150 KV	0,997503	0,952752	-0,044751
BKARU\BKARU	Busbar 150 KV	1,003583	0,970577	-0,033006
BKMBA\BKMBA	Busbar 150 KV	0,963273	0,912833	-0,05044
BLNGI\BLNGI	Busbar 150 KV	0,974789	0,922648	-0,052141
BLUSU\BLUSU	Busbar 150 KV	1,002956	0,960179	-0,042777
BNTNGN\BNTNG NEW	Busbar 150 KV	0,99194	0,933045	-0,058895
BONE\BONE	Busbar 150 KV	0,971468	0,929115	-0,042353
BNTLA\BONTOALA	Busbar 150 KV	0,974788	0,922234	-0,052554
BSOWA\BSOWA	Busbar 150 KV	0,981316	0,931397	-0,049919
ERKNG\ERKNG	Busbar 150 KV	0,98307	0,942675	-0,040395
JENEPONTO EXPN	Busbar 150 KV	1,001311	0,939453	-0,061858
JNPTO\JNPTO	Busbar 150 KV	0,994199	0,93517	-0,059029
KIMA\KIMA	Busbar 150 KV	0,973596	0,921859	-0,051737

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
KLAKA\KLAKA	Busbar 150 KV	0,984021	0,913856	-0,070165
KNDRI\KNDRI	Busbar 150 KV	0,990264	0,909604	-0,08066
LSUSU\LSUSU	Busbar 150 KV	0,989989	0,925656	-0,064333
LTUPA1\LTUPA 150KV	Busbar 150 KV	0,97556	0,936388	-0,039172
MAROS\MAROS	Busbar 150 KV	0,97696	0,926836	-0,050124
MJENE\MJENE	Busbar 150 KV	0,983042	0,949131	-0,033911
MKALE\MKALE	Busbar 150 KV	0,978997	0,939216	-0,039781
MLILI\MLILI	Busbar 150 KV	1,000522	0,944241	-0,056281
MMUJU\MMUJU	Busbar 150 KV	0,979189	0,946415	-0,032774
PANAKUKANG	Busbar 150 KV	0,972946	0,920693	-0,052253
PARE\PARE	Busbar 150 KV	0,991938	0,951426	-0,040512
PGAYA\PGAYA	Busbar 150 KV	1,000983	0,939305	-0,061678
PLMAS\PLMAS	Busbar 150 KV	0,987893	0,953328	-0,034565
PLOPO\PLOPO	Busbar 150 KV	0,976831	0,93745	-0,039381
GSDRP\PLTB SDRP	Busbar 150 KV	0,990964	0,948956	-0,042008
PLTU JENEPONTO	Busbar 150 KV	1,000833	0,939379	-0,061454
PLTU MRAMO	Busbar 150 KV	1,003303	0,922315	-0,080988
PMONA\PMONA	Busbar 150 KV	0,994272	0,955679	-0,038593
PNKEP\PNKEP	Busbar 150 KV	0,988815	0,940174	-0,048641
POSO\POSO	Busbar 150 KV	0,969545	0,932194	-0,037351
PRANG\PRANG	Busbar 150 KV	0,988833	0,950899	-0,037934
PSGKYU\PSGKYU	Busbar 150 KV	0,923356	0,890876	-0,03248
PWATU\PWATU	Busbar 150 KV	0,989238	0,90812	-0,081118
SDERA\SDERA	Busbar 150 KV	0,902315	0,869009	-0,033306
SDRAP\SDRAP	Busbar 150 KV	0,991015	0,94988	-0,041135
SGMSA\SGMSA	Busbar 150 KV	0,975563	0,922728	-0,052835
SILAE\SILAE	Busbar 150 KV	0,901699	0,868821	-0,032878
SIWA\SIWA	Busbar 150 KV	0,990166	0,950798	-0,039368
SKANG\SKANG	Busbar 150 KV	1,002059	0,962526	-0,039533
SNJAI\SNJAI	Busbar 150 KV	0,959777	0,913773	-0,046004
SPENG\SPENG	Busbar 150 KV	0,988492	0,947811	-0,040681
TBNGA\TBNGA	Busbar 150 KV	0,975439	0,922742	-0,052697
TELLO\TELLO	Busbar 150 KV	0,973902	0,921598	-0,052304
TLAMA\TELLO LAMA	Busbar 150 KV	0,974341	0,921901	-0,05244
TLASA\TLASA	Busbar 150 KV	0,986842	0,92966	-0,057182
TPOYO\TPOYO	Busbar 150 KV	0,951523	0,919102	-0,032421
UNNHA\UNNHA	Busbar 150 KV	0,984468	0,907958	-0,07651
WOTU\WOTU	Busbar 150 KV	1,005549	0,952502	-0,053047
LTUPA2\LTUPA	Busbar 275 KV	0,996757	0,955103	-0,041654
PMONA 275KV	Busbar 275 KV	0,998505	0,958832	-0,039673
WOTU27\WOTU 275KV	Busbar 275 KV	0,993245	0,950287	-0,042958

3) Simulasi PLTU Jeneponto ekspansi unit 1 dan unit 2 lepas

Adapun hasil simulasi dari lepasnya PLTU Jeneponto ekspansi unit 1 dan unit 2 dapat dilihat pada tabel berikut ini:

Tabel Respon sudut rotor: Saat PLTU Jeneponto ekspansi unit 1 dan 2 lepas dari sistem

	Sudut Rotor(Derajat)							
WAKTU	PLTMG		PLTU		PLTU		PLTU	
	Niitanasa 1		Niitanasa 1		Niitanasa 3		Jeneponto EXP 1	
(s)	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam
0,9	23,095	-29,772	8,641	-3,502	12,388	-0,588	0,434	-5,797
1,9	23,095	-29,772	8,641	-3,502	12,388	-0,588	0,434	-5,797
2,9	40,757	-15,171	26,866	13,210	30,973	16,305	0,000	0,000
3,9	45,254	-12,118	31,252	16,834	35,538	19,995	0,000	0,000
4,9	37,828	-20,617	22,975	7,813	27,440	11,026	0,000	0,000
5,9	37,019	-24,419	21,552	4,208	26,359	7,506	0,000	0,000
6,9	43,581	-20,880	28,004	8,709	33,293	12,143	0,000	0,000
7,9	45,569	-20,067	29,554	9,978	35,243	13,489	0,000	0,000
8,9	44,372	-23,463	27,581	6,564	33,703	10,127	0,000	0,000
9,9	46,912	-25,024	29,471	5,190	36,213	8,823	0,000	0,000
10,9	50,487	-24,212	32,374	6,378	39,804	10,084	0,000	0,000
11,9	52,074	-24,536	33,002	6,205	41,157	9,959	0,000	0,000
12,9	54,439	-26,026	34,269	4,713	43,353	8,500	0,000	0,000
13,9	58,226	-26,693	36,852	4,119	47,107	7,944	0,000	0,000
14,9	61,777	-26,699	38,905	4,216	50,575	8,074	0,000	0,000
15,9	65,862	-27,157	41,157	3,774	54,718	7,652	0,000	0,000
16,9	71,351	-27,884	44,426	3,020	60,673	6,913	0,000	0,000
17,9	77,956	-28,276	48,186	2,624	68,454	6,531	0,000	0,000
18,9	86,609	-28,493	53,077	2,405	80,377	6,321	0,000	0,000
19,9	99,217	-28,863	60,504	2,000	103,880	5,921	0,000	0,000

4) Tegangan bus saat PLTU Jeneponto ekspansi unit 1 dan unit 2 lepas

Adapun Tegangan dari tiap busbar dapat dilihat pada tabel berikut ini:

Tabel tegangan tiap bus Saat PLTU Jeneponto ekspansi unit 1 dan unit 2 lepas dari sistem

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
BRLOE\BRLOE	Busbar 70 KV	1,00713	0,894773	-0,11236
DAYA\DAYA	Busbar 70 KV	0,997261	0,886128	-0,11113
MNDAI\MNDAI	Busbar 70 KV	0,994858	0,884486	-0,11037
NTNSA\NTNSA	Busbar 70 KV	1,010421	0,798223	-0,2122
PNKEP7\PNKEP-70KV	Busbar 70 KV	1,0031	0,895768	-0,10733
PRIGI\PRIGI	Busbar 70 KV	0,943098	0,865704	-0,07739
PWATU7\PWATU 70KV	Busbar 70 KV	1,007456	0,797547	-0,20991
SDERA7\SDERA 70KV	Busbar 70 KV	0,991263	0,909916	-0,08135

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
TLISE7\TALISE 70KV	Busbar 70 KV	0,959233	0,880515	-0,07872
TELLO7\TELLO-70KV	Busbar 70 KV	1,003605	0,891041	-0,11256
TNASA\TNASA	Busbar 70 KV	1,000304	0,893272	-0,10703
TOLOB\BAR PLTB TOLO	Busbar 150 KV	1,000636	0,876888	-0,12375
BAR PLTU MMUJU	Busbar 150 KV	0,983427	0,911019	-0,07241
BARRU\BARRU	Busbar 150 KV	0,997503	0,901012	-0,09649
BKARU\BKARU	Busbar 150 KV	1,003583	0,931172	-0,07241
BKMBA\BKMBA	Busbar 150 KV	0,963273	0,856092	-0,10718
BLNGI\BLNGI	Busbar 150 KV	0,974789	0,864178	-0,11061
BLUSU\BLUSU	Busbar 150 KV	1,002956	0,910342	-0,09261
BNTNGN\BNTNG NEW	Busbar 150 KV	0,99194	0,868474	-0,12347
BONE\BONE	Busbar 150 KV	0,971468	0,879745	-0,09172
BNTLA\BONTOALA	Busbar 150 KV	0,974788	0,863401	-0,11139
BSOWA\BSOWA	Busbar 150 KV	0,981316	0,87489	-0,10643
ERKNG\ERKNG	Busbar 150 KV	0,98307	0,894554	-0,08852
JENEPONTO EXPN	Busbar 150 KV	1,001311	0,872162	-0,12915
JNPTO\JNPTO	Busbar 150 KV	0,994199	0,870451	-0,12375
KIMA\KIMA	Busbar 150 KV	0,973596	0,863773	-0,10982
KLAKA\KLAKA	Busbar 150 KV	0,984021	0,831349	-0,15267
KNDRI\KNDRI	Busbar 150 KV	0,990264	0,818718	-0,17155
LSUSU\LSUSU	Busbar 150 KV	0,989989	0,848778	-0,14121
LTUPA1\LTUPA 150KV	Busbar 150 KV	0,97556	0,888633	-0,08693
MAROS\MAROS	Busbar 150 KV	0,97696	0,870107	-0,10685
MJENE\MJENE	Busbar 150 KV	0,983042	0,90843	-0,07461
MKALE\MKALE	Busbar 150 KV	0,978997	0,891313	-0,08768
MLILI\MLILI	Busbar 150 KV	1,000522	0,876118	-0,1244
MMUJU\MMUJU	Busbar 150 KV	0,979189	0,90671	-0,07248
PKANG\PANAKUKANG	Busbar 150 KV	0,972946	0,862145	-0,1108
PARE\PARE	Busbar 150 KV	0,991938	0,903788	-0,08815
PGAYA\PGAYA	Busbar 150 KV	1,000983	0,872102	-0,12888
PLMAS\PLMAS	Busbar 150 KV	0,987893	0,912035	-0,07586
PLOPO\PLOPO	Busbar 150 KV	0,976831	0,889735	-0,0871
GSDRP\PLTB SDRP	Busbar 150 KV	0,990964	0,899704	-0,09126
PLTU JENEPONTO	Busbar 150 KV	1,000833	0,872401	-0,12843
MRAMO\PLTU MRAMO	Busbar 150 KV	1,003303	0,831054	-0,17225
PMONA\PMONA	Busbar 150 KV	0,994272	0,908413	-0,08586
PNKEP\PNKEP	Busbar 150 KV	0,988815	0,884771	-0,10404
POSO\POSO	Busbar 150 KV	0,969545	0,886469	-0,08308
PRANG\PRANG	Busbar 150 KV	0,988833	0,906101	-0,08273
PSGKYU\PSGKYU	Busbar 150 KV	0,923356	0,85118	-0,07218
PWATU\PWATU	Busbar 150 KV	0,989238	0,816927	-0,17231
SDERA\SDERA	Busbar 150 KV	0,902315	0,828268	-0,07405
SDRAP\SDRAP	Busbar 150 KV	0,991015	0,901477	-0,08954
SGMSA\SGMSA	Busbar 150 KV	0,975563	0,86365	-0,11191
SILAE\SILAE	Busbar 150 KV	0,901699	0,828608	-0,07309
SIWA\SIWA	Busbar 150 KV	0,990166	0,903632	-0,08653
SKANG\SKANG	Busbar 150 KV	1,002059	0,915669	-0,08639
SNJAI\SNJAI	Busbar 150 KV	0,959777	0,861038	-0,09874
SPENG\SPENG	Busbar 150 KV	0,988492	0,899926	-0,08857
TBNGA\TBNGA	Busbar 150 KV	0,975439	0,863769	-0,11167
TELLO\TELLO	Busbar 150 KV	0,973902	0,862993	-0,11091
TLAMA\TELLO LAMA	Busbar 150 KV	0,974341	0,863177	-0,11116

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
TLASA\TLASA	Busbar 150 KV	0,986842	0,866664	-0,12018
TPOYO\TPOYO	Busbar 150 KV	0,951523	0,879551	-0,07197
UNNHA\UNNHA	Busbar 150 KV	0,984468	0,820074	-0,16439
WOTU\WOTU	Busbar 150 KV	1,005549	0,888161	-0,11739
LTUPA2\LTUPA	Busbar 275 KV	0,996757	0,904217	-0,09254
PMON27\PMONA 275KV	Busbar 275 KV	0,998505	0,910278	-0,08823
WOTU27\WOTU 275KV	Busbar 275 KV	0,993245	0,897755	-0,09549

5) Simulasi PLTA Poso 2 unit 2 lepas

Adapun hasil simulasi dari lepasnya PLTU Poso 2 unit 2 dapat dilihat pada tabel berikut ini:

