

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 1  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

**VIHD (Individual Harmonic Distortion) Report**

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus81	0.400	98.90	2.97	5.00
Bus82	33.000	99.78	1.95	5.00
Bus83	33.000	99.78	1.94	5.00
Bus85	0.400	98.91	2.95	5.00
Bus86	33.000	99.78	1.94	5.00
Bus87	33.000	99.77	1.95	5.00
Bus89	0.400	98.74	2.96	5.00
Bus90	33.000	99.75	1.96	5.00
Bus92	0.400	98.94	2.99	5.00
Bus93	33.000	99.74	1.96	5.00
Bus95	0.400	98.70	3.00	5.00
Bus96	33.000	99.74	1.97	5.00
Bus98	0.400	99.31	3.04	5.00
Bus99	33.000	99.74	1.97	5.00
Bus101	0.400	99.14	3.05	5.00
Bus102	33.000	99.74	1.97	5.00
Bus103	33.000	99.74	1.97	5.00
Bus105	0.400	98.84	3.00	5.00
Bus106	33.000	99.74	1.97	5.00
Bus108	0.400	98.64	2.97	5.00
Bus113	33.000	99.75	1.96	5.00
Bus114	33.000	99.75	1.96	5.00
Bus116	0.400	99.12	3.02	5.00
Bus119	0.400	99.22	3.03	5.00
Bus120	33.000	99.75	1.96	5.00
Bus121	33.000	99.75	1.95	5.00
Bus124	33.000	99.74	1.95	5.00
Bus125	0.400	98.75	2.97	5.00
Bus126	33.000	99.75	1.95	5.00
Bus127	33.000	99.75	1.94	5.00
Bus129	0.400	99.19	2.99	5.00
Bus132	33.000	99.76	1.93	5.00
Bus133	0.400	99.19	2.99	5.00
Bus134	33.000	99.76	1.93	5.00
Bus135	33.000	99.76	1.92	5.00
Bus138	33.000	99.77	1.91	5.00
Bus139	0.400	98.26	2.92	5.00
Bus142	33.000	99.74	1.95	5.00
Bus143	0.400	98.62	2.96	5.00
Bus145	33.000	99.89	1.92	5.00

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 2  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus146	33.000	99.89	1.92	5.00
Bus148	0.400	98.73	2.94	5.00
Bus150	0.400	99.55	3.01	5.00
Bus151	33.000	99.89	1.93	5.00
Bus152	33.000	99.89	1.92	5.00
Bus154	0.400	99.77	3.04	5.00
Bus155	33.000	99.88	1.94	5.00
Bus157	0.400	99.55	3.02	5.00
Bus158	33.000	99.88	1.94	5.00
Bus159	33.000	99.88	1.95	5.00
Bus160	33.000	99.88	1.95	5.00
Bus162	0.400	99.33	3.02	5.00
Bus163	33.000	99.87	1.96	5.00
Bus165	0.400	99.31	3.02	5.00
Bus166	33.000	99.87	1.96	5.00
Bus167	33.000	99.87	1.96	5.00
Bus168	33.000	99.87	1.96	5.00
Bus5	0.400	98.93	2.47	3.00
Bus8	0.400	99.38	2.61	3.00
Bus12	0.400	99.21	2.29	3.00
Bus14	0.400	99.33	2.47	3.00
Bus19	0.400	99.25	2.47	3.00
Bus20	0.400	99.02	2.57	3.00
Bus22	0.400	98.86	2.47	3.00
Bus25	0.400	99.17	2.61	3.00
Bus27	0.400	99.22	2.29	3.00
Bus30	0.400	99.46	2.57	3.00
Bus34	0.400	98.89	2.57	3.00
Bus37	0.400	98.98	2.47	3.00
Bus41	0.400	99.12	2.61	3.00
Bus46	0.400	97.72	2.29	3.00
Bus52	0.400	99.22	2.29	3.00
Bus56	0.400	99.14	2.29	3.00
Bus59	0.400	99.08	2.61	3.00
Bus62	0.400	98.89	2.47	3.00
Bus66	0.400	98.74	2.57	3.00
Bus68	0.400	99.37	2.57	3.00
Bus72	0.400	98.80	2.57	3.00
Bus75	0.400	99.35	2.57	3.00
Bus78	0.400	99.30	2.48	3.00
Bus81	0.400	98.90	2.48	3.00
Bus85	0.400	98.91	2.48	3.00
Bus89	0.400	98.74	2.48	3.00

