Load Flow Calculation

25.03.2026, 21:15:58.089
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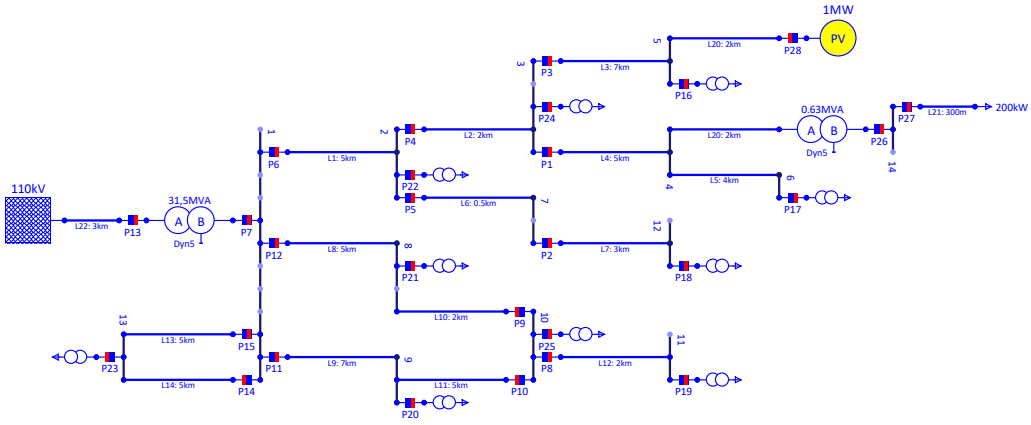
ATPDesigner Version 4.02.12 - 14.03.2026
Version NET File 6.3 - 22.01.2021

Identifiers and Descriptions

nom	Nominal value, e.g. nominal voltage Vnom
r	Rated value, e.g. rated current Ir
VAG, VBG, VCG [V], [%]	Amount of the phase-to-ground voltages in V and %Vn/√3
VAB, VBC, VCA [V], [%]	Amount of the phase-to-phase voltages in V and %Vn
Vmin, Vmax [V], [%]	Amount of the minimum and maximum phase-to-ground and phase-to-phase voltage VABC in V and %Vnom
Vpp, Vpg [V], [%]	Amount of the phase-to-phase voltages VAB, VBC, VCA in V and %Vn Amount of the phase-to-ground voltages VAG, VBG, VCG in V and %Vn/√3
IA, IB, IC [A], [%]	Amount of the phase currents in A and %In
V1, V2, V0 [V], [%]	Amount of the positive-, negative- and zero-sequence voltage in V and %Vn/√3
I1, I2, I0 [A], [%]	Amount of the positive-, negative- and zero-sequence current in A and %In
Ipmax [A], [%]	Amount of the maximum phase current IABC in A und %In=Imax·Red.
Load [%Inom]	Amount of the maximum phase current IABC in %In
Load Smax, Smin [%Sr]	Amount of the maximum or minimum apparent power S in %Sr
S [VA]	Amount of the apparent power in VA
P [W]	Amount of the active power in W
Q [var]	Amount of the reactive power in var
Vpgnom	Vpgnom = Vnom/√3
max	maximum
min	minimum
CosPhi	Displacement factor cos phi = P / S
Load [%]	Load of winding A and B in %In
SA, SB, SC [VA]	Single-phase apparent power of phase A, B and C in VA
PA, PB, PC [W]	Single-phase active power of phase A, B and C in W
QA, QB, QC [var]	Single-phase reactive power of phase A, B and C in var
NA	Need for Action
Ipmax [%]	Maximum phase current IABC in %Inom
fN [%]	Grid Health in %
m [p.u.]	Load Level acc. VDE 0276
LF	State of Load Flow Calculation: o.k.=1, failed=0, stopped=2, invalid=-1
TRIP	Grid Protection: TRIP-Command - 0=disabled, 1=enabled
GEN	Grid Protection: General starting - 0=disabled, 1=enabled
DSZ	Grid Protection: Distance zone of the distance protection with TRIP
R1k	Grid Protection: Resistance of the short-circuit impedance of the positive sequence system
X1k	Grid Protection: Reactance of the short-circuit impedance of the positive sequence system
DST	Daylight Saving Time: Summer = S, Winter = W
State	Overall result for the equipment according to the BDEW traffic light model (green, yellow, red)
Enabled (Ena) Disabled (Dis)	Network element: enabled (Ena) or disabled (Dis)