Tabel data respon sudut rotor saat PLTA Poso 2 unit 2 lepas dari sistem

WAKTU (s)	Sudut Rotor(Derajat)							
	PLTMG Niitanasa 1		PLTU Niitanasa 1		PLTU Niitanasa 3		PLTA Poso 2 #2	
	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam
-0,10	23,095	-29,772	8,641	-3,502	12,388	-0,588	-38,594	-34,532
0,90	23,095	-29,772	8,641	-3,502	12,388	-0,588	-38,594	-34,532
1,90	23,095	-29,772	8,641	-3,502	12,388	-0,588	-38,594	-34,532
2,90	21,602	-32,211	7,192	-5,921	11,000	-2,984	0,000	0,000
3,90	21,418	-32,970	7,022	-6,405	10,911	-3,428	0,000	0,000
4,90	22,933	-31,541	8,577	-4,693	12,538	-1,683	0,000	0,000
5,90	24,059	-30,534	9,734	-3,470	13,767	-0,432	0,000	0,000
6,90	23,952	-31,160	9,587	-4,053	13,684	-0,993	0,000	0,000
7,90	23,859	-31,854	9,423	-4,728	13,588	-1,647	0,000	0,000
8,90	24,485	-31,586	10,006	-4,342	14,241	-1,239	0,000	0,000
9,90	25,174	-31,131	10,653	-3,769	14,954	-0,647	0,000	0,000
10,90	25,434	-31,219	10,836	-3,812	15,199	-0,677	0,000	0,000
11,90	25,604	-31,510	10,911	-4,080	15,333	-0,932	0,000	0,000
12,90	26,013	-31,510	11,224	-4,031	15,706	-0,871	0,000	0,000
13,90	26,490	-31,344	11,600	-3,810	16,141	-0,639	0,000	0,000
14,90	26,831	-31,325	11,823	-3,759	16,418	-0,580	0,000	0,000
15,90	27,122	-31,426	11,982	-3,843	16,630	-0,658	0,000	0,000
16,90	27,489	-31,455	12,211	-3,852	16,911	-0,659	0,000	0,000
17,90	27,891	-31,402	12,467	-3,774	17,219	-0,576	0,000	0,000
18,90	28,253	-31,379	12,672	-3,733	17,472	-0,531	0,000	0,000
19,90	28,594	-31,408	12,847	-3,751	17,694	-0,546	0,000	0,000
20,90	28,961	-31,427	13,040	-3,759	17,934	-0,551	0,000	0,000
21,90	29,344	-31,412	13,241	-3,733	18,181	-0,522	0,000	0,000
22,90	29,717	-31,400	13,424	-3,711	18,408	-0,498	0,000	0,000
23,90	30,085	-31,407	13,592	-3,712	18,621	-0,497	0,000	0,000
24,90	30,464	-31,416	13,764	-3,715	18,836	-0,499	0,000	0,000
25,90	30,851	-31,414	13,937	-3,707	19,051	-0,489	0,000	0,000
26,90	31,239	-31,409	14,102	-3,697	19,258	-0,479	0,000	0,000
27,90	31,629	-31,411	14,261	-3,695	19,458	-0,476	0,000	0,000

WAKTU (s)	Sudut Rotor(Derajat)							
	PLTMG Niitanasa 1		PLTU Niitanasa 1		PLTU Niitanasa 3		PLTA Poso 2 #2	
	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam
28,90	32,026	-31,415	14,419	-3,696	19,657	-0,477	0,000	0,000
29,90	32,430	-31,416	14,576	-3,694	19,855	-0,474	0,000	0,000
30,90	32,839	-31,415	14,729	-3,690	20,049	-0,471	0,000	0,000
31,90	33,253	-31,416	14,879	-3,689	20,239	-0,469	0,000	0,000
32,90	33,676	-31,419	15,028	-3,690	20,428	-0,470	0,000	0,000
33,90	34,107	-31,420	15,176	-3,691	20,616	-0,471	0,000	0,000
34,90	34,545	-31,421	15,322	-3,690	20,802	-0,470	0,000	0,000
35,90	34,993	-31,423	15,467	-3,691	20,988	-0,471	0,000	0,000
36,90	35,451	-31,425	15,612	-3,692	21,172	-0,473	0,000	0,000
37,90	35,919	-31,427	15,756	-3,693	21,357	-0,474	0,000	0,000
38,90	36,399	-31,428	15,900	-3,694	21,541	-0,475	0,000	0,000
39,90	36,892	-31,430	16,044	-3,695	21,726	-0,477	0,000	0,000
40,90	37,399	-31,432	16,188	-3,697	21,911	-0,479	0,000	0,000
41,90	37,920	-31,434	16,333	-3,699	22,098	-0,481	0,000	0,000
42,90	38,458	-31,435	16,478	-3,700	22,286	-0,483	0,000	0,000
43,90	39,014	-31,437	16,625	-3,702	22,475	-0,485	0,000	0,000
44,90	39,589	-31,439	16,773	-3,704	22,667	-0,487	0,000	0,000
45,90	40,185	-31,441	16,923	-3,706	22,862	-0,489	0,000	0,000
46,90	40,805	-31,442	17,075	-3,708	23,059	-0,492	0,000	0,000
47,90	41,450	-31,444	17,230	-3,709	23,260	-0,494	0,000	0,000
48,90	42,123	-31,446	17,388	-3,711	23,464	-0,496	0,000	0,000
49,90	42,828	-31,447	17,548	-3,713	23,674	-0,498	0,000	0,000
50,90	43,566	-31,449	17,713	-3,715	23,888	-0,500	0,000	0,000
51,90	44,343	-31,450	17,882	-3,717	24,108	-0,503	0,000	0,000
52,90	45,162	-31,452	18,056	-3,719	24,335	-0,505	0,000	0,000
53,90	46,028	-31,453	18,235	-3,720	24,569	-0,507	0,000	0,000
54,90	46,948	-31,455	18,420	-3,722	24,811	-0,509	0,000	0,000
55,90	47,927	-31,456	18,612	-3,724	25,062	-0,511	0,000	0,000
56,90	48,974	-31,458	18,812	-3,726	25,323	-0,513	0,000	0,000
57,90	50,098	-31,459	19,020	-3,727	25,596	-0,515	0,000	0,000
58,90	51,310	-31,460	19,239	-3,729	25,883	-0,517	0,000	0,000
59,90	52,623	-31,461	19,469	-3,730	26,184	-0,518	0,000	0,000
60,90	54,054	-31,463	19,711	-3,732	26,501	-0,520	0,000	0,000
61,90	55,623	-31,464	19,968	-3,733	26,838	-0,522	0,000	0,000
62,90	57,354	-31,465	20,242	-3,735	27,197	-0,524	0,000	0,000
63,90	59,278	-31,466	20,535	-3,736	27,581	-0,525	0,000	0,000
64,90	61,436	-31,467	20,851	-3,737	27,995	-0,527	0,000	0,000
65,90	63,878	-31,468	21,192	-3,739	28,443	-0,528	0,000	0,000
66,90	66,673	-31,469	21,565	-3,740	28,931	-0,530	0,000	0,000
67,90	69,912	-31,470	21,975	-3,741	29,467	-0,531	0,000	0,000
68,90	73,722	-31,471	22,428	-3,742	30,061	-0,533	0,000	0,000
69,90	78,285	-31,472	22,936	-3,743	30,725	-0,534	0,000	0,000
70,90	83,865	-31,473	23,511	-3,745	31,475	-0,535	0,000	0,000
71,90	90,866	-31,473	24,168	-3,746	32,333	-0,536	0,000	0,000
72,90	99,926	-31,474	24,927	-3,747	33,324	-0,538	0,000	0,000
73,90	112,088	-31,475	25,813	-3,748	34,481	-0,539	0,000	0,000
74,90	129,078	-31,476	26,843	-3,749	35,833	-0,540	0,000	0,000

6) Tegangan bus saat PLTA Poso 2 unit 2 lepas

Adapun Tegangan dari tiap busbar dapat dilihat pada tabel berikut ini:

Tabel tegangan tiap bus Saat PLTA Poso 2 unit 2 lepas dari sistem

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
BRLOE\BRLOE	Busbar 70 KV	1,00713	0,995912	-0,011218
DAYA\DAYA	Busbar 70 KV	0,997261	0,985755	-0,011506
MNDAI\MNDAI	Busbar 70 KV	0,994858	0,983318	-0,01154
NTNSA\NTNSA	Busbar 70 KV	1,010421	0,917934	-0,092487
PNKEP7\PNKEP-70KV	Busbar 70 KV	1,0031	0,990968	-0,012132
PRIGI\PRIGI	Busbar 70 KV	0,943098	0,90584	-0,037258
PWATU7\PWATU 70KV	Busbar 70 KV	1,007456	0,916228	-0,091228
SDERA7\SDERA 70KV	Busbar 70 KV	0,991263	0,952102	-0,039161
TLISE7\TALISE 70KV	Busbar 70 KV	0,959233	0,921337	-0,037896
TELLO7\TELLO-70KV	Busbar 70 KV	1,003605	0,992116	-0,011489
TNASA\TNASA	Busbar 70 KV	1,000304	0,988207	-0,012097
TOLOB\BAR PLTB TOLO	Busbar 150 KV	1,000636	0,9906	-0,010036
MMUJUP\BAR PLTU MMUJU	Busbar 150 KV	0,983427	0,960607	-0,02282
BARRU\BARRU	Busbar 150 KV	0,997503	0,984556	-0,012947
BKARU\BKARU	Busbar 150 KV	1,003583	0,991619	-0,011964
BKMBA\BKMBA	Busbar 150 KV	0,963273	0,951183	-0,01209
BLNGI\BLNGI	Busbar 150 KV	0,974789	0,963279	-0,01151
BLUSU\BLUSU	Busbar 150 KV	1,002956	0,98958	-0,013376
BNTNGN\BNTNG NEW	Busbar 150 KV	0,99194	0,981927	-0,010013
BONE\BONE	Busbar 150 KV	0,971468	0,956094	-0,015374
BNTLA\BONTOALA	Busbar 150 KV	0,974788	0,963529	-0,011259
BSOWA\BSOWA	Busbar 150 KV	0,981316	0,969521	-0,011795
ERKNG\ERKNG	Busbar 150 KV	0,98307	0,961048	-0,022022
JENEPONTO EXPN	Busbar 150 KV	1,001311	0,991827	-0,009484
JNPTO\JNPTO	Busbar 150 KV	0,994199	0,984163	-0,010036
KIMA\KIMA	Busbar 150 KV	0,973596	0,962238	-0,011358
KLAKA\KLAKA	Busbar 150 KV	0,984021	0,917095	-0,066926
KNDRI\KNDRI	Busbar 150 KV	0,990264	0,917337	-0,072927
LSUSU\LSUSU	Busbar 150 KV	0,989989	0,926305	-0,063684
LTUPA1\LTUPA 150KV	Busbar 150 KV	0,97556	0,938921	-0,036639
MAROS\MAROS	Busbar 150 KV	0,97696	0,964504	-0,012456
MJENE\MJENE	Busbar 150 KV	0,983042	0,966269	-0,016773
MKALE\MKALE	Busbar 150 KV	0,978997	0,951408	-0,027589
MLILI\MLILI	Busbar 150 KV	1,000522	0,94137	-0,059152
MMUJU\MMUJU	Busbar 150 KV	0,979189	0,958706	-0,020483
PKANG\PANAKUKANG	Busbar 150 KV	0,972946	0,961681	-0,011265
PARE\PARE	Busbar 150 KV	0,991938	0,976481	-0,015457
PGAYA\PGAYA	Busbar 150 KV	1,000983	0,991477	-0,009506
PLMAS\PLMAS	Busbar 150 KV	0,987893	0,972699	-0,015194
PLOPO\PLOPO	Busbar 150 KV	0,976831	0,945306	-0,031525
GSDRP\PLTB SDRP	Busbar 150 KV	0,990964	0,974651	-0,016313
PLTU JENEPONTO	Busbar 150 KV	1,000833	0,991341	-0,009492
MRAMO\PLTU MRAMO	Busbar 150 KV	1,003303	0,93054	-0,072763

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
PMONA\PMONA	Busbar 150 KV	0,994272	0,94493	-0,049342
PNKEP\PNKEP	Busbar 150 KV	0,988815	0,976674	-0,012141
POSO\POSO	Busbar 150 KV	0,969545	0,923678	-0,045867
PRANG\PRANG	Busbar 150 KV	0,988833	0,974575	-0,014258
PSGKYU\PSGKYU	Busbar 150 KV	0,923356	0,89287	-0,030486
PWATU\PWATU	Busbar 150 KV	0,989238	0,915927	-0,073311
SDERA\SDERA	Busbar 150 KV	0,902315	0,866668	-0,035647
SDRAP\SDRAP	Busbar 150 KV	0,991015	0,974302	-0,016713
SGMSA\SGMSA	Busbar 150 KV	0,975563	0,964327	-0,011236
SILAE\SILAE	Busbar 150 KV	0,901699	0,867531	-0,034168
SIWA\SIWA	Busbar 150 KV	0,990166	0,966766	-0,0234
SKANG\SKANG	Busbar 150 KV	1,002059	0,984707	-0,017352
SNJAI\SNJAI	Busbar 150 KV	0,959777	0,946173	-0,013604
SPENG\SPENG	Busbar 150 KV	0,988492	0,971934	-0,016558
TBNGA\TBNGA	Busbar 150 KV	0,975439	0,964188	-0,011251
TELLO\TELLO	Busbar 150 KV	0,973902	0,962627	-0,011275
TLAMA\TELLO LAMA	Busbar 150 KV	0,974341	0,963075	-0,011266
TLASA\TLASA	Busbar 150 KV	0,986842	0,976543	-0,010299
TPOYO\TPOYO	Busbar 150 KV	0,951523	0,924827	-0,026696
UNNHA\UNNHA	Busbar 150 KV	0,984468	0,913914	-0,070554
WOTU\WOTU	Busbar 150 KV	1,005549	0,948225	-0,057324
LTUPA2\LTUPA	Busbar 275 KV	0,996757	0,951601	-0,045156
PMON27\PMONA 275KV	Busbar 275 KV	0,998505	0,945643	-0,052862
WOTU27\WOTU 275KV	Busbar 275 KV	0,993245	0,943224	-0,050021

7) Simulasi PLTA Poso 2 unit 2 dan unit 3 lepas

Adapun hasil simulasi dari lepasnya PLTU Poso 2 unit 2 dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor saat PLTA Poso 2 unit 2 dan unit 3 lepas dari sistem