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 3  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus92	0.400	98.94	2.57	3.00
Bus95	0.400	98.70	2.48	3.00
Bus98	0.400	99.31	2.58	3.00
Bus101	0.400	99.14	2.62	3.00
Bus105	0.400	98.84	2.48	3.00
Bus108	0.400	98.64	2.48	3.00
Bus116	0.400	99.12	2.48	3.00
Bus119	0.400	99.22	2.48	3.00
Bus125	0.400	98.75	2.48	3.00
Bus129	0.400	99.19	2.48	3.00
Bus133	0.400	99.19	2.48	3.00
Bus139	0.400	98.26	2.48	3.00
Bus143	0.400	98.62	2.48	3.00
Bus148	0.400	98.73	2.47	3.00
Bus150	0.400	99.55	2.48	3.00
Bus154	0.400	99.77	2.48	3.00
Bus157	0.400	99.55	2.48	3.00
Bus162	0.400	99.33	2.48	3.00
Bus165	0.400	99.31	2.48	3.00
Bus170	0.400	99.24	2.29	3.00
Bus175	0.400	98.64	2.29	3.00
Bus178	0.400	98.28	2.29	3.00
Bus183	0.400	99.04	2.48	3.00
Bus188	0.400	99.48	2.48	3.00
Bus191	0.400	99.56	2.48	3.00
Bus200	0.400	98.73	2.57	3.00
Bus203	0.400	99.49	2.48	3.00
Bus208	0.400	99.31	2.57	3.00
Bus211	0.400	99.05	2.57	3.00
Bus2	33.000	99.99	1.81	5.00
Bus3	33.000	99.99	1.81	5.00
Bus4	33.000	99.97	1.82	5.00
Bus5	0.400	98.93	2.86	5.00
Bus6	33.000	99.96	1.84	5.00
Bus7	33.000	99.91	1.88	5.00
Bus8	0.400	99.38	2.93	5.00
Bus9	33.000	99.91	1.88	5.00
Bus10	33.000	99.90	1.89	5.00
Bus11	33.000	99.90	1.89	5.00
Bus12	0.400	99.21	2.93	5.00
Bus13	33.000	99.90	1.89	5.00
Bus14	0.400	99.33	2.96	5.00
Bus15	33.000	99.90	1.89	5.00

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 4  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus17	33.000	99.89	1.89	5.00
Bus18	33.000	99.89	1.90	5.00
Bus19	0.400	99.25	2.95	5.00
Bus20	0.400	99.02	2.92	5.00
Bus21	33.000	99.98	1.82	5.00
Bus22	0.400	98.86	2.83	5.00
Bus24	33.000	99.92	1.85	5.00
Bus25	0.400	99.17	2.89	5.00
Bus26	33.000	99.92	1.85	5.00
Bus27	0.400	99.22	2.89	5.00
Bus28	33.000	99.89	1.87	5.00
Bus30	0.400	99.46	2.94	5.00
Bus31	33.000	99.88	1.88	5.00
Bus32	33.000	99.88	1.88	5.00
Bus34	0.400	98.89	2.89	5.00
Bus35	33.000	99.88	1.88	5.00
Bus37	0.400	98.98	2.91	5.00
Bus38	33.000	99.87	1.89	5.00
Bus41	0.400	99.12	2.93	5.00
Bus42	33.000	99.86	1.89	5.00
Bus43	33.000	99.86	1.89	5.00
Bus44	33.000	99.85	1.89	5.00
Bus46	0.400	97.72	2.78	5.00
Bus47	33.000	99.85	1.90	5.00
Bus51	33.000	99.85	1.90	5.00
Bus52	0.400	99.22	2.95	5.00
Bus53	33.000	99.85	1.90	5.00
Bus54	33.000	99.84	1.91	5.00
Bus56	0.400	99.14	2.95	5.00
Bus57	33.000	99.83	1.91	5.00
Bus59	0.400	99.08	2.95	5.00
Bus60	33.000	99.83	1.91	5.00
Bus62	0.400	98.89	2.90	5.00
Bus63	33.000	99.82	1.92	5.00
Bus64	33.000	99.81	1.92	5.00
Bus66	0.400	98.74	2.94	5.00
Bus68	0.400	99.37	3.00	5.00
Bus69	33.000	99.81	1.92	5.00
Bus70	33.000	99.79	1.94	5.00
Bus72	0.400	98.80	2.94	5.00
Bus73	33.000	99.78	1.94	5.00
Bus75	0.400	99.35	3.02	5.00
Bus76	33.000	99.78	1.94	5.00