Power Grid Topology



Short-Circuit

Short-Circuit	---
Equipment	---
Short-Circuit Node	---
IkA; phi	---
IkB; phi	---
IkC; phi	---

Summary

Name	Grid State
Power Grid	Amber
Busbar: [Bb 1] 1	Green
Busbar: [Bb 2] 2	Green
Busbar: [Bb 3] 3	Green
Busbar: [Bb 4] 7	Green
Busbar: [Bb 5] 5	Green
Busbar: [Bb 6] 4	Green
Busbar: [Bb 7] 6	Green
Busbar: [Bb 8] 12	Green
Busbar: [Bb 9] 8	Green
Busbar: [Bb 10] 9	Green
Busbar: [Bb 11] 11	Green
Busbar: [Bb 12] 10	Green
Busbar: [Bb 13] 13	Green
Busbar: [Bb 14] 14	Green
2-Winding Transformer: [Tra 1] 31,5MVA	Green
2-Winding Transformer: [Tra 2] Tra 2	Green
2-Winding Transformer: [Tra 3] Tra 3	Green
2-Winding Transformer: [Tra 4] Tra 4	Green
2-Winding Transformer: [Tra 5] Tra 5	Green
2-Winding Transformer: [Tra 6] Tra 6	Green
2-Winding Transformer: [Tra 7] Tra 7	Green
2-Winding Transformer: [Tra 8] Tra 8	Green
2-Winding Transformer: [Tra 9] Tra 9	Green
2-Winding Transformer: [Tra 10] Tra 10	Green
2-Winding Transformer: [Tra 11] Tra 11	Green
2-Winding Transformer: [Tra 12] 0.63MVA	Green
Probe: [Prb 1] P1	Green
Probe: [Prb 2] P2	Green
Probe: [Prb 3] P3	Green
Probe: [Prb 4] P4	Green
Probe: [Prb 5] P5	Green
Probe: [Prb 6] P6	Green
Probe: [Prb 7] P7	Green
Probe: [Prb 8] P8	Green
Probe: [Prb 9] P9	Green
Probe: [Prb 11] P11	Green
Probe: [Prb 12] P12	Green
Probe: [Prb 10] P10	Green
Probe: [Prb 13] P13	Green
Probe: [Prb 14] P14	Green
Probe: [Prb 15] P15	Green
Probe: [Prb 16] P16	Green
Probe: [Prb 17] P17	Green
Probe: [Prb 18] P18	Green
Probe: [Prb 19] P19	Green
Probe: [Prb 20] P20	Green
Probe: [Prb 21] P21	Green
Probe: [Prb 22] P22	Green
Probe: [Prb 23] P23	Green
Probe: [Prb 24] P24	Green
Probe: [Prb 25] P25	Green
Probe: [Prb 26] P26	Green
Probe: [Prb 27] P27	Green
Probe: [Prb 28] P28	Green

3-Phase Source: [3Ph 1] 1MW	Green
Line: [Line 4] L1: 5km	Green
Line: [Line 5] L2: 2km	Green
Line: [Line 6] L6: 0.5km	Green
Line: [Line 7] L3: 7km	Green
Line: [Line 8] L4: 5km	Green
Line: [Line 9] L5: 4km	Green
Line: [Line 10] L8: 5km	Green
Line: [Line 11] L7: 3km	Green
Line: [Line 12] L10: 2km	Green
Line: [Line 13] L9: 7km	Green
Line: [Line 14] L11: 5km	Green
Line: [Line 15] L12: 2km	Green
Line: [Line 16] L14: 5km	Green
Line: [Line 17] L13: 5km	Green
Line: [Line 18] L20: 2km	Green
Line: [Line 19] L21: 300m	Amber
Line: [Line 20] L22: 3km	Green
Line: [Line 21] L20: 2km	Green
Load Impedance: [Load 1] 200kW	Amber
Network Infeed: [Network 1] 110kV	Green