WAKTU (s)	Sudut Rotor(Derajat)							
	PLTMG Niitanasa 1		PLTU Niitanasa 1		PLTU Niitanasa 3		PLTU Poso 2 #2	
	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam	bp. Siang	bp. Malam
-0,100	23,095	-29,772	8,641	-3,502	12,388	-0,588	-38,594	-34,532
0,900	23,095	-29,772	8,641	-3,502	12,388	-0,588	-38,594	-34,532
1,900	23,095	-29,772	8,641	-3,502	12,388	-0,588	-38,594	-34,532
2,900	21,042	-34,649	6,766	-8,165	10,666	-5,195	0,000	0,000
3,900	21,403	-35,565	7,175	-8,641	11,258	-5,577	0,000	0,000
4,900	24,589	-32,173	10,494	-4,532	14,747	-1,389	0,000	0,000
5,900	25,997	-31,084	11,957	-3,133	16,377	0,072	0,000	0,000
6,900	25,715	-32,992	11,601	-4,975	16,188	-1,718	0,000	0,000
7,900	26,846	-33,216	12,684	-4,979	17,460	-1,662	0,000	0,000
8,900	28,605	-31,873	14,413	-3,309	19,381	0,066	0,000	0,000
9,900	29,313	-31,822	15,006	-3,100	20,156	0,317	0,000	0,000
10,900	30,002	-32,509	15,536	-3,710	20,878	-0,255	0,000	0,000
11,900	31,335	-32,306	16,711	-3,345	22,258	0,151	0,000	0,000

12,900	32,463	-31,853	17,638	-2,735	23,390	0,796	0,000	0,000
13,900	33,349	-31,985	18,267	-2,788	24,230	0,770	0,000	0,000
14,900	34,517	-32,140	19,152	-2,872	25,340	0,711	0,000	0,000
15,900	35,769	-31,951	20,086	-2,586	26,510	1,022	0,000	0,000
16,900	36,908	-31,832	20,853	-2,391	27,523	1,237	0,000	0,000
17,900	38,156	-31,901	21,686	-2,412	28,620	1,232	0,000	0,000
18,900	39,532	-31,888	22,601	-2,346	29,821	1,314	0,000	0,000
19,900	40,917	-31,790	23,469	-2,192	30,994	1,482	0,000	0,000
20,900	42,388	-31,764	24,360	-2,126	32,220	1,560	0,000	0,000
21,900	43,995	-31,775	25,323	-2,103	33,552	1,594	0,000	0,000
22,900	45,698	-31,738	26,304	-2,031	34,942	1,676	0,000	0,000
23,900	47,532	-31,696	27,326	-1,957	36,423	1,757	0,000	0,000
24,900	49,548	-31,688	28,427	-1,923	38,045	1,798	0,000	0,000
25,900	51,757	-31,678	29,596	-1,889	39,813	1,838	0,000	0,000
26,900	54,203	-31,653	30,852	-1,841	41,767	1,891	0,000	0,000
27,900	56,958	-31,636	32,230	-1,805	43,975	1,932	0,000	0,000
28,900	60,090	-31,629	33,753	-1,782	46,501	1,960	0,000	0,000
29,900	63,709	-31,618	35,460	-1,755	49,456	1,990	0,000	0,000
30,900	67,981	-31,606	37,418	-1,727	53,015	2,020	0,000	0,000
31,900	73,142	-31,599	39,713	-1,708	57,449	2,042	0,000	0,000
32,900	79,578	-31,594	42,487	-1,692	63,259	2,060	0,000	0,000
33,900	87,957	-31,587	45,997	-1,675	71,468	2,079	0,000	0,000
34,900	99,562	-31,582	50,753	-1,661	84,661	2,094	0,000	0,000
35,900	117,335	-31,579	58,073	-1,650	112,719	2,106	0,000	0,000

8) Tegangan bus saat PLTA Poso 2 unit 2 dan unit 3

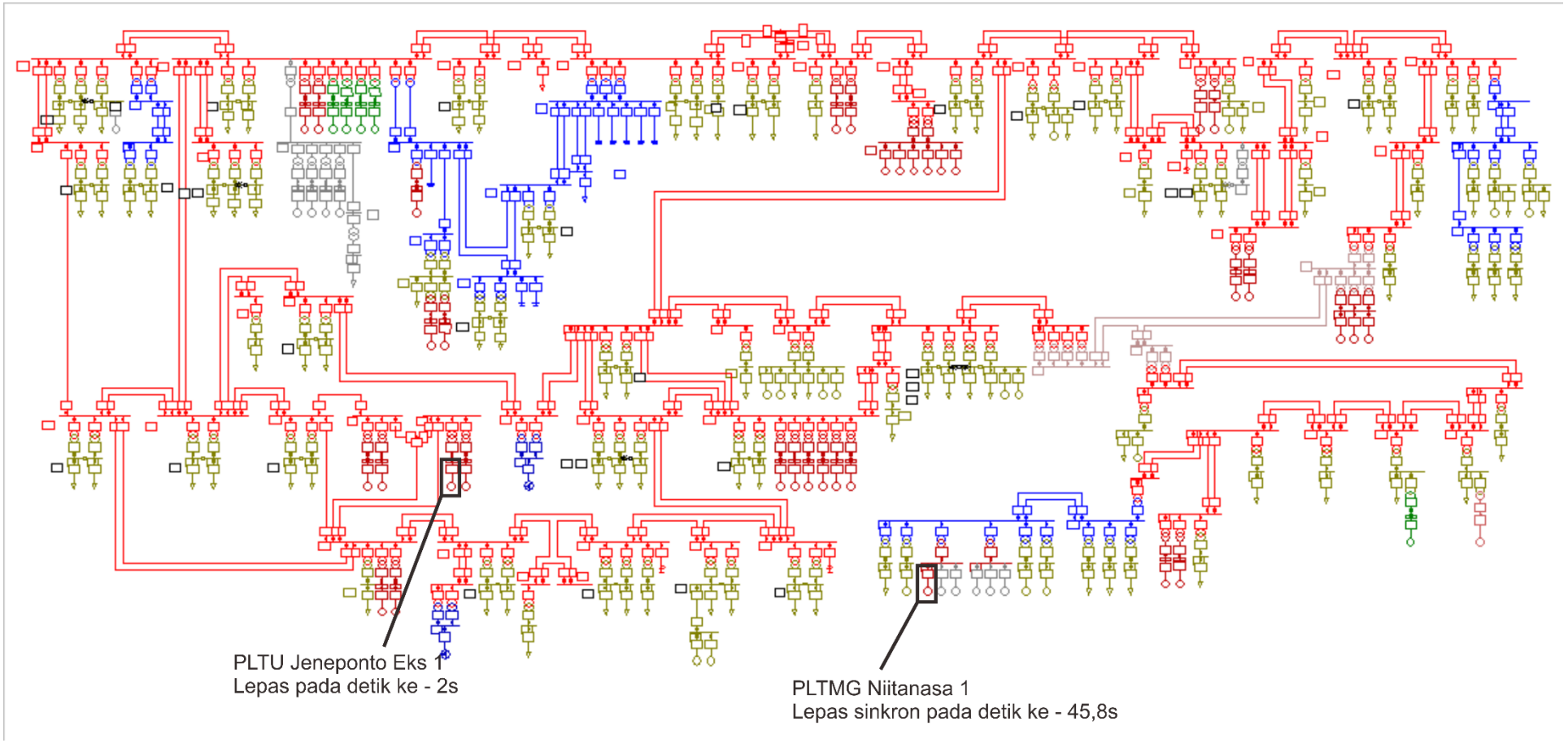
Adapun Tegangan dari tiap busbar dapat dilihat pada tabel berikut ini:

Tabel tegangan tiap bus Saat PLTA Poso 2 unit 2 dan unit 3 lepas dari sistem

Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
BRLOE\BRLOE	Busbar 70 KV	1,00713	0,982541	-0,024589
DAYA\DAYA	Busbar 70 KV	0,997261	0,972053	-0,025208
MNDAI\MNDAI	Busbar 70 KV	0,994858	0,96957	-0,025288
NTNSA\NTNSA	Busbar 70 KV	1,010421	0,832077	-0,178344
PNKEP7\PNKEP-70KV	Busbar 70 KV	1,0031	0,976474	-0,026626
PRIGI\PRIGI	Busbar 70 KV	0,943098	0,855987	-0,087111
PWATU7\PWATU 70KV	Busbar 70 KV	1,007456	0,830544	-0,176912
SDERA7\SDERA 70KV	Busbar 70 KV	0,991263	0,899703	-0,09156
TLISE7\TALISE 70KV	Busbar 70 KV	0,959233	0,870632	-0,088601
TELLO7\TELLO-70KV	Busbar 70 KV	1,003605	0,978443	-0,025162
TNASA\TNASA	Busbar 70 KV	1,000304	0,973753	-0,026551
TOLOB\BAR PLTB TOLO	Busbar 150 KV	1,000636	0,979639	-0,020997
MMUJUP\BAR PLTU MMUJU	Busbar 150 KV	0,983427	0,930374	-0,053053
BARRU\BARRU	Busbar 150 KV	0,997503	0,968386	-0,029117
BKARU\BKARU	Busbar 150 KV	1,003583	0,975505	-0,028078
BKMBA\BKMBA	Busbar 150 KV	0,963273	0,937044	-0,026229
BLNGI\BLNGI	Busbar 150 KV	0,974789	0,949846	-0,024943
BLUSU\BLUSU	Busbar 150 KV	1,002956	0,972662	-0,030294
BNTNGN\BNTNG NEW	Busbar 150 KV	0,99194	0,970991	-0,020949
BONE\BONE	Busbar 150 KV	0,971468	0,936833	-0,034635

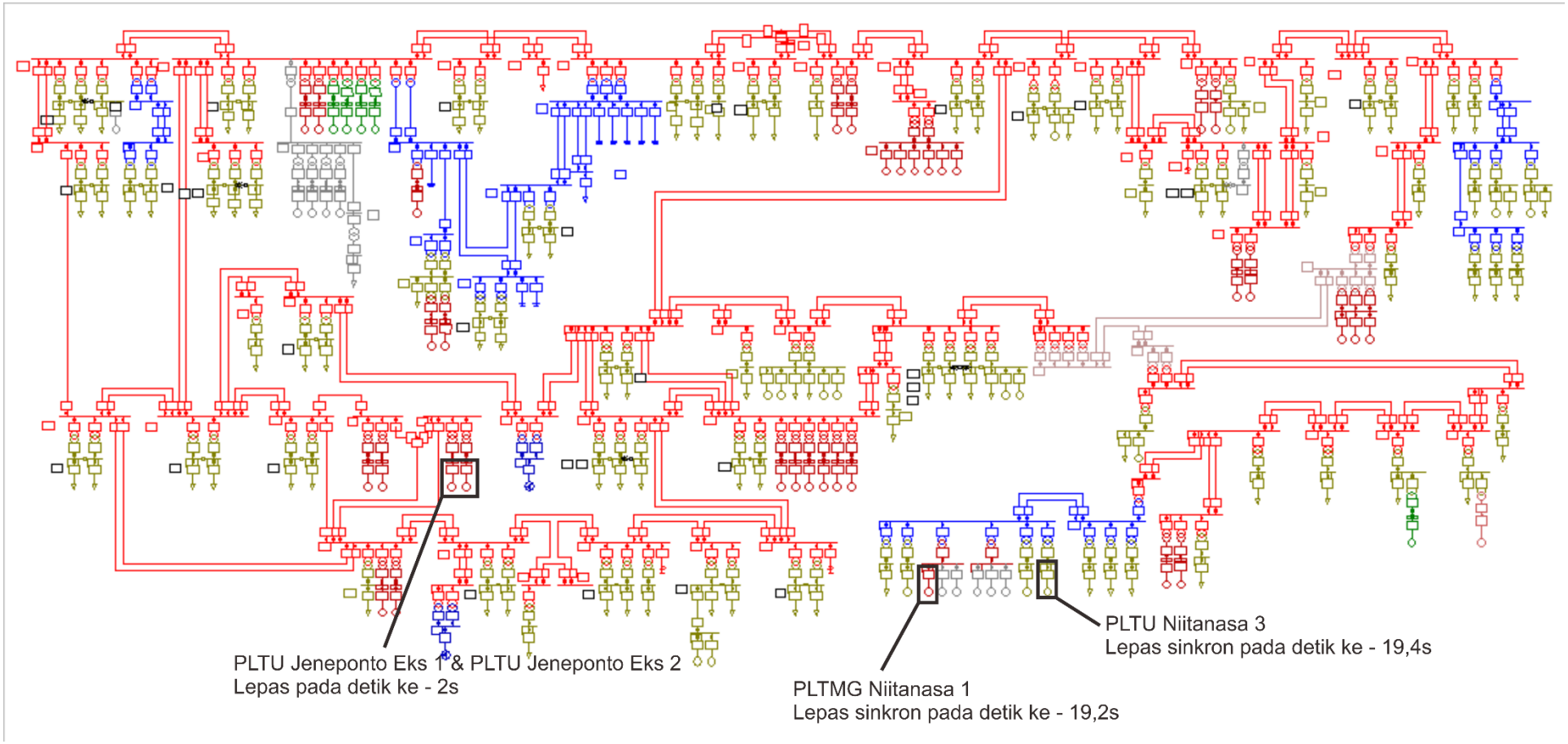
Nama Busbar	*Tipe Busbar*	*Tegangan per unit*		
		Sebelum Gangguan	*Setelah Gangguan*	*Perubahan*
BNTLA\BONTOALA	Busbar 150 KV	0,974788	0,950451	-0,024337
BSOWA\BSOWA	Busbar 150 KV	0,981316	0,955435	-0,025881
ERKNG\ERKNG	Busbar 150 KV	0,98307	0,932658	-0,050412
JNPTOE\JENEPONTO EXPN	Busbar 150 KV	1,001311	0,981702	-0,019609
JNPTO\JNPTO	Busbar 150 KV	0,994199	0,973202	-0,020997
KIMA\KIMA	Busbar 150 KV	0,973596	0,948944	-0,024652
KLAKA\KLAKA	Busbar 150 KV	0,984021	0,841359	-0,142662
KNDRI\KNDRI	Busbar 150 KV	0,990264	0,841013	-0,149251
LSUSU\LSUSU	Busbar 150 KV	0,989989	0,851381	-0,138608
LTUPA1\LTUPA 150KV	Busbar 150 KV	0,97556	0,891203	-0,084357
MAROS\MAROS	Busbar 150 KV	0,97696	0,949619	-0,027341
MJENE\MJENE	Busbar 150 KV	0,983042	0,944184	-0,038858
MKALE\MKALE	Busbar 150 KV	0,978997	0,915616	-0,063381
MLILI\MLILI	Busbar 150 KV	1,000522	0,86839	-0,132132
MMUJU\MMUJU	Busbar 150 KV	0,979189	0,931693	-0,047496
PKANG\PANAKUKANG	Busbar 150 KV	0,972946	0,948566	-0,02438
PARE\PARE	Busbar 150 KV	0,991938	0,956693	-0,035245
PGAYA\PGAYA	Busbar 150 KV	1,000983	0,981317	-0,019666
PLMAS\PLMAS	Busbar 150 KV	0,987893	0,952694	-0,035199
PLOPO\PLOPO	Busbar 150 KV	0,976831	0,904302	-0,072529
GSDRP\PLTB SDRP	Busbar 150 KV	0,990964	0,953916	-0,037048
GJNPTO\PLTU JENEPONTO	Busbar 150 KV	1,000833	0,981189	-0,019644
MRAMO\PLTU MRAMO	Busbar 150 KV	1,003303	0,854334	-0,148969
PMONA\PMONA	Busbar 150 KV	0,994272	0,878938	-0,115334
PNKEP\PNKEP	Busbar 150 KV	0,988815	0,961965	-0,02685
POSO\POSO	Busbar 150 KV	0,969545	0,86226	-0,107285
PRANG\PRANG	Busbar 150 KV	0,988833	0,956073	-0,03276
PSGKYU\PSGKYU	Busbar 150 KV	0,923356	0,852307	-0,071049
PWATU\PWATU	Busbar 150 KV	0,989238	0,839494	-0,149744
SDERA\SDERA	Busbar 150 KV	0,902315	0,818971	-0,083344
SDRAP\SDRAP	Busbar 150 KV	0,991015	0,952964	-0,038051
SGMSA\SGMSA	Busbar 150 KV	0,975563	0,95132	-0,024243
SILAE\SILAE	Busbar 150 KV	0,901699	0,821875	-0,079824
SIWA\SIWA	Busbar 150 KV	0,990166	0,936516	-0,05365
SKANG\SKANG	Busbar 150 KV	1,002059	0,962407	-0,039652
SNJAI\SNJAI	Busbar 150 KV	0,959777	0,92966	-0,030117
SPENG\SPENG	Busbar 150 KV	0,988492	0,950872	-0,03762
TBNGA\TBNGA	Busbar 150 KV	0,975439	0,951129	-0,02431
TELLO\TELLO	Busbar 150 KV	0,973902	0,949498	-0,024404
TLAMA\TELLO LAMA	Busbar 150 KV	0,974341	0,949978	-0,024363
TLASA\TLASA	Busbar 150 KV	0,986842	0,965135	-0,021707
TPOYO\TPOYO	Busbar 150 KV	0,951523	0,889423	-0,0621
UNNHA\UNNHA	Busbar 150 KV	0,984468	0,837627	-0,146841
WOTU\WOTU	Busbar 150 KV	1,005549	0,876233	-0,129316
LTUPA2\LTUPA	Busbar 275 KV	0,996757	0,892033	-0,104724
PMON27\PMONA 275KV	Busbar 275 KV	0,998505	0,874824	-0,123681
WOTU27\WOTU 275KV	Busbar 275 KV	0,993245	0,877514	-0,115731