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 5  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus78	0.400	99.30	3.02	5.00
Bus79	33.000	99.78	1.95	5.00
Bus170	0.400	99.24	3.01	5.00
Bus171	33.000	99.87	1.96	5.00
Bus172	33.000	99.88	1.93	5.00
Bus173	33.000	99.85	1.96	5.00
Bus175	0.400	98.64	2.97	5.00
Bus176	33.000	99.84	1.97	5.00
Bus178	0.400	98.28	2.91	5.00
Bus179	33.000	99.84	1.97	5.00
Bus180	33.000	99.82	1.98	5.00
Bus181	33.000	99.81	1.99	5.00
Bus183	0.400	99.04	3.02	5.00
Bus184	33.000	99.81	1.99	5.00
Bus185	33.000	99.81	2.00	5.00
Bus188	0.400	99.48	3.08	5.00
Bus189	33.000	99.81	2.00	5.00
Bus191	0.400	99.56	3.09	5.00
Bus192	33.000	99.81	2.00	5.00
Bus193	33.000	99.81	2.00	5.00
Bus194	33.000	99.82	1.98	5.00
Bus195	33.000	99.81	1.99	5.00
Bus196	33.000	99.81	1.99	5.00
Bus197	33.000	99.81	1.99	5.00
Bus198	33.000	99.80	1.99	5.00
Bus200	0.400	98.73	3.01	5.00
Bus201	33.000	99.80	2.00	5.00
Bus203	0.400	99.49	3.09	5.00
Bus204	33.000	99.80	2.00	5.00
Bus205	33.000	99.80	2.00	5.00
Bus206	33.000	99.80	2.00	5.00
Bus208	0.400	99.31	3.04	5.00
Bus209	33.000	99.80	2.00	5.00
Bus211	0.400	99.05	3.03	5.00
Bus213	33.000	99.77	1.91	5.00
Bus212	0.400	99.65	3.10	5.00
Bus1	33.000	100.00	1.80	5.00
Bus5	0.400	98.93	1.94	7.00
Bus8	0.400	99.38	2.05	7.00
Bus12	0.400	99.21	1.97	7.00
Bus14	0.400	99.33	2.02	7.00
Bus19	0.400	99.25	2.01	7.00
Bus20	0.400	99.02	2.00	7.00

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 6  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus22	0.400	98.86	1.90	7.00
Bus25	0.400	99.17	2.01	7.00
Bus27	0.400	99.22	1.95	7.00
Bus30	0.400	99.46	2.04	7.00
Bus34	0.400	98.89	1.97	7.00
Bus37	0.400	98.98	1.98	7.00
Bus41	0.400	99.12	2.04	7.00
Bus46	0.400	97.72	1.79	7.00
Bus52	0.400	99.22	2.00	7.00
Bus56	0.400	99.14	1.99	7.00
Bus59	0.400	99.08	2.06	7.00
Bus62	0.400	98.89	1.94	7.00
Bus66	0.400	98.74	2.01	7.00
Bus68	0.400	99.37	2.09	7.00
Bus72	0.400	98.80	2.01	7.00
Bus75	0.400	99.35	2.10	7.00
Bus78	0.400	99.30	2.08	7.00
Bus81	0.400	98.90	2.01	7.00
Bus85	0.400	98.91	1.99	7.00
Bus89	0.400	98.74	2.01	7.00
Bus92	0.400	98.94	2.07	7.00
Bus95	0.400	98.70	2.05	7.00
Bus98	0.400	99.31	2.12	7.00
Bus101	0.400	99.14	2.16	7.00
Bus105	0.400	98.84	2.05	7.00
Bus108	0.400	98.64	2.01	7.00
Bus116	0.400	99.12	2.08	7.00
Bus119	0.400	99.22	2.09	7.00
Bus125	0.400	98.75	2.02	7.00
Bus129	0.400	99.19	2.06	7.00
Bus133	0.400	99.19	2.08	7.00
Bus139	0.400	98.26	2.01	7.00
Bus143	0.400	98.62	2.01	7.00
Bus148	0.400	98.73	1.98	7.00
Bus150	0.400	99.55	2.07	7.00
Bus154	0.400	99.77	2.11	7.00
Bus157	0.400	99.55	2.08	7.00
Bus162	0.400	99.33	2.06	7.00
Bus165	0.400	99.31	2.06	7.00
Bus170	0.400	99.24	2.03	7.00
Bus175	0.400	98.64	1.98	7.00
Bus178	0.400	98.28	1.90	7.00
Bus183	0.400	99.04	2.04	7.00

Project:  
Location:  
Contract:  
Engineer:  
Filename: unbalance max load

**ETAP**  
**12.6.0H**  
  
Study Case: HA

Page: 7  
Date: 11-01-2017  
SN:  
Revision: Base  
Config.: Normal

Bus		Voltage Distortion		
ID	kV	Fund.	VIHD	Order
		%	%	
Bus188	0.400	99.48	2.12	7.00
Bus191	0.400	99.56	2.13	7.00
Bus200	0.400	98.73	2.05	7.00
Bus203	0.400	99.49	2.13	7.00
Bus208	0.400	99.31	2.10	7.00
Bus211	0.400	99.05	2.07	7.00
Bus212	0.400	99.65	2.53	11.00
Bus212	0.400	99.65	2.43	17.00
Bus212	0.400	99.65	1.80	19.00
Bus212	0.400	99.65	2.57	23.00
Bus212	0.400	99.65	1.78	25.00

Indicates buses with IHD (Individual Harmonic Distortion) exceeding the limit