Voltage Monitoring: Busbar

Name	Vnom [kV]	VAB [%]	VBC [%]	VCA [%]	V<> [%]	NA [%]	State
[Bb 1] 1	20	97.71	97.71	97.71	90% - 110%	0	Green
[Bb 2] 2	20	97.56	97.56	97.56	90% - 110%	0	Green
[Bb 3] 3	20	97.53	97.53	97.53	90% - 110%	0	Green
[Bb 4] 7	20	97.56	97.56	97.56	90% - 110%	0	Green
[Bb 5] 5	20	97.59	97.59	97.59	90% - 110%	0	Green
[Bb 6] 4	20	97.47	97.47	97.47	90% - 110%	0	Green
[Bb 7] 6	20	97.43	97.43	97.43	90% - 110%	0	Green
[Bb 8] 12	20	97.53	97.53	97.53	90% - 110%	0	Green
[Bb 9] 8	20	97.61	97.61	97.61	90% - 110%	0	Green
[Bb 10] 9	20	97.61	97.61	97.61	90% - 110%	0	Green
[Bb 11] 11	20	97.56	97.56	97.56	90% - 110%	0	Green
[Bb 12] 10	20	97.58	97.58	97.58	90% - 110%	0	Green
[Bb 13] 13	20	97.69	97.69	97.69	90% - 110%	0	Green
[Bb 14] 14	0.4	97.09	97.09	97.09	90% - 110%	0	Green

Name	Vnom [kV]	VAG [%]	VBG [%]	VCG [%]	V<> [%]	NA [%]	State
[Bb 1] 1	20	97.71	97.71	97.71	90% - 110%	0	Green
[Bb 2] 2	20	97.56	97.56	97.56	90% - 110%	0	Green
[Bb 3] 3	20	97.53	97.53	97.53	90% - 110%	0	Green
[Bb 4] 7	20	97.56	97.56	97.56	90% - 110%	0	Green
[Bb 5] 5	20	97.59	97.59	97.59	90% - 110%	0	Green
[Bb 6] 4	20	97.47	97.47	97.47	90% - 110%	0	Green
[Bb 7] 6	20	97.43	97.43	97.43	90% - 110%	0	Green
[Bb 8] 12	20	97.53	97.53	97.53	90% - 110%	0	Green
[Bb 9] 8	20	97.61	97.61	97.61	90% - 110%	0	Green
[Bb 10] 9	20	97.61	97.61	97.61	90% - 110%	0	Green
[Bb 11] 11	20	97.56	97.56	97.56	90% - 110%	0	Green
[Bb 12] 10	20	97.58	97.58	97.58	90% - 110%	0	Green
[Bb 13] 13	20	97.69	97.69	97.69	90% - 110%	0	Green
[Bb 14] 14	0.4	97.09	97.09	97.09	90% - 110%	0	Green

Name	Vnom [kV]	V1 [%]	V2 [%]	V0 [%]	phiV1 [°]	phiV2 [°]	phiV0 [°]	State
[Bb 1] 1	20	97.71	0.00	0.00	118.74	109.09	-47.17	Green
[Bb 2] 2	20	97.56	0.00	0.00	118.60	104.68	-59.75	Green
[Bb 3] 3	20	97.53	0.00	0.00	118.57	106.96	-45.17	Green
[Bb 4] 7	20	97.56	0.00	0.00	118.59	104.74	-60.81	Green
[Bb 5] 5	20	97.59	0.00	0.00	118.63	107.91	-15.46	Green
[Bb 6] 4	20	97.47	0.00	0.00	118.52	107.05	-53.20	Green
[Bb 7] 6	20	97.43	0.00	0.00	118.48	107.69	-61.86	Green
[Bb 8] 12	20	97.53	0.00	0.00	118.57	103.58	-65.69	Green
[Bb 9] 8	20	97.61	0.00	0.00	118.64	110.06	-103.03	Green
[Bb 10] 9	20	97.61	0.00	0.00	118.64	109.17	-92.86	Green
[Bb 11] 11	20	97.56	0.00	0.00	118.60	110.92	-133.50	Green
[Bb 12] 10	20	97.58	0.00	0.00	118.62	108.87	-115.18	Green
[Bb 13] 13	20	97.69	0.00	0.00	118.72	108.47	-45.46	Green
[Bb 14] 14	0.4	97.09	0.00	0.00	-32.27	-103.31	62.64	Green

Classification of Busbar Voltages

Classes	Vpp	Vpg	V1
<=90%	0	0	0
]90% - 92%]	0	0	0
]92% - 94%]	0	0	0
]94% - 96%]	0	0	0
]96% - 98%]	14	14	14
]98% - 100%]	0	0	0
]100% - 102%]	0	0	0
]102% - 104%]	0	0	0
]104% - 106%]	0	0	0
]106% - 108%]	0	0	0
]108% - 110%]	0	0	0
>110%	0	0	0

Voltage Monitoring: 3-Phase Source

Name	Vnom [kV]	VAB [%]	VBC [%]	VCA [%]	V<> [%]	State
[3Ph 1] 1MW	20	97.62	97.62	97.62	V<=0%; V>=1e+17%	Green