9) Single line sistem saat PLTU Jeneponto ekspansi unit 1 lepas



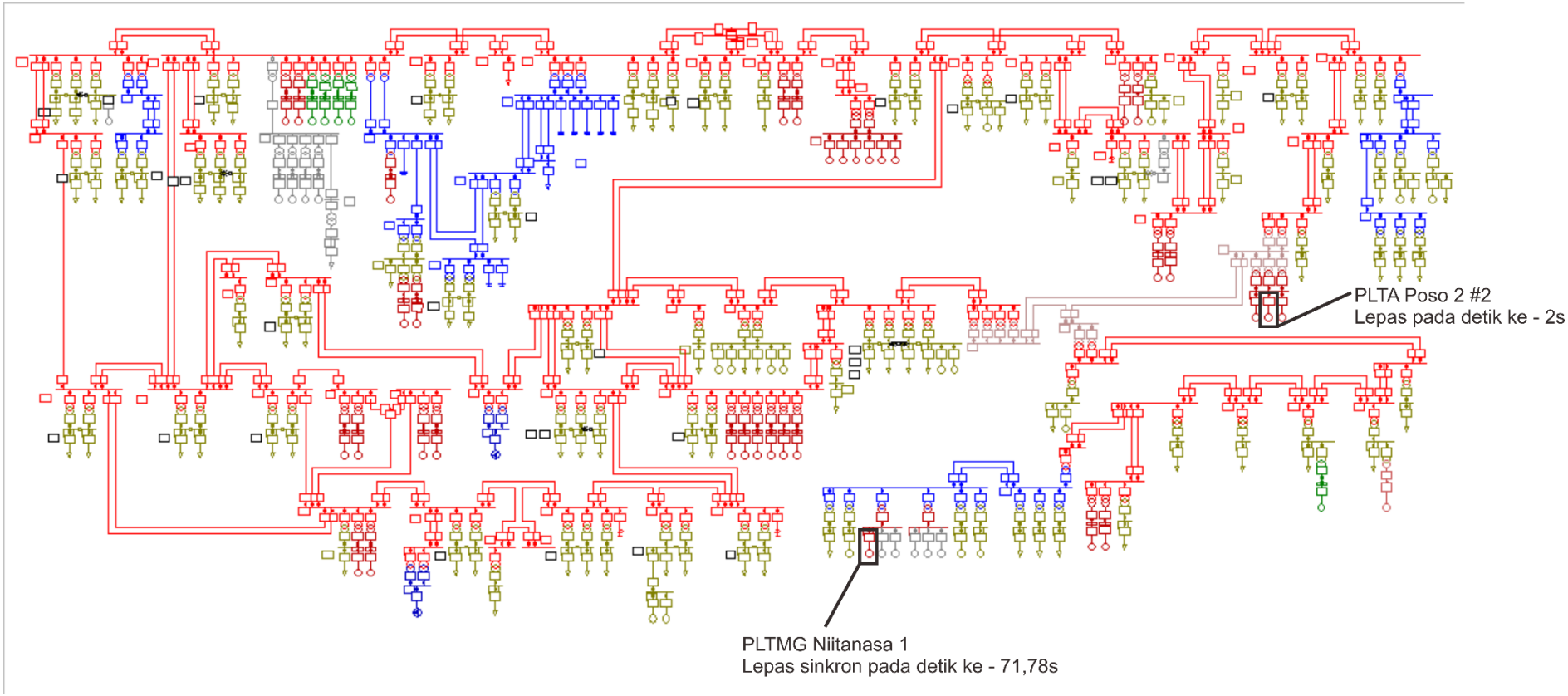
Gambar *Single Line* Diagram Sistem Kelistrikan Sulbagsel saat PLTU Jeneponto Eks 1 lepas

10) Single line sistem saat PLTU Jeneponto ekspansi unit 1 dan unit 2 lepas



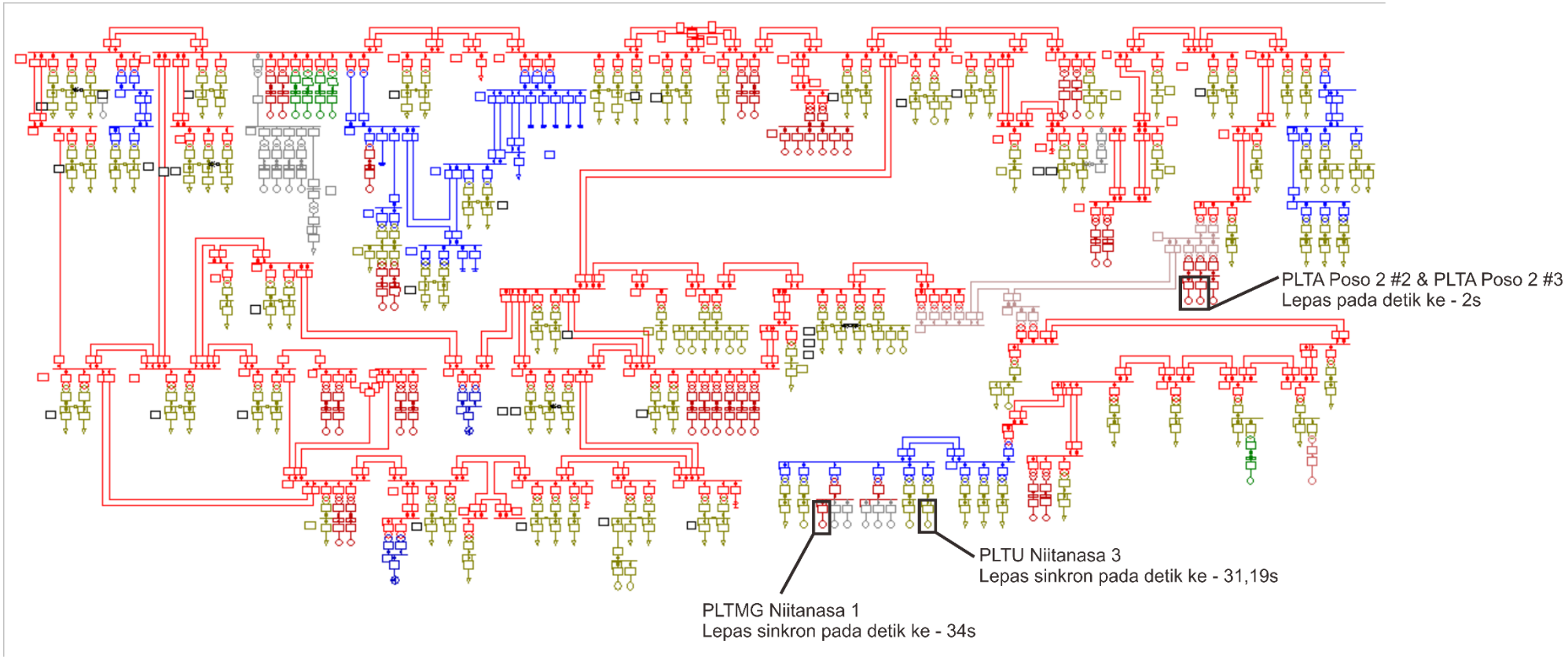
Gambar *Single Line* Diagram Sistem Kelistrikan Sulbagsel saat PLTU Jeneponto Eks 1 dan 2 lepas

11) Single line sistem saat PLTA Poso 2 unit 2 lepas



Gambar *Single Line* Diagram Sistem Kelistrikan Sulbagsel saat PLTA Poso 2 unit 2 lepas

12) Single line sistem saat PLTA Poso 2 unit 2 dan unit 3 lepas



Gambar *Single Line* Diagram Sistem Kelistrikan Sulbagsel saat PLTA Poso 2 unit 2 dan unit 3 lepas

Lampiran 4 Hasil simulasi menaikkan konstanta inersia generator

1) Simulasi PLTU Jeneponto ekspansi lepas

Adapun hasil simulasi dari lepasnya PLTU Jeneponto ekspansi dengan nilai konstanta inersia yang berbeda dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor Saat PLTU Jeneponto ekspansi lepas dari sistem dengan konstanta inersia yang berbeda

WAKTU(s)	*Sudut rotor PLTMG Niitanasa 1 saat PLTU Jeneponto ekspansi lepas*					
	1 unit lepas			*2 unit lepas*		
	+0%	*+50%*	*+100%*	*+0%*	*+50%*	*+100%*
-0,100	23,095	23,095	23,095	23,095	23,095	23,095
0,900	23,095	23,095	23,095	23,095	23,095	23,095
1,900	23,095	23,095	23,095	23,095	23,095	23,095
2,900	30,793	33,065	35,407	40,757	45,782	50,945
3,900	33,315	35,408	36,957	45,254	49,386	52,078
4,900	30,402	31,189	31,637	37,828	39,676	41,130
5,900	28,589	29,994	32,086	37,019	41,727	47,991
6,900	30,424	33,076	36,039	43,581	49,751	55,347
7,900	32,462	34,774	36,386	45,569	49,608	52,803
8,900	32,423	33,934	35,180	44,372	49,080	55,276
9,900	31,920	33,812	36,201	46,912	53,717	60,801
10,900	32,577	35,162	37,749	50,487	56,751	62,560
11,900	33,691	36,112	37,997	52,074	58,387	66,168
12,900	34,221	36,245	38,206	54,439	62,439	71,628
13,900	34,444	36,641	39,144	58,226	66,842	76,472
14,900	34,993	37,511	39,978	61,777	71,149	83,296
15,900	35,774	38,242	40,474	65,862	77,280	92,242
16,900	36,419	38,746	41,139	71,351	84,913	103,814
17,900	36,949	39,376	41,994	77,956	94,760	121,057
18,900	37,576	40,164	42,766	86,609	109,222	148,426
19,900	38,309	40,915	43,517	99,217	132,411	-161,916
20,900	39,028	41,628	44,386			
21,900	39,724	42,418	45,311			
22,900	40,468	43,281	46,245			
23,900	41,271	44,160	47,242			
24,900	42,100	45,069	48,326			
25,900	42,951	46,047	49,474			
26,900	43,849	47,092	50,698			
27,900	44,803	48,192	52,024			
28,900	45,808	49,366	53,463			
29,900	46,866	50,631	55,026			
30,900	47,993	51,995	56,740			
31,900	49,200	53,469	58,633			
32,900	50,492	55,076	60,737			
33,900	51,883	56,841	63,097			
34,900	53,391	58,789	65,771			
35,900	55,035	60,957	68,836			
36,900	56,838	63,393	72,395			
37,900	58,830	66,160	76,596			
38,900	61,050	69,339	81,648			
39,900	63,548	73,045	87,860			

WAKTU(s)	*Sudut rotor PLTMG Niitanasa 1 saat PLTU Jeneponto ekspansi lepas*					
	1 unit lepas			*2 unit lepas*		
	+0%	*+50%*	*+100%*	*+0%*	*+50%*	*+100%*
40,900	66,389	77,436	95,711			
41,900	69,661	82,744	105,964			
42,900	73,484	89,315	119,874			
43,900	78,031	97,692	139,484			
44,900	83,552	108,751	167,595			
45,900	90,427	123,946	-154,842			
46,900	99,256	145,625	-115,967			
47,900	111,023	176,656	-86,864			
48,900	127,377	-143,801	-66,789			
49,900	150,939	-106,786	-52,274			