Name	Vnom [kV]	VAG [%]	VBG [%]	VCG [%]	V<> [%]	State
[3Ph 1] 1MW	20	97.62	97.62	97.62	V<=0%; V>=1e+17%	Green

Power Infeed: 3-Phase Source

Name	S [MVA]	P [MW]	Q [Mvar]	CosPhi
[3Ph 1] 1MW	1.000002	1.000002	0.000000	1.000

Power Consumption: Load Impedance

Name	S [MVA]	P [MW]	Q [Mvar]	CosPhi
[Load 1] 200kW	0.198703	0.198703	-0.000000	1.000

Power Consumption: 2-Winding Transformer - Internal Load Impedance

Name	Sr [MVA]	S [MVA]	P [MW]	Q [Mvar]	CosPhi

[Tra 2] Tra 2, Load 100001	0.500000	0.500066	0.500066	-0.000000	1.000
[Tra 3] Tra 3, Load 100003	0.500000	0.500098	0.500098	-0.000000	1.000
[Tra 4] Tra 4, Load 100004	0.500000	0.500252	0.500252	-0.000000	1.000
[Tra 5] Tra 5, Load 100005	0.500000	0.499961	0.499961	-0.000000	1.000
[Tra 6] Tra 6, Load 100006	0.500000	0.499963	0.499963	-0.000000	1.000
[Tra 7] Tra 7, Load 100007	0.500000	0.499973	0.499973	-0.000000	1.000
[Tra 8] Tra 8, Load 100008	0.500000	0.499966	0.499966	-0.000000	1.000
[Tra 9] Tra 9, Load 100009	0.500000	0.499966	0.499966	-0.000000	1.000
[Tra 10] Tra 10, Load 100010	0.500000	0.500067	0.500067	-0.000000	1.000
[Tra 11] Tra 11, Load 100011	0.500000	0.500106	0.500106	-0.000000	1.000

Power Consumption: Line - Internal Load Impedance

Name	Sr [MVA]	S [MVA]	P [MW]	Q [Mvar]	CosPhi

Voltage Monitoring: Probe

Name	Vnom [kV]	VAB [%]	VBC [%]	VCA [%]	State
[Prb 1] P1	20	97.5346	97.5346	97.5346	Green
[Prb 2] P2	20	97.5593	97.5593	97.5593	Green
[Prb 3] P3	20	97.5346	97.5346	97.5346	Green
[Prb 4] P4	20	97.5638	97.5638	97.5638	Green
[Prb 5] P5	20	97.5638	97.5638	97.5638	Green
[Prb 6] P6	20	97.7146	97.7146	97.7146	Green
[Prb 7] P7	20	97.7146	97.7146	97.7146	Green
[Prb 8] P8	20	97.582	97.582	97.582	Green
[Prb 9] P9	20	97.582	97.582	97.582	Green
[Prb 11] P11	20	97.7146	97.7146	97.7146	Green
[Prb 12] P12	20	97.7146	97.7146	97.7146	Green
[Prb 10] P10	20	97.582	97.582	97.582	Green
[Prb 13] P13	110	100.198	100.198	100.198	Green
[Prb 14] P14	20	97.7146	97.7146	97.7146	Green
[Prb 15] P15	20	97.7146	97.7146	97.7146	Green
[Prb 16] P16	20	97.5874	97.5873	97.5874	Green
[Prb 17] P17	20	97.433	97.433	97.433	Green
[Prb 18] P18	20	97.532	97.532	97.532	Green
[Prb 19] P19	20	97.5638	97.5638	97.5638	Green
[Prb 20] P20	20	97.6107	97.6107	97.6107	Green
[Prb 21] P21	20	97.6069	97.6069	97.6069	Green
[Prb 22] P22	20	97.5638	97.5638	97.5638	Green
[Prb 23] P23	20	97.6919	97.6919	97.6919	Green
[Prb 24] P24	20	97.5346	97.5346	97.5346	Green
[Prb 25] P25	20	97.582	97.582	97.582	Green
[Prb 26] P26	0.4	97.0864	97.0864	97.0864	Green
[Prb 27] P27	0.4	97.0864	97.0864	97.0864	Green
[Prb 28] P28	20	97.6206	97.6206	97.6206	Green

Name	Vnom [kV]	VAG [%]	VBG [%]	VCG [%]	State
[Prb 1] P1	20	97.5346	97.5346	97.5346	Green
[Prb 2] P2	20	97.5593	97.5593	97.5593	Green
[Prb 3] P3	20	97.5346	97.5346	97.5346	Green
[Prb 4] P4	20	97.5638	97.5638	97.5638	Green
[Prb 5] P5	20	97.5638	97.5638	97.5638	Green
[Prb 6] P6	20	97.7146	97.7146	97.7146	Green
[Prb 7] P7	20	97.7146	97.7146	97.7146	Green
[Prb 8] P8	20	97.582	97.582	97.582	Green
[Prb 9] P9	20	97.582	97.582	97.582	Green

[Prb 11] P11	20	97.7146	97.7146	97.7146	Green
[Prb 12] P12	20	97.7146	97.7146	97.7146	Green
[Prb 10] P10	20	97.582	97.582	97.582	Green
[Prb 13] P13	110	100.198	100.198	100.198	Green
[Prb 14] P14	20	97.7146	97.7146	97.7146	Green
[Prb 15] P15	20	97.7146	97.7146	97.7146	Green
[Prb 16] P16	20	97.5873	97.5874	97.5873	Green
[Prb 17] P17	20	97.433	97.433	97.433	Green
[Prb 18] P18	20	97.532	97.532	97.532	Green
[Prb 19] P19	20	97.5638	97.5638	97.5638	Green
[Prb 20] P20	20	97.6107	97.6107	97.6107	Green
[Prb 21] P21	20	97.6069	97.6069	97.6069	Green
[Prb 22] P22	20	97.5638	97.5638	97.5638	Green
[Prb 23] P23	20	97.6919	97.6919	97.6919	Green
[Prb 24] P24	20	97.5346	97.5346	97.5346	Green
[Prb 25] P25	20	97.582	97.582	97.582	Green
[Prb 26] P26	0.4	97.0864	97.0864	97.0864	Green
[Prb 27] P27	0.4	97.0864	97.0864	97.0864	Green
[Prb 28] P28	20	97.6206	97.6206	97.6206	Green

Phase Current Monitoring: Probe

Name	Ir [A]	IA [%]	IA [A]	IB [%]	IB [A]	IC [%]	IC [A]	State
[Prb 1] P1	630	3.36	21.18	3.36	21.18	3.36	21.18	Green
[Prb 2] P2	630	2.37	14.90	2.37	14.90	2.37	14.90	Green
[Prb 3] P3	630	2.34	14.71	2.34	14.71	2.34	14.71	Green
[Prb 4] P4	630	3.41	21.51	3.41	21.51	3.41	21.51	Green
[Prb 5] P5	630	2.37	14.90	2.37	14.90	2.37	14.90	Green
[Prb 6] P6	630	8.11	51.11	8.11	51.11	8.11	51.11	Green
[Prb 7] P7	630	19.91	125.45	19.91	125.45	19.91	125.45	Green
[Prb 8] P8	630	2.36	14.89	2.36	14.89	2.36	14.89	Green
[Prb 9] P9	630	3.23	20.38	3.23	20.38	3.23	20.38	Green
[Prb 11] P11	630	3.86	24.29	3.86	24.29	3.86	24.29	Green
[Prb 12] P12	630	5.60	35.27	5.60	35.27	5.60	35.27	Green
[Prb 10] P10	630	1.49	9.41	1.49	9.41	1.49	9.41	Green
[Prb 13] P13	630	3.57	22.46	3.57	22.46	3.57	22.46	Green
[Prb 14] P14	630	1.18	7.44	1.18	7.44	1.18	7.44	Green
[Prb 15] P15	630	1.18	7.44	1.18	7.44	1.18	7.44	Green
[Prb 16] P16	630	2.36	14.90	2.36	14.90	2.36	14.90	Green
[Prb 17] P17	630	2.37	14.92	2.37	14.92	2.37	14.92	Green
[Prb 18] P18	630	2.37	14.90	2.37	14.90	2.37	14.90	Green
[Prb 19] P19	630	2.36	14.89	2.36	14.89	2.36	14.89	Green
[Prb 20] P20	630	2.36	14.89	2.36	14.89	2.36	14.89	Green
[Prb 21] P21	630	2.36	14.89	2.36	14.89	2.36	14.89	Green
[Prb 22] P22	630	2.36	14.90	2.36	14.90	2.36	14.90	Green
[Prb 23] P23	630	2.36	14.87	2.36	14.87	2.36	14.87	Green
[Prb 24] P24	630	2.37	14.90	2.37	14.90	2.37	14.90	Green
[Prb 25] P25	630	2.36	14.89	2.36	14.89	2.36	14.89	Green
[Prb 26] P26	630	49.50	311.85	49.50	311.85	49.50	311.85	Green
[Prb 27] P27	630	49.50	311.85	49.50	311.85	49.50	311.85	Green
[Prb 28] P28	630	4.69	29.57	4.69	29.57	4.69	29.57	Green