2) Simulasi PLTA Poso lepas

Adapun hasil simulasi dari lepasnya PLTA Poso dengan nilai konstanta inersia yang berbeda dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor PLTMG Niitanasa unit 1
Saat PLTA Poso 2 lepas dari sistem

WAKTU(s)	*Sudut rotor PLTMG Niitanasa 1 saat PLTA Poso lepas*					
	1 unit lepas			*2 unit lepas*		
	+0%	*+50%*	*+100%*	*+0%*	*+50%*	*+100%*
-0,100	23,095	23,095	23,095	23,095	23,095	23,095
0,900	23,095	23,095	23,095	23,095	23,095	23,095
1,900	23,095	23,095	23,095	23,095	23,095	23,095
2,900	21,602	21,378	21,272	21,042	20,768	20,619
3,900	21,418	21,439	21,530	21,403	21,450	21,672
4,900	22,933	23,394	23,699	24,589	25,070	25,345
5,900	24,059	24,296	24,222	25,997	25,844	25,336
6,900	23,952	23,857	23,674	25,715	25,332	25,052
7,900	23,859	23,905	24,103	26,846	26,821	26,864
8,900	24,485	24,695	24,894	28,605	28,212	27,586
9,900	25,174	25,165	25,001	29,313	28,416	27,627
10,900	25,434	25,192	24,990	30,002	29,204	28,641
11,900	25,604	25,413	25,369	31,335	30,413	29,438
12,900	26,013	25,879	25,732	32,463	31,108	29,856
13,900	26,490	26,220	25,882	33,349	31,878	30,686
14,900	26,831	26,427	26,091	34,517	32,960	31,511
15,900	27,122	26,718	26,413	35,769	33,893	32,183
16,900	27,489	27,082	26,683	36,908	34,817	33,046
17,900	27,891	27,398	26,911	38,156	35,921	33,944
18,900	28,253	27,680	27,186	39,532	37,024	34,811
19,900	28,594	27,998	27,482	40,917	38,144	35,789
20,900	28,961	28,338	27,755	42,388	39,387	36,818
21,900	29,344	28,661	28,032	43,995	40,690	37,878
22,900	29,717	28,979	28,329	45,698	42,057	39,031
23,900	30,085	29,314	28,628	47,532	43,546	40,254
24,900	30,464	29,657	28,925	49,548	45,144	41,553
25,900	30,851	29,997	29,230	51,757	46,867	42,960
26,900	31,239	30,340	29,543	54,203	48,756	44,475

WAKTU(s)	Sudut rotor PLTMG Niitanasa 1 saat PLTA Poso lepas					
	1 unit lepas			2 unit lepas		
	+0%	+50%	+100%	+0%	+50%	+100%
27,900	31,629	30,692	29,859	56,958	50,833	46,119
28,900	32,026	31,049	30,179	60,090	53,137	47,922
29,900	32,430	31,409	30,507	63,709	55,729	49,906
30,900	32,839	31,776	30,839	67,981	58,676	52,116
31,900	33,253	32,149	31,177	73,142	62,084	54,605
32,900	33,676	32,528	31,521	79,578	66,107	57,447
33,900	34,107	32,914	31,871	87,957	70,975	60,752
34,900	34,545	33,306	32,227	99,562	77,081	64,686
35,900	34,993	33,707	32,590	117,335	85,147	69,525
36,900	35,451	34,115	32,961			
37,900	35,919	34,533	33,338			
38,900	36,399	34,959	33,724			
39,900	36,892	35,396	34,117			
40,900	37,399	35,843	34,520			
41,900	37,920	36,302	34,932			
42,900	38,458	36,773	35,354			
43,900	39,014	37,258	35,786			
44,900	39,589	37,757	36,230			
45,900	40,185	38,272	36,686			
46,900	40,805	38,804	37,156			
47,900	41,450	39,354	37,639			
48,900	42,123	39,925	38,138			
49,900	42,828	40,517	38,653			
50,900	43,566	41,134	39,186			
51,900	44,343	41,777	39,738			
52,900	45,162	42,448	40,312			
53,900	46,028	43,152	40,908			
54,900	46,948	43,891	41,529			
55,900	47,927	44,669	42,178			
56,900	48,974	45,490	42,857			
57,900	50,098	46,359	43,569			
58,900	51,310	47,283	44,317			
59,900	52,623	48,268	45,107			
60,900	54,054	49,323	45,941			
61,900	55,623	50,456	46,826			
62,900	57,354	51,679	47,767			
63,900	59,278	53,006	48,773			
64,900	61,436	54,453	49,851			
65,900	63,878	56,042	51,011			
66,900	66,673	57,796	52,266			
67,900	69,912	59,750	53,630			
68,900	73,722	61,943	55,120			
69,900	78,285	64,428	56,760			
70,900	83,865	67,277	58,576			
71,900	90,866	70,585	60,603			
72,900	99,926	74,484	62,885			
73,900	112,088	79,163	65,481			
74,900	129,078	84,900	68,467			

Lampiran 5 Hasil simulasi menaikkan tengangan generator

1) Simulasi dengan posisi tap changer dari trafo generator PLTMG Niitanasa unit 1 berbeda

Adapun hasil simulasi dengan posisi tap changer dari trafo generator PLTMG Niitanasa unit 1 yang berbeda dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor saat PLTU Jeneponto ekspansi dan PLTA Poso lepas dari sistem dengan posisi tap changer yang berbeda

	Sudut rotor saat PLTU Jeneponto ekspansi lepas				*Sudut rotor saat PLTA Poso lepas*			
WAKTU(s)	*1 unit lepas*		*2 unit lepas*		*1 unit lepas*		*2 unit lepas*	
	tap No. 9	*tap No. 10*	*tap No. 9*	*tap No. 10*	*tap No. 9*	*tap No. 10*	*tap No. 9*	*tap No. 10*
-0,100	23,095	-24,007	23,095	-24,007	23,095	-24,007	23,095	-24,007
0,900	23,095	-24,007	23,095	-24,007	23,095	-24,007	23,095	-24,007
1,900	23,095	-24,007	23,095	-24,007	23,095	-24,007	23,095	-24,007
2,900	30,793	-17,227	40,757	-8,404	21,602	-25,625	21,042	-26,356
3,900	33,315	-15,189	45,254	-4,962	21,418	-26,003	21,403	-26,331
4,900	30,402	-18,431	37,828	-13,192	22,933	-24,807	24,589	-23,734
5,900	28,589	-20,809	37,019	-15,612	24,059	-23,909	25,997	-22,733
6,900	30,424	-19,725	43,581	-11,024	23,952	-24,207	25,715	-23,429
7,900	32,462	-18,374	45,569	-10,674	23,859	-24,524	26,846	-22,843
8,900	32,423	-18,995	44,372	-13,614	24,485	-24,161	28,605	-21,662
9,900	31,920	-20,108	46,912	-13,276	25,174	-23,732	29,313	-21,509
10,900	32,577	-20,128	50,487	-11,937	25,434	-23,719	30,002	-21,433
11,900	33,691	-19,679	52,074	-12,644	25,604	-23,805	31,335	-20,779
12,900	34,221	-19,771	54,439	-13,065	26,013	-23,670	32,463	-20,351
13,900	34,444	-20,181	58,226	-12,387	26,490	-23,471	33,349	-20,206
14,900	34,993	-20,298	61,777	-12,232	26,831	-23,408	34,517	-19,846
15,900	35,774	-20,183	65,862	-12,331	27,122	-23,401	35,769	-19,448
16,900	36,419	-20,192	71,351	-11,928	27,489	-23,328	36,908	-19,219
17,900	36,949	-20,334	77,956	-11,534	27,891	-23,225	38,156	-18,956
18,900	37,576	-20,404	86,609	-11,280	28,253	-23,166	39,532	-18,635
19,900	38,309	-20,383	99,217	-10,809	28,594	-23,134	40,917	-18,382
20,900	39,028	-20,382			28,961	-23,083	42,388	-18,145
21,900	39,724	-20,428			29,344	-23,023	43,995	-17,877
22,900	40,468	-20,459			29,717	-22,977	45,698	-17,631
23,900	41,271	-20,457			30,085	-22,944	47,532	-17,402
24,900	42,100	-20,454			30,464	-22,906	49,548	-17,163
25,900	42,951	-20,467			30,851	-22,866	51,757	-16,928
26,900	43,849	-20,477			31,239	-22,832	54,203	-16,704
27,900	44,803	-20,475			31,629	-22,804	56,958	-16,477
28,900	45,808	-20,472			32,026	-22,776	60,090	-16,250
29,900	46,866	-20,472			32,430	-22,748	63,709	-16,028
30,900	47,993	-20,473			32,839	-22,722	67,981	-15,804
31,900	49,200	-20,469			33,253	-22,700	73,142	-15,578
32,900	50,492	-20,465			33,676	-22,679	79,578	-15,352
33,900	51,883	-20,461			34,107	-22,658	87,957	-15,122
34,900	53,391	-20,458			34,545	-22,639	99,562	-14,889

	Sudut rotor saat PLTU Jeneponto ekspansi lepas				*Sudut rotor saat PLTA Poso lepas*			
WAKTU(s)	*1 unit lepas*		*2 unit lepas*		*1 unit lepas*		*2 unit lepas*	
	tap No. 9	*tap No. 10*	*tap No. 9*	*tap No. 10*	*tap No. 9*	*tap No. 10*	*tap No. 9*	*tap No. 10*
35,900	55,035	-20,453			34,993	-22,622	117,335	-14,652
36,900	56,838	-20,448			35,451	-22,606		
37,900	58,830	-20,443			35,919	-22,591		
38,900	61,050	-20,438			36,399	-22,577		
39,900	63,548	-20,433			36,892	-22,564		
40,900	66,389	-20,428			37,399	-22,552		
41,900	69,661	-20,423			37,920	-22,541		
42,900	73,484	-20,418			38,458	-22,530		
43,900	78,031	-20,413			39,014	-22,520		
44,900	83,552	-20,409			39,589	-22,511		
45,900	90,427	-20,404			40,185	-22,503		
46,900	99,256	-20,399			40,805	-22,495		
47,900	111,023	-20,395			41,450	-22,487		
48,900	127,377	-20,391			42,123	-22,481		
49,900	150,939	-20,387			42,828	-22,474		
50,900					43,566	-22,468		
51,900					44,343	-22,463		
52,900					45,162	-22,458		
53,900					46,028	-22,453		
54,900					46,948	-22,448		
55,900					47,927	-22,444		
56,900					48,974	-22,440		
57,900					50,098	-22,437		
58,900					51,310	-22,433		
59,900					52,623	-22,430		
60,900					54,054	-22,427		
61,900					55,623	-22,425		
62,900					57,354	-22,422		
63,900					59,278	-22,420		
64,900					61,436	-22,418		
65,900					63,878	-22,416		
66,900					66,673	-22,414		
67,900					69,912	-22,412		
68,900					73,722	-22,411		
69,900					78,285	-22,409		
70,900					83,865	-22,408		
71,900					90,866	-22,407		
72,900					99,926	-22,406		
73,900					112,088	-22,405		
74,900					129,078	-22,404		

2) Simulasi dengan posisi tap changer dari trafo generator PLTMG Niitanasa unit 1, PLTU Niitanasa unit 1 dan 3 berbeda

Adapun hasil simulasi dengan posisi tap changer pada trafo generator PLTMG Niitanasa unit 1, PLTU Niitanasa unit 1 dan 3 yang berbeda dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor saat PLTU Jeneponto ekspansi dan PLTA Poso lepas dari sistem dengan posisi tap 10 pada trafo generator PLTMG Niitanasa unit 1, PLTU Niitanasa unit 1 dan 3

Waktu(s)	Sudut Rotor saat 2 unit PLTU Jeneponto Ekspansi lepas(Derajat)			Sudut Rotor saat 2 unit PLTA Poso lepas(Derajat)		
	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3
-0,100	-17,167	-4,072	0,530	-17,167	-4,072	0,530
0,900	-17,167	-4,072	0,530	-17,167	-4,072	0,530
1,900	-17,167	-4,072	0,530	-17,167	-4,072	0,530
2,900	-1,231	13,380	18,298	-19,462	-6,011	-1,266
3,900	2,432	17,448	22,499	-19,425	-5,858	-0,965
4,900	-5,733	8,829	14,003	-16,748	-2,772	2,248
5,900	-8,192	6,528	11,913	-15,686	-1,495	3,649
6,900	-3,477	12,084	17,772	-16,382	-2,092	3,157
7,900	-2,902	13,049	18,940	-15,798	-1,323	4,043
8,900	-5,893	10,136	16,204	-14,581	0,121	5,598
9,900	-5,740	10,660	16,971	-14,407	0,425	5,993
10,900	-4,349	12,497	19,040	-14,358	0,590	6,247
11,900	-5,039	12,014	18,738	-13,715	1,389	7,135
12,900	-5,727	11,527	18,439	-13,276	1,956	7,780
13,900	-5,241	12,306	19,420	-13,156	2,170	8,065
14,900	-5,154	12,613	19,901	-12,836	2,596	8,560
15,900	-5,530	12,395	19,844	-12,455	3,080	9,108
16,900	-5,484	12,626	20,240	-12,253	3,363	9,449
17,900	-5,338	12,945	20,714	-12,042	3,652	9,793
18,900	-5,442	12,973	20,882	-11,764	4,009	10,203
19,900	-5,476	13,066	21,112	-11,552	4,289	10,531
20,900	-5,392	13,276	21,454	-11,376	4,527	10,815
21,900	-5,384	13,390	21,689	-11,170	4,794	11,125
22,900	-5,393	13,474	21,890	-10,984	5,037	11,409
23,900	-5,344	13,614	22,142	-10,827	5,245	11,655
24,900	-5,305	13,736	22,368	-10,666	5,455	11,901
25,900	-5,284	13,829	22,560	-10,511	5,657	12,137
26,900	-5,244	13,937	22,765	-10,374	5,837	12,350
27,900	-5,198	14,047	22,965	-10,242	6,009	12,553
28,900	-5,161	14,141	23,145	-10,114	6,176	12,749
29,900	-5,119	14,236	23,322	-9,997	6,329	12,930
30,900	-5,072	14,333	23,498	-9,887	6,473	13,100
31,900	-5,028	14,423	23,664	-9,781	6,612	13,264
32,900	-4,984	14,510	23,823	-9,681	6,741	13,417
33,900	-4,937	14,598	23,980	-9,588	6,863	13,561
34,900	-4,890	14,683	24,132	-9,499	6,979	13,699