Accuracy of the Load Flow Calculation: 3-Phase Source

No.	Name	dPhi [°]	dS [%]
1	[3Ph 1] 1MW	0.00319123	-0.0198534

Power Loss

No. of Transformers	12
No. of Lines	18
No. of 2/3-Winding Transformer (BCTRAN)	0

Name	S [kVA]	P [kW]	Q [kvar]	CosPhi
[Tra 1] 31,5MVA	268.731	27.6901	267.301	0.10304
[Tra 2] Tra 2	25.3953	2.75003	25.246	0.108289
[Tra 3] Tra 3	25.4108	2.75295	25.2612	0.108338
[Tra 4] Tra 4	25.3998	2.75006	25.2504	0.108271
[Tra 5] Tra 5	25.3843	2.74833	25.2351	0.108269
[Tra 6] Tra 6	25.382	2.74786	25.2328	0.10826
[Tra 7] Tra 7	25.368	2.74502	25.219	0.108208
[Tra 8] Tra 8	25.3788	2.74722	25.2297	0.108248
[Tra 9] Tra 9	25.3783	2.74712	25.2292	0.108247
[Tra 10] Tra 10	25.3911	2.74919	25.2418	0.108274
[Tra 11] Tra 11	25.3975	2.75029	25.2482	0.10829
[Tra 12] 0.63MVA	7.22063	1.20518	7.11934	0.166908
[Line 4] L1: 5km	187.387	2.5474	-187.37	0.0135943
[Line 5] L2: 2km	0.354661	0.180427	0.305337	0.508729
[Line 6] L6: 0.5km	0.0425584	0.0216507	0.0366396	0.508729
[Line 7] L3: 7km	0.580672	0.295405	0.499916	0.508729
[Line 8] L4: 5km	0.859453	0.437229	0.739926	0.508729
[Line 9] L5: 4km	0.341206	0.173581	0.293753	0.508729
[Line 10] L8: 5km	2.38345	1.21253	2.05198	0.508729
[Line 11] L7: 3km	0.255345	0.129901	0.219833	0.508729
[Line 12] L10: 2km	0.318348	0.161953	0.274074	0.508729
[Line 13] L9: 7km	1.58343	0.805536	1.36322	0.508729
[Line 14] L11: 5km	0.169577	0.086269	0.145994	0.508729
[Line 15] L12: 2km	0.170048	0.0865085	0.146399	0.508729
[Line 16] L14: 5km	0.106004	0.0539273	0.0912616	0.508729
[Line 17] L13: 5km	0.106004	0.0539273	0.0912616	0.508729
[Line 18] L20: 2km	0.0300341	0.0152792	0.0258572	0.508729
[Line 19] L21: 300m	12.9894	10.9406	7.00198	0.842271
[Line 20] L22: 3km	4773.75	0.271056	-4773.75	5.67805e-05
[Line 21] L20: 2km	0.670361	0.341032	0.577131	0.508729
Sum	**5511.93**	**74.1975**	**-4420.44**	**0.0134613**

Load Flow Results: Line

Name	IA [A]	IB [A]	IC [A]	Ipmax [A]	Ipmax [%]	I1 [A]	I2 [A]	I0 [A]	State
[Line 4] L1: 5km	51.27	51.27	51.27	51.27	8.56	51.27	0.00	0.00	Green
[Line 5] L2: 2km	21.51	21.51	21.51	21.51	3.59	21.51	0.00	0.00	Green
[Line 6] L6: 0.5km	14.90	14.90	14.90	14.90	2.49	14.90	0.00	0.00	Green
[Line 7] L3: 7km	14.71	14.71	14.71	14.71	2.46	14.71	0.00	0.00	Green
[Line 8] L4: 5km	21.18	21.18	21.18	21.18	3.54	21.18	0.00	0.00	Green
[Line 9] L5: 4km	14.92	14.92	14.92	14.92	2.49	14.92	0.00	0.00	Green
[Line 10] L8: 5km	35.27	35.27	35.26	35.27	5.89	35.27	0.00	0.00	Green
[Line 11] L7: 3km	14.90	14.90	14.90	14.90	2.49	14.90	0.00	0.00	Green
[Line 12] L10: 2km	20.38	20.38	20.38	20.38	3.40	20.38	0.00	0.00	Green
[Line 13] L9: 7km	24.29	24.29	24.29	24.29	4.06	24.29	0.00	0.00	Green
[Line 14] L11: 5km	9.41	9.41	9.41	9.41	1.57	9.41	0.00	0.00	Green
[Line 15] L12: 2km	14.89	14.89	14.89	14.89	2.49	14.89	0.00	0.00	Green
[Line 16] L14: 5km	7.44	7.44	7.44	7.44	1.24	7.44	0.00	0.00	Green
[Line 17] L13: 5km	7.44	7.44	7.44	7.44	1.24	7.44	0.00	0.00	Green
[Line 18] L20: 2km	6.26	6.26	6.26	6.26	1.04	6.26	0.00	0.00	Green