Waktu(s)	Sudut Rotor saat 2 unit PLTU Jeneponto Ekspansi lepas(Derajat)			Sudut Rotor saat 2 unit PLTA Poso lepas(Derajat)		
	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3
35,900	-4,844	14,765	24,278	-9,416	7,088	13,829
36,900	-4,797	14,846	24,420			
37,900	-4,750	14,925	24,559			
38,900	-4,704	15,003	24,694			
39,900	-4,657	15,079	24,826			
40,900	-4,610	15,155	24,956			
41,900	-4,564	15,228	25,082			
42,900	-4,517	15,301	25,205			
43,900	-4,471	15,373	25,327			
44,900	-4,425	15,444	25,446			
45,900	-4,379	15,514	25,563			
46,900	-4,334	15,583	25,679			
47,900	-4,288	15,652	25,792			
48,900	-4,243	15,720	25,904			
49,900	-4,198	15,787	26,015			
50,900	-4,153	15,854	26,125			
51,900	-4,108	15,920	26,234			
52,900	-4,063	15,986	26,341			
53,900	-4,019	16,052	26,448			
54,900	-3,975	16,117	26,554			
55,900	-3,930	16,182	26,659			
56,900	-3,886	16,247	26,764			
57,900	-3,842	16,312	26,868			
58,900	-3,797	16,376	26,972			
59,900	-3,753	16,440	27,076			
60,900	-3,709	16,505	27,179			
61,900	-3,665	16,569	27,283			
62,900	-3,620	16,634	27,386			
63,900	-3,576	16,698	27,489			
64,900	-3,531	16,763	27,593			
65,900	-3,487	16,827	27,696			
66,900	-3,442	16,892	27,800			
67,900	-3,397	16,957	27,905			
68,900	-3,352	17,023	28,010			
69,900	-3,306	17,088	28,115			
70,900	-3,261	17,154	28,221			
71,900	-3,215	17,221	28,327			
72,900	-3,169	17,287	28,434			
73,900	-3,122	17,355	28,542			
74,900	-3,075	17,422	28,651			
75,900	-3,028	17,490	28,761			
76,900	-2,980	17,559	28,872			
77,900	-2,932	17,629	28,983			
78,900	-2,884	17,699	29,097			
79,900	-2,835	17,769	29,211			
80,900	-2,785	17,841	29,327			
81,900	-2,735	17,913	29,444			
82,900	-2,685	17,986	29,562			

Waktu(s)	Sudut Rotor saat 2 unit PLTU Jeneponto Ekspansi lepas(Derajat)			Sudut Rotor saat 2 unit PLTA Poso lepas(Derajat)		
	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3
83,900	-2,633	18,060	29,683			
84,900	-2,581	18,135	29,805			
85,900	-2,529	18,211	29,929			
86,900	-2,475	18,288	30,055			
87,900	-2,421	18,367	30,183			
88,900	-2,366	18,446	30,313			
89,900	-2,311	18,527	30,445			
90,900	-2,254	18,608	30,580			
91,900	-2,196	18,692	30,717			
92,900	-2,138	18,777	30,857			
93,900	-2,078	18,863	31,001			
94,900	-2,017	18,951	31,147			
95,900	-1,955	19,040	31,296			
96,900	-1,892	19,132	31,449			
97,900	-1,827	19,225	31,605			
98,900	-1,761	19,321	31,765			
99,900	-1,694	19,418	31,930			
100,900	-1,625	19,518	32,098			
101,900	-1,554	19,620	32,271			
102,900	-1,482	19,725	32,449			
103,900	-1,408	19,833	32,632			
104,900	-1,331	19,943	32,821			
105,900	-1,253	20,056	33,016			
106,900	-1,173	20,173	33,216			
107,900	-1,090	20,293	33,424			
108,900	-1,005	20,416	33,638			
109,900	-0,917	20,544	33,860			
110,900	-0,826	20,675	34,091			
111,900	-0,732	20,811	34,330			
112,900	-0,635	20,952	34,578			
113,900	-0,535	21,098	34,837			
114,900	-0,430	21,249	35,107			
115,900	-0,322	21,406	35,388			
116,900	-0,210	21,569	35,683			
117,900	-0,093	21,739	35,991			
118,900	0,029	21,917	36,315			
119,900	0,157	22,102	36,655			
120,900	0,290	22,296	37,013			
121,900	0,430	22,499	37,392			
122,900	0,577	22,712	37,792			
123,900	0,732	22,937	38,217			
124,900	0,895	23,174	38,669			
125,900	1,067	23,424	39,151			
126,900	1,250	23,690	39,667			
127,900	1,444	23,972	40,222			
128,900	1,651	24,274	40,820			
129,900	1,872	24,596	41,467			
130,900	2,110	24,941	42,172			

Waktu(s)	Sudut Rotor saat 2 unit PLTU Jeneponto Ekspansi lepas(Derajat)			Sudut Rotor saat 2 unit PLTA Poso lepas(Derajat)		
	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3	PLTMG Niitanasa 1	PLTU Niitanasa 1	PLTU Niitanasa 3
131,900	2,366	25,314	42,942			
132,900	2,643	25,718	43,789			
133,900	2,946	26,157	44,727			
134,900	3,276	26,638	45,774			
135,900	3,641	27,168	46,953			
136,900	4,046	27,757	48,294			
137,900	4,500	28,417	49,838			
138,900	5,015	29,163	51,644			
139,900	5,606	30,021	53,796			
140,900	6,298	31,021	56,422			
141,900	7,124	32,213	59,733			
142,900	8,143	33,678	64,097			
143,900	9,456	35,556	70,258			
144,900	11,276	38,139	80,024			
145,900	14,160	42,192	99,744			

Lampiran 6 Hasil simulasi penggunaan high speed recloser

1) Simulasi PLTU Jeneponto ekspansi lepas

Adapun hasil simulasi dari lepasnya PLTU Jeneponto ekspansi dengan penggunaan high speed recloser dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor saat PLTU Jeneponto ekspansi lepas
dengan penggunaan high speed recloser

	Sudut Rotor saat PLTU Jeneponto Ekspansi lepas(Derajat)					
WAKTU(s)	PLTMG Niitanasa 1		PLTU Niitanasa 1		PLTU Niitanasa 3	
	1 unit lepas	2 unit lepas	1 unit lepas	2 unit lepas	1 unit lepas	2 unit lepas
-0,100	23,095	23,095	8,641	8,641	12,388	12,388
0,900	23,095	23,095	8,641	8,641	12,388	12,388
1,900	23,095	23,095	8,641	8,641	12,388	12,388
2,900	30,793	40,757	16,528	26,866	20,401	30,973
3,900	33,315	45,254	19,018	31,252	22,965	35,538
4,900	30,402	37,828	15,766	22,975	19,782	27,440
5,900	28,589	37,019	13,622	21,552	17,737	26,359
6,900	30,424	43,581	15,320	28,004	19,572	33,293
7,900	32,462	45,569	17,244	29,554	21,621	35,243
8,900	32,423	44,372	16,961	27,581	21,445	33,703
9,900	31,920	46,912	16,150	29,471	20,747	36,213
10,900	32,577	50,487	16,539	32,374	21,264	39,804
11,900	33,691	52,074	17,401	33,002	22,253	41,157
12,900	34,221	54,439	17,633	34,269	22,601	43,353
13,900	34,444	58,226	17,518	36,852	22,601	47,107
14,900	34,993	61,777	17,725	38,905	22,928	50,575
15,900	35,774	65,862	18,162	41,157	23,485	54,718
16,900	36,419	71,351	18,437	44,426	23,876	60,673
17,900	36,949	77,956	18,568	48,186	24,122	68,454
18,900	37,576	86,609	18,781	53,077	24,452	80,377
19,900	38,309	77,597	19,083	40,080	24,871	66,293
20,900	39,028	78,521	19,348	39,017	25,253	68,491
21,900	39,724	78,043	19,564	37,125	25,585	68,307
22,900	40,468	76,924	19,801	34,854	25,941	66,605
23,900	41,271	75,551	20,073	32,545	26,332	64,132
24,900	42,100	74,152	20,340	30,480	26,720	61,302
25,900	42,951	72,834	20,594	28,777	27,097	58,336
26,900	43,849	71,627	20,859	27,386	27,488	55,364
27,900	44,803	70,528	21,140	26,218	27,897	52,471
28,900	45,808	69,532	21,426	25,230	28,316	49,707
29,900	46,866	68,634	21,715	24,406	28,741	47,106
30,900	47,993	67,832	22,014	23,730	29,182	44,687
31,900	49,200	67,117	22,328	23,176	29,643	42,462
32,900	50,492	66,478	22,654	22,726	30,122	40,433
33,900	51,883	65,908	22,992	22,361	30,621	38,596
34,900	53,391	65,396	23,346	22,068	31,145	36,942
35,900	55,035	64,935	23,720	21,834	31,698	35,462
36,900	56,838	64,517	24,115	21,648	32,284	34,144
37,900	58,830	64,136	24,534	21,503	32,907	32,975
38,900	61,050	63,787	24,981	21,391	33,574	31,941

39,900	63,548	63,464	25,462	21,306	34,293	31,030
40,900	66,389	63,163	25,981	21,242	35,073	30,229
41,900	72,512	62,880	29,924	21,196	39,054	29,528
42,900	73,166	62,612	29,532	21,163	38,446	28,914
43,900	73,428	62,357	28,998	21,142	37,716	28,377
44,900	73,068	62,111	27,940	21,130	36,451	27,910
45,900	72,455	61,873	26,779	21,125	34,972	27,503
46,900	71,826	61,641	25,802	21,125	33,629	27,149
47,900	71,234	61,413	24,997	21,130	32,478	26,842
48,900	70,661	61,188	24,290	21,138	31,447	26,575
49,900	70,104	60,965	23,668	21,148	30,509	26,344
50,900	69,576		23,135		29,679	
51,900	69,086		22,687		28,955	
52,900	68,633		22,313		28,328	
53,900	68,214		22,002		27,785	
54,900	67,825		21,745		27,317	
55,900	67,462		21,534		26,915	
56,900	67,123		21,363		26,571	
57,900	66,804		21,225		26,277	
58,900	66,502		21,115		26,026	
59,900	66,214		21,028		25,813	
60,900	65,938		20,961		25,632	
61,900	65,673		20,909		25,478	
62,900	65,415		20,871		25,348	
63,900	65,164		20,844		25,239	
64,900	64,918		20,826		25,146	
65,900	64,677		20,816		25,069	
66,900	64,438		20,812		25,003	
67,900	64,202		20,812		24,949	
68,900	63,968		20,817		24,904	
69,900	63,734		20,825		24,867	
70,900	63,501		20,836		24,837	
71,900	63,267		20,849		24,812	
72,900	63,032		20,863		24,792	
73,900	62,796		20,879		24,776	
74,900	62,558		20,895		24,764	
75,900	62,318		20,913		24,755	
76,900	62,075		20,930		24,748	
77,900	61,829		20,948		24,744	
78,900	61,580		20,967		24,741	
79,900	61,328		20,985		24,739	
80,900	61,071		21,003		24,739	
81,900	60,810		21,021		24,740	
82,900	60,545		21,039		24,742	
83,900	60,275		21,056		24,744	
84,900	60,000		21,073		24,747	
85,900	59,720		21,090		24,751	
86,900	59,435		21,107		24,755	
87,900	59,144		21,123		24,759	
88,900	58,848		21,138		24,763	
89,900	58,547		21,154		24,767	

2) Simulasi PLTA Poso lepas

Adapun hasil simulasi dari lepasnya PLTA Poso dengan penggunaan high speed recloser dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor saat PLTA Poso lepas dengan penggunaan high speed recloser

WAKTU(s)	*Sudut Rotor saat PLTA Poso lepas(Derajat)*					
	PLTMG Niitanasa 1		*PLTU Niitanasa 1*		*PLTU Niitanasa 3*	
	1 unit lepas	*2 unit lepas*	*1 unit lepas*	*2 unit lepas*	*1 unit lepas*	*2 unit lepas*
-0,100	23,095	23,095	8,641	8,641	12,388	12,388
0,900	23,095	23,095	8,641	8,641	12,388	12,388
1,900	23,095	23,095	8,641	8,641	12,388	12,388
2,900	21,602	21,042	7,192	6,766	11,000	10,666
3,900	21,418	21,403	7,022	7,175	10,911	11,258
4,900	22,933	24,589	8,577	10,494	12,538	14,747
5,900	24,059	25,997	9,734	11,957	13,767	16,377
6,900	23,952	25,715	9,587	11,601	13,684	16,188
7,900	23,859	26,846	9,423	12,684	13,588	17,460
8,900	24,485	28,605	10,006	14,413	14,241	19,381
9,900	25,174	29,313	10,653	15,006	14,954	20,156
10,900	25,434	30,002	10,836	15,536	15,199	20,878
11,900	25,604	31,335	10,911	16,711	15,333	22,258
12,900	26,013	32,463	11,224	17,638	15,706	23,390
13,900	26,490	33,349	11,600	18,267	16,141	24,230
14,900	26,831	34,517	11,823	19,152	16,418	25,340
15,900	27,122	35,769	11,982	20,086	16,630	26,510
16,900	27,489	36,908	12,211	20,853	16,911	27,523
17,900	27,891	38,156	12,467	21,686	17,219	28,620
18,900	28,253	39,532	12,672	22,601	17,472	29,821
19,900	28,594	40,917	12,847	23,469	17,694	30,994
20,900	28,961	42,388	13,040	24,360	17,934	32,220
21,900	29,344	43,995	13,241	25,323	18,181	33,552
22,900	29,717	45,698	13,424	26,304	18,408	34,942
23,900	30,085	47,532	13,592	27,326	18,621	36,423
24,900	30,464	49,548	13,764	28,427	18,836	38,045
25,900	30,851	51,757	13,937	29,596	19,051	39,813
26,900	31,239	54,203	14,102	30,852	19,258	41,767
27,900	31,629	56,958	14,261	32,230	19,458	43,975
28,900	32,026	60,090	14,419	33,753	19,657	46,501
29,900	32,430	63,709	14,576	35,460	19,855	49,456
30,900	32,839	67,981	14,729	37,418	20,049	53,015
31,900	33,253	73,142	14,879	39,713	20,239	57,449
32,900	33,676	75,861	15,028	38,541	20,428	58,602
33,900	34,107	74,032	15,176	35,298	20,616	55,083
34,900	34,545	72,935	15,322	32,940	20,802	51,917
35,900	34,993	72,032	15,467	31,181	20,988	49,024
36,900	35,451	71,165	15,612	29,752	21,172	46,414
37,900	35,919	70,297	15,756	28,448	21,357	44,039
38,900	36,399	69,443	15,900	27,238	21,541	41,831
39,900	36,892	68,644	16,044	26,177	21,726	39,769
40,900	37,399	67,924	16,188	25,285	21,911	37,884
41,900	37,920	67,292	16,333	24,542	22,098	36,203
42,900	38,458	66,742	16,478	23,926	22,286	34,724