[Line 19] L21: 300m	311.85	311.85	311.85	311.85	86.87	311.85	0.00	0.00	Amber
[Line 20] L22: 3km	32.21	32.21	32.21	32.21	6.78	32.21	0.00	0.00	Green
[Line 21] L20: 2km	29.57	29.57	29.57	29.57	4.94	29.57	0.00	0.00	Green

Name	Vnom [kV]	Vpgmin [%]	Vpgmax [%]	State
[Line 4] L1: 5km	20.0	97.56	97.71	Green
[Line 5] L2: 2km	20.0	97.53	97.56	Green
[Line 6] L6: 0.5km	20.0	97.56	97.56	Green
[Line 7] L3: 7km	20.0	97.53	97.59	Green
[Line 8] L4: 5km	20.0	97.47	97.53	Green
[Line 9] L5: 4km	20.0	97.43	97.47	Green
[Line 10] L8: 5km	20.0	97.61	97.71	Green
[Line 11] L7: 3km	20.0	97.53	97.56	Green
[Line 12] L10: 2km	20.0	97.58	97.61	Green
[Line 13] L9: 7km	20.0	97.61	97.71	Green
[Line 14] L11: 5km	20.0	97.58	97.61	Green
[Line 15] L12: 2km	20.0	97.56	97.58	Green
[Line 16] L14: 5km	20.0	97.69	97.71	Green
[Line 17] L13: 5km	20.0	97.69	97.71	Green
[Line 18] L20: 2km	20.0	97.46	97.47	Green
[Line 19] L21: 300m	0.4	91.97	97.09	Amber
[Line 20] L22: 3km	110.0	100.20	100.20	Green
[Line 21] L20: 2km	20.0	97.59	97.62	Green

Load Flow Results: 2-Winding Transformer

Name	S [kVA]	S [%Sr]	P [kW]	Q [kvar]	Vmax [%]	Vmin [%]	Ipmax(A) [%]	Ipmax(B) [%]	State
[Tra 1] 31,5MVA	4287.82	13.61	4273.24	353.30	100.20	97.71	8.63	14.94	Green
[Tra 2] Tra 2	503.45	50.34	502.82	25.25	97.53	97.03	29.80	51.62	Green
[Tra 3] Tra 3	503.49	50.35	502.85	25.26	97.43	96.93	29.83	51.68	Green
[Tra 4] Tra 4	503.64	50.36	503.00	25.25	97.59	97.09	29.80	51.61	Green
[Tra 5] Tra 5	503.34	50.33	502.71	25.24	97.56	97.07	29.79	51.59	Green
[Tra 6] Tra 6	503.34	50.33	502.71	25.23	97.58	97.08	29.78	51.58	Green
[Tra 7] Tra 7	503.35	50.34	502.72	25.22	97.69	97.19	29.75	51.52	Green
[Tra 8] Tra 8	503.35	50.33	502.71	25.23	97.61	97.11	29.77	51.57	Green
[Tra 9] Tra 9	503.35	50.33	502.71	25.23	97.61	97.11	29.77	51.57	Green
[Tra 10] Tra 10	503.45	50.34	502.82	25.24	97.56	97.07	29.79	51.60	Green
[Tra 11] Tra 11	503.49	50.35	502.86	25.25	97.53	97.04	29.80	51.62	Green
[Tra 12] 0.63MVA	211.32	33.54	210.85	14.12	97.46	97.09	19.87	34.42	Green