WAKTU(s)	Sudut Rotor saat PLTA Poso lepas(Derajat)					
	PLTMG Niitanasa 1		PLTU Niitanasa 1		PLTU Niitanasa 3	
	1 unit lepas	2 unit lepas	1 unit lepas	2 unit lepas	1 unit lepas	2 unit lepas
43,900	39,014	66,264	16,625	23,417	22,475	33,424
44,900	39,589	65,847	16,773	22,999	22,667	32,285
45,900	40,185	65,484	16,923	22,655	22,862	31,290
46,900	40,805	65,165	17,075	22,375	23,059	30,423
47,900	41,450	64,883	17,230	22,146	23,260	29,669
48,900	42,123	64,632	17,388	21,961	23,464	29,015
49,900	42,828	64,407	17,548	21,811	23,674	28,447
50,900	43,566	64,203	17,713	21,690	23,888	27,956
51,900	44,343	64,017	17,882	21,593	24,108	27,531
52,900	45,162	63,844	18,056	21,515	24,335	27,163
53,900	46,028	63,684	18,235	21,454	24,569	26,845
54,900	46,948	63,532	18,420	21,406	24,811	26,570
55,900	47,927	63,389	18,612	21,369	25,062	26,333
56,900	48,974	63,252	18,812	21,341	25,323	26,129
57,900	50,098	63,120	19,020	21,319	25,596	25,953
58,900	51,310	62,992	19,239	21,304	25,883	25,801
59,900	52,623	62,867	19,469	21,294	26,184	25,670
60,900	54,054		19,711		26,501	
61,900	55,623		19,968		26,838	
62,900	57,354		20,242		27,197	
63,900	59,278		20,535		27,581	
64,900	61,436		20,851		27,995	
65,900	63,878		21,192		28,443	
66,900	72,282		28,617		35,832	
67,900	71,694		27,226		34,283	
68,900	71,408		26,406		33,239	
69,900	71,112		25,740		32,378	
70,900	70,690		25,020		31,463	
71,900	70,199		24,321		30,548	
72,900	69,713		23,720		29,732	
73,900	69,257		23,215		29,023	
74,900	68,829		22,784		28,400	
75,900	68,427		22,417		27,852	
76,900	68,054		22,108		27,377	
77,900	67,710		21,852		26,968	
78,900	67,391		21,641		26,617	
79,900	67,096		21,469		26,317	
80,900	66,820		21,329		26,061	
81,900	66,563		21,216		25,843	
82,900	66,320		21,127		25,659	
83,900	66,091		21,056		25,502	
84,900	65,872		21,002		25,370	
85,900	65,663		20,961		25,259	
86,900	65,462		20,931		25,166	
87,900	65,268		20,911		25,087	
88,900	65,079		20,898		25,022	
89,900	64,895		20,890		24,967	
90,900	64,715		20,888		24,922	
91,900	64,539		20,891		24,884	
92,900	64,365		20,896		24,854	
93,900	64,193		20,904		24,829	

WAKTU(s)	*Sudut Rotor saat PLTA Poso lepas(Derajat)*					
	PLTMG Niitanasa 1		*PLTU Niitanasa 1*		*PLTU Niitanasa 3*	
	1 unit lepas	*2 unit lepas*	*1 unit lepas*	*2 unit lepas*	*1 unit lepas*	*2 unit lepas*
94,900	64,023		20,915		24,809	
95,900	63,854		20,927		24,794	
96,900	63,686		20,940		24,781	
97,900	63,518		20,954		24,772	
98,900	63,351		20,969		24,765	
99,900	63,183		20,985		24,761	
100,900	63,014		21,001		24,758	
101,900	62,844		21,017		24,757	
102,900	62,673		21,033		24,756	
103,900	62,500		21,050		24,757	
104,900	62,326		21,066		24,759	
105,900	62,149		21,082		24,762	
106,900	61,970		21,098		24,765	
107,900	61,788		21,113		24,768	
108,900	61,603		21,129		24,772	
109,900	61,414		21,144		24,776	
110,900	61,222		21,158		24,780	
111,900	61,027		21,172		24,785	
112,900	60,827		21,186		24,789	
113,900	60,624		21,200		24,794	
114,900	60,415		21,213		24,798	
115,900	60,202		21,226		24,803	
116,900	59,985		21,238		24,808	
117,900	59,762		21,251		24,812	
118,900	59,534		21,262		24,817	
119,900	59,301		21,274		24,821	

Lampiran 7 Hasil simulasi menurunkan reaktansi seri saluran

1) Simulasi dengan menggunakan kompensator seri

Adapun hasil simulasi dengan penggunaan kompensator seri dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor PLTMG Niitanasa unit 1 Saat PLTU Jeneponto ekspansi dan PLTA Poso lepas dengan kompensasi reaktansi yang berbeda

Waktu(s)	*Sudut rotor saat PLTU Jeneponto ekspansi lepas*				*Sudut rotor saat PLTA Poso lepas*			
	1 unit lepas		*2 unit lepas*		*1 unit lepas*		*2 unit lepas*	
	0%	*50%*	*0%*	*50%*	*0%*	*50%*	*0%*	*50%*
-0,100	23,095	6,108	23,095	6,108	23,095	6,108	23,095	6,108
0,900	23,095	6,108	23,095	6,108	23,095	6,108	23,095	6,108
1,900	23,095	6,108	23,095	6,108	23,095	6,108	23,095	6,108
2,900	30,793	13,158	40,757	22,196	21,602	4,513	21,042	3,748
3,900	33,315	15,753	45,254	27,145	21,418	4,091	21,403	3,654
4,900	30,402	13,198	37,828	20,345	22,933	5,405	24,589	6,609
5,900	28,589	10,772	37,019	17,073	24,059	6,607	25,997	8,227
6,900	30,424	11,560	43,581	21,594	23,952	6,557	25,715	7,683
7,900	32,462	13,366	45,569	24,278	23,859	6,210	26,846	8,056
8,900	32,423	13,595	44,372	22,468	24,485	6,502	28,605	9,546
9,900	31,920	12,753	46,912	22,117	25,174	7,092	29,313	10,224
10,900	32,577	12,526	50,487	24,167	25,434	7,349	30,002	10,340
11,900	33,691	13,076	52,074	25,042	25,604	7,340	31,335	11,011
12,900	34,221	13,463	54,439	24,878	26,013	7,454	32,463	11,836
13,900	34,444	13,363	58,226	25,656	26,490	7,734	33,349	12,263
14,900	34,993	13,236	61,777	26,821	26,831	7,961	34,517	12,683
15,900	35,774	13,377	65,862	27,440	27,122	8,069	35,769	13,310
16,900	36,419	13,592	71,351	28,109	27,489	8,176	36,908	13,855
17,900	36,949	13,668	77,956	29,156	27,891	8,340	38,156	14,289
18,900	37,576	13,669	86,609	30,165	28,253	8,508	39,532	14,790
19,900	38,309	13,730	99,217	31,141	28,594	8,632	40,917	15,316
20,900	39,028	13,844			28,961	8,740	42,388	15,782
21,900	39,724	13,933			29,344	8,861	43,995	16,244
22,900	40,468	13,984			29,717	8,987	45,698	16,732
23,900	41,271	14,038			30,085	9,099	47,532	17,203
24,900	42,100	14,113			30,464	9,198	49,548	17,660
25,900	42,951	14,187			30,851	9,298	51,757	18,127
26,900	43,849	14,247			31,239	9,398	54,203	18,594
27,900	44,803	14,303			31,629	9,492	56,958	19,053
28,900	45,808	14,363			32,026	9,578	60,090	19,516
29,900	46,866	14,424			32,430	9,662	63,709	19,982
30,900	47,993	14,481			32,839	9,744	67,981	20,449
31,900	49,200	14,534			33,253	9,822	73,142	20,918
32,900	50,492	14,587			33,676	9,896	79,578	21,394
33,900	51,883	14,639			34,107	9,967	87,957	21,876
34,900	53,391	14,690			34,545	10,035	99,562	22,363
35,900	55,035	14,738			34,993	10,101	117,335	22,861
36,900	56,838	14,785			35,451	10,163		
37,900	58,830	14,831			35,919	10,222		
38,900	61,050	14,875			36,399	10,279		
39,900	63,548	14,919			36,892	10,334		

Waktu(s)	*Sudut rotor saat PLTU Jeneponto ekspansi lepas*				*Sudut rotor saat PLTA Poso lepas*			
	1 unit lepas		*2 unit lepas*		*1 unit lepas*		*2 unit lepas*	
	0%	*50%*	*0%*	*50%*	*0%*	*50%*	*0%*	*50%*
40,900	66,389	14,960			37,399	10,386		
41,900	69,661	15,001			37,920	10,436		
42,900	73,484	15,040			38,458	10,484		
43,900	78,031	15,078			39,014	10,530		
44,900	83,552	15,115			39,589	10,573		
45,900	90,427	15,151			40,185	10,615		
46,900	99,256	15,186			40,805	10,655		
47,900	111,023	15,220			41,450	10,694		
48,900	127,377	15,252			42,123	10,730		
49,900	150,939	15,284			42,828	10,765		
50,900					43,566	10,799		
51,900					44,343	10,831		
52,900					45,162	10,862		
53,900					46,028	10,891		
54,900					46,948	10,919		
55,900					47,927	10,946		
56,900					48,974	10,972		
57,900					50,098	10,997		
58,900					51,310	11,020		
59,900					52,623	11,043		
60,900					54,054	11,065		
61,900					55,623	11,085		
62,900					57,354	11,105		
63,900					59,278	11,124		
64,900					61,436	11,142		
65,900					63,878	11,159		
66,900					66,673	11,176		
67,900					69,912	11,192		
68,900					73,722	11,207		
69,900					78,285	11,222		
70,900					83,865	11,236		
71,900					90,866	11,249		
72,900					99,926	11,262		
73,900					112,088	11,274		
74,900					129,078	11,286		

2) Simulasi dengan menggunakan tambahan saluran transmisi

Adapun hasil simulasi dengan penggunaan tambahan saluran transmisi dapat dilihat pada tabel berikut ini:

Tabel respon sudut rotor PLTMG Niitanasa unit 1 Saat PLTU Jeneponto ekspansi dan PLTA Poso lepas dengan penambahan jumlah jaringan transmisi

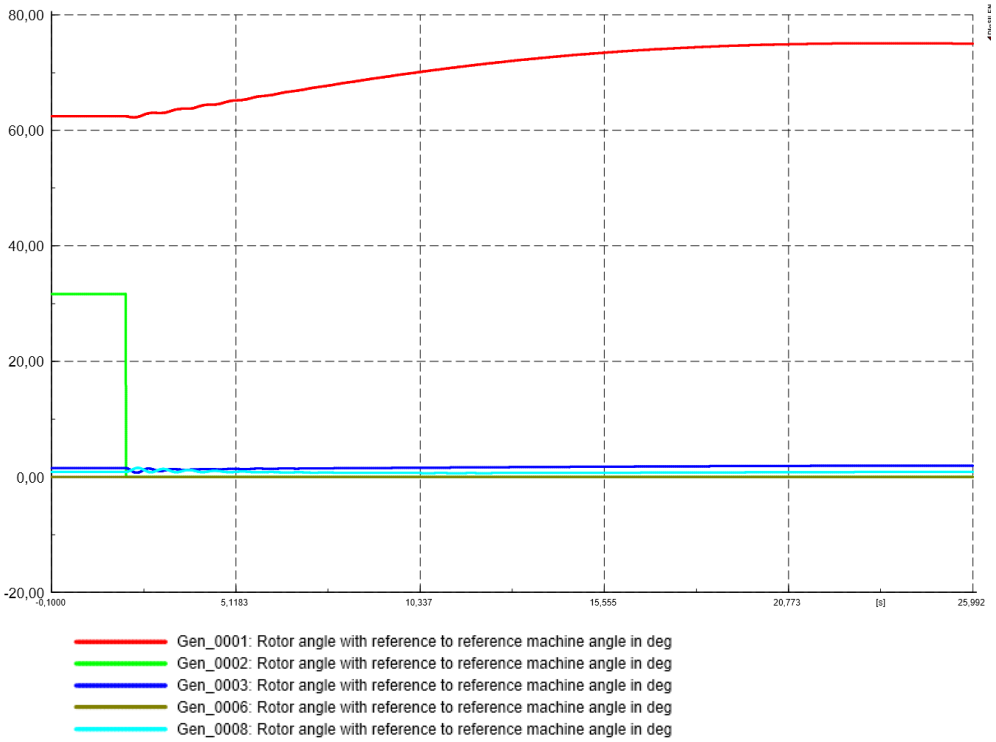
Waktu(s)	Sudut rotor saat PLTU Jeneponto ekspansi lepas				Sudut rotor saat PLTA Poso lepas			
	1 unit lepas		2 unit lepas		1 unit lepas		2 unit lepas	
	0%	50%	0%	50%	0%	50%	0%	50%
-0,100	23,095	3,757	23,095	3,757	23,095	3,757	23,095	3,757
0,900	23,095	3,757	23,095	3,757	23,095	3,757	23,095	3,757
1,900	23,095	3,757	23,095	3,757	23,095	3,757	23,095	3,757
2,900	30,793	10,903	40,757	20,112	21,602	2,182	21,042	1,473
3,900	33,315	13,392	45,254	24,713	21,418	1,812	21,403	1,485
4,900	30,402	10,619	37,828	17,437	22,933	3,142	24,589	4,410
5,900	28,589	8,273	37,019	14,694	24,059	4,268	25,997	5,851
6,900	30,424	9,295	43,581	19,626	23,952	4,145	25,715	5,291
7,900	32,462	11,061	45,569	21,681	23,859	3,830	26,846	5,820
8,900	32,423	11,036	44,372	19,490	24,485	4,186	28,605	7,283
9,900	31,920	10,112	46,912	19,572	25,174	4,756	29,313	7,814
10,900	32,577	10,013	50,487	21,663	25,434	4,945	30,002	7,952
11,900	33,691	10,612	52,074	22,071	25,604	4,919	31,335	8,695
12,900	34,221	10,878	54,439	21,847	26,013	5,064	32,463	9,445
13,900	34,444	10,673	58,226	22,778	26,490	5,346	33,349	9,802
14,900	34,993	10,563	61,777	23,741	26,831	5,536	34,517	10,252
15,900	35,774	10,737	65,862	24,134	27,122	5,618	35,769	10,867
16,900	36,419	10,907	71,351	24,795	27,489	5,728	36,908	11,344
17,900	36,949	10,913	77,956	25,745	27,891	5,893	38,156	11,755
18,900	37,576	10,889	86,609	26,541	28,253	6,040	39,532	12,250
19,900	38,309	10,952	99,217	27,385	28,594	6,143	40,917	12,730
20,900	39,028	11,045			28,961	6,242	42,388	13,152
21,900	39,724	11,092			29,344	6,358	43,995	13,591
22,900	40,468	11,113			29,717	6,470	45,698	14,043
23,900	41,271	11,153			30,085	6,564	47,532	14,467
24,900	42,100	11,211			30,464	6,652	49,548	14,886
25,900	42,951	11,258			30,851	6,742	51,757	15,314
26,900	43,849	11,292			31,239	6,830	54,203	15,734
27,900	44,803	11,329			31,629	6,910	56,958	16,146
28,900	45,808	11,371			32,026	6,984	60,090	16,563
29,900	46,866	11,411			32,430	7,057	63,709	16,979
30,900	47,993	11,447			32,839	7,127	67,981	17,392
31,900	49,200	11,481			33,253	7,193	73,142	17,808
32,900	50,492	11,516			33,676	7,255	79,578	18,227
33,900	51,883	11,551			34,107	7,315	87,957	18,648
34,900	53,391	11,583			34,545	7,372	99,562	19,073
35,900	55,035	11,614			34,993	7,426	117,335	19,505
36,900	56,838	11,645			35,451	7,478		
37,900	58,830	11,675			35,919	7,526		
38,900	61,050	11,703			36,399	7,573		
39,900	63,548	11,731			36,892	7,618		
40,900	66,389	11,758			37,399	7,660		
41,900	69,661	11,784			37,920	7,700		
42,900	73,484	11,809			38,458	7,738		

Waktu(s)	Sudut rotor saat PLTU Jeneponto ekspansi lepas				Sudut rotor saat PLTA Poso lepas			
	1 unit lepas		2 unit lepas		1 unit lepas		2 unit lepas	
	0%	50%	0%	50%	0%	50%	0%	50%
43,900	78,031	11,833			39,014	7,774		
44,900	83,552	11,857			39,589	7,809		
45,900	90,427	11,879			40,185	7,842		
46,900	99,256	11,901			40,805	7,873		
47,900	111,023	11,923			41,450	7,903		
48,900	127,377	11,943			42,123	7,931		
49,900	150,939	11,963			42,828	7,958		
50,900					43,566	7,984		
51,900					44,343	8,009		
52,900					45,162	8,032		
53,900					46,028	8,054		
54,900					46,948	8,075		
55,900					47,927	8,095		
56,900					48,974	8,114		
57,900					50,098	8,133		
58,900					51,310	8,150		
59,900					52,623	8,166		
60,900					54,054	8,182		
61,900					55,623	8,197		
62,900					57,354	8,211		
63,900					59,278	8,225		
64,900					61,436	8,238		
65,900					63,878	8,250		
66,900					66,673	8,262		
67,900					69,912	8,273		
68,900					73,722	8,284		
69,900					78,285	8,294		
70,900					83,865	8,303		
71,900					90,866	8,312		
72,900					99,926	8,321		
73,900					112,088	8,330		
74,900					129,078	8,337		

Lampiran 8 Hasil simulasi pada sistem 14 bus IEEE

1) Respon sudut rotor saat melepaskan pembangkit thermal pada bus 2

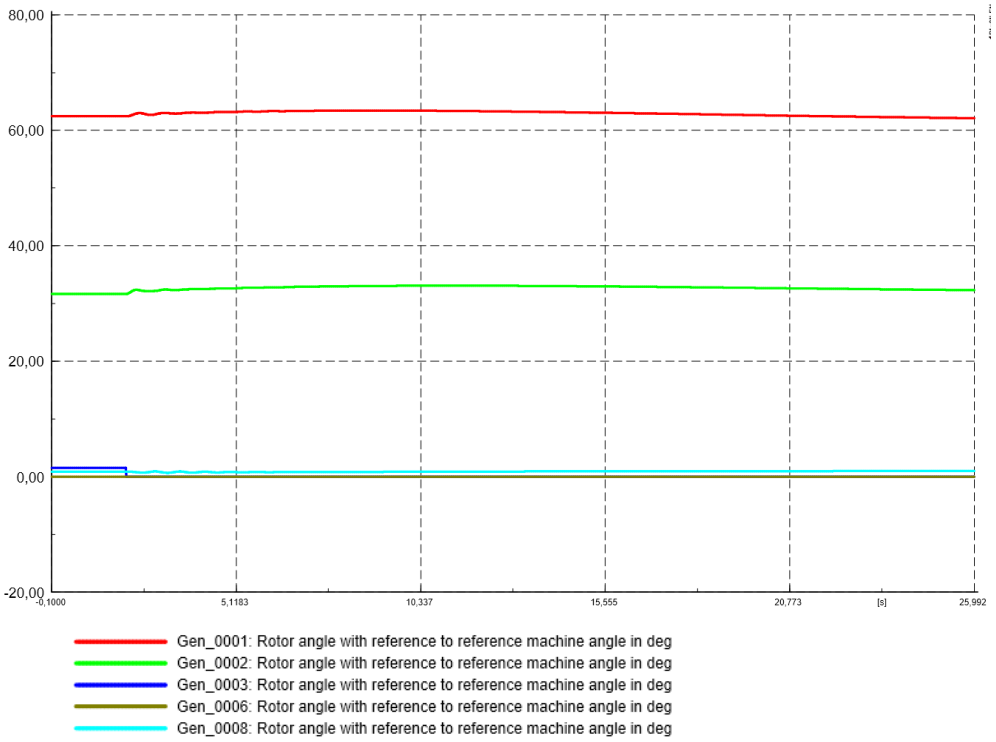
Adapun respon sudut rotor saat melepaskan pembangkit thermal pada bus 2 dapat dilihat pada tabel berikut ini:



Gambar Respon sudut rotor saat pembangkit 2 lepas

2) Respon sudut rotor saat melepaskan pembangkit thermal pada bus 3

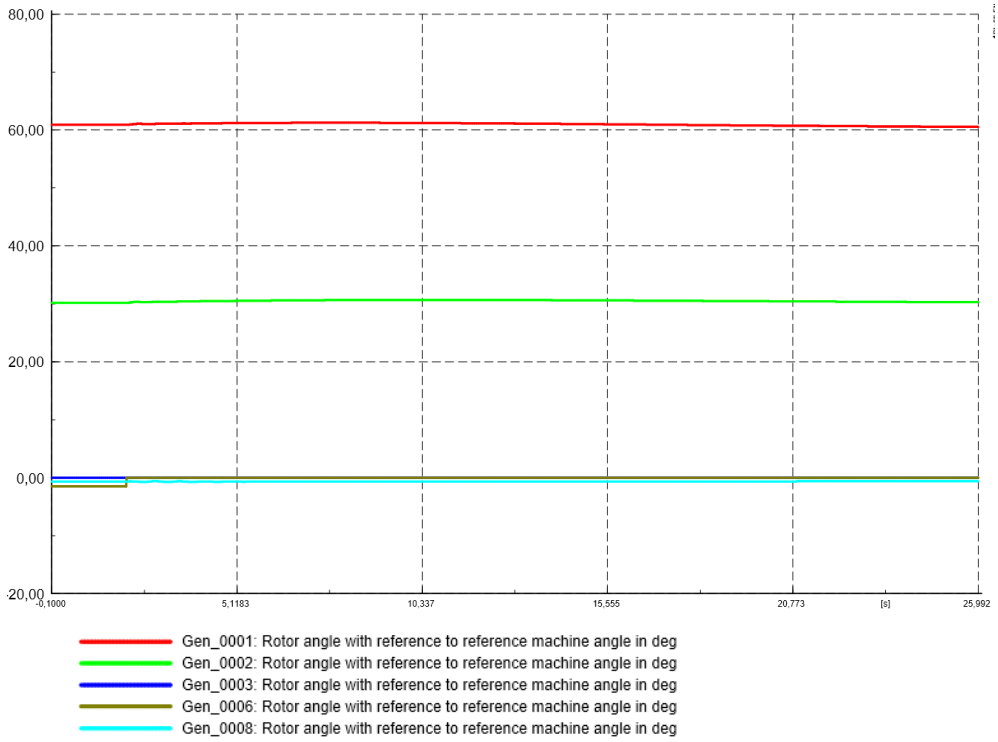
Adapun respon sudut rotor saat melepaskan pembangkit thermal pada bus 3 dapat dilihat pada tabel berikut ini:



Gambar Respon sudut rotor saat pembangkit 3 lepas

3) Respon sudut rotor saat melepaskan pembangkit thermal pada bus 6

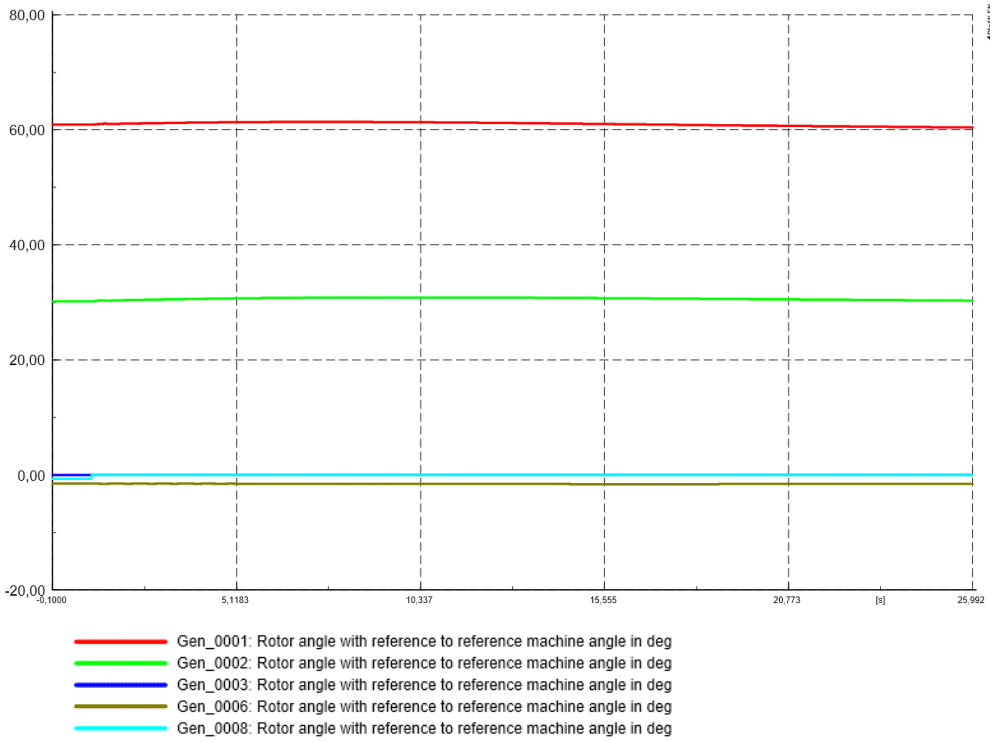
Adapun respon sudut rotor saat melepaskan pembangkit thermal pada bus 6 dapat dilihat pada tabel berikut ini:



Gambar Respon sudut rotor saat pembangkit 6 lepas

4) Respon sudut rotor saat melepaskan pembangkit thermal pada bus 8

Adapun respon sudut rotor saat melepaskan pembangkit thermal pada bus 8 dapat dilihat pada tabel berikut ini:



Gambar Respon sudut rotor saat pembangkit 8 lepas

5) Tegangan tiap bus saat melepaskan pembangkit thermal pada bus 1

Adapun tegangan tiap bus saat melepaskan pembangkit thermal pada bus 1 dapat dilihat pada tabel berikut ini:

Tabel Tegangan tiap bus saat Pembangkit thermal 1 lepas

Nama Busbar	*Tegangan per unit*		
	Sebelum Gangguan	Setelah Gangguan	Perubahan
Bus_0001	1,06	0,373296	-0,686704
Bus_0002	1,045	0,372265	-0,672735
Bus_0003	1,01	0,387499	-0,622501
Bus_0004	1,018622	0,38063	-0,637992
Bus_0005	1,020262	0,37813	-0,642132
Bus_0006	1,07	0,423824	-0,646176
Bus_0007	1,061951	0,418069	-0,643882
Bus_0008	1,09	0,449853	-0,640147
Bus_0009	1,056347	0,413902	-0,642445
Bus_0010	1,051329	0,412751	-0,638578
Bus_0011	1,057082	0,416857	-0,640225
Bus_0012	1,05522	0,417634	-0,637586
Bus_0013	1,050443	0,41547	-0,634973
Bus_0014	1,035795	0,407516	-0,628279

6) Tegangan tiap bus saat melepaskan PLTB pada bus 1

Adapun tegangan tiap bus saat melepaskan PLTB pada bus 1 dapat dilihat pada tabel berikut ini:

Tabel Tegangan tiap bus saat PLTB lepas

Nama Busbar	*Tegangan per unit*		
	Sebelum Gangguan	Setelah Gangguan	Perubahan
Bus_0001	1,06	0,373296	-0,6867
Bus_0002	1,045	0,372265	-0,67274
Bus_0003	1,01	0,387499	-0,6225
Bus_0004	1,018622	0,38063	-0,63799
Bus_0005	1,020262	0,37813	-0,64213
Bus_0006	1,07	0,423824	-0,64618
Bus_0007	1,061951	0,418069	-0,64388
Bus_0008	1,09	0,449853	-0,64015
Bus_0009	1,056347	0,413902	-0,64245
Bus_0010	1,051329	0,412751	-0,63858
Bus_0011	1,057082	0,416857	-0,64023
Bus_0012	1,05522	0,417634	-0,63759
Bus_0013	1,050443	0,41547	-0,63497
Bus_0014	1,035795	0,407516	-0,62828