Name	IA(A) [A]	IB(A) [A]	IC(A) [A]	IA(B) [A]	IB(B) [A]	IC(B) [A]	Ir(A) [A]	Ir(B) [A]	State
[Tra 1] 31,5MVA	12.97	12.97	12.97	126.41	126.41	126.41	150.30	845.89	Green
[Tra 2] Tra 2	8.60	8.60	8.60	745.05	745.05	745.05	28.87	1443.38	Green
[Tra 3] Tra 3	8.61	8.61	8.61	745.86	745.86	745.86	28.87	1443.38	Green
[Tra 4] Tra 4	8.60	8.60	8.60	744.91	744.91	744.91	28.87	1443.38	Green
[Tra 5] Tra 5	8.60	8.60	8.60	744.65	744.65	744.65	28.87	1443.38	Green
[Tra 6] Tra 6	8.60	8.60	8.60	744.52	744.52	744.52	28.87	1443.38	Green
[Tra 7] Tra 7	8.59	8.59	8.59	743.69	743.69	743.69	28.87	1443.38	Green
[Tra 8] Tra 8	8.59	8.59	8.59	744.33	744.33	744.33	28.87	1443.38	Green
[Tra 9] Tra 9	8.59	8.59	8.59	744.30	744.30	744.30	28.87	1443.38	Green
[Tra 10] Tra 10	8.60	8.60	8.60	744.81	744.81	744.81	28.87	1443.38	Green
[Tra 11] Tra 11	8.60	8.60	8.60	745.09	745.09	745.09	28.87	1443.38	Green
[Tra 12] 0.63MVA	3.61	3.61	3.61	312.96	312.96	312.96	18.19	909.33	Green

Name	Position tapchanger	dVtotal [%Vr] winding A	dVtotal [%Vr] winding B	dV [%Vr] per step
[Tra 1] 31,5MVA	**Tapchanger disabled**	---	---	---
[Tra 2] Tra 2	**Tapchanger disabled**	---	---	---

[Tra 3] Tra 3	**Tapchanger disabled**	---	---	---
[Tra 4] Tra 4	**Tapchanger disabled**	---	---	---
[Tra 5] Tra 5	**Tapchanger disabled**	---	---	---
[Tra 6] Tra 6	**Tapchanger disabled**	---	---	---
[Tra 7] Tra 7	**Tapchanger disabled**	---	---	---
[Tra 8] Tra 8	**Tapchanger disabled**	---	---	---
[Tra 9] Tra 9	**Tapchanger disabled**	---	---	---
[Tra 10] Tra 10	**Tapchanger disabled**	---	---	---
[Tra 11] Tra 11	**Tapchanger disabled**	---	---	---
[Tra 12] 0.63MVA	**Tapchanger disabled**	---	---	---

Grid State of Lines

Line: Validation acc.	Valid	Partly Valid	Invalid
VDE 0276	18	---	0
Green/Amber/Red acc. BDEW	17	1	0
EN 50160	18	---	0

Name	NA [%]	Ipmax [%]	Vmax [%]	Vmin [%]	State
[Line 4] L1: 5km	0.000	8.559	97.715	97.564	Green
[Line 5] L2: 2km	0.000	3.591	97.564	97.535	Green
[Line 6] L6: 0.5km	0.000	2.488	97.564	97.559	Green
[Line 7] L3: 7km	0.000	2.456	97.587	97.535	Green
[Line 8] L4: 5km	0.000	3.535	97.535	97.469	Green
[Line 9] L5: 4km	0.000	2.490	97.469	97.433	Green
[Line 10] L8: 5km	0.000	5.887	97.715	97.607	Green
[Line 11] L7: 3km	0.000	2.488	97.559	97.532	Green
[Line 12] L10: 2km	0.000	3.402	97.607	97.582	Green
[Line 13] L9: 7km	0.000	4.056	97.715	97.611	Green
[Line 14] L11: 5km	0.000	1.570	97.611	97.582	Green
[Line 15] L12: 2km	0.000	2.486	97.582	97.564	Green
[Line 16] L14: 5km	0.000	1.242	97.715	97.692	Green
[Line 17] L13: 5km	0.000	1.242	97.715	97.692	Green
[Line 18] L20: 2km	0.000	1.045	97.469	97.462	Green
[Line 19] L21: 300m	27.464	86.866	97.086	91.969	Amber
[Line 20] L22: 3km	0.000	6.781	100.198	100.198	Green
[Line 21] L20: 2km	0.000	4.937	97.621	97.587	Green

Classification Need for Action (NA) of Lines

Need for Action NA [%]	Number of Lines
=0%	17
]0% - 10%]	0
]10% - 20%]	0
]20% - 30%]	1
]30% - 40%]	0
]40% - 50%]	0
]50% - 60%]	0
]60% - 70%]	0
]70% - 80%]	0
]80% - 90%]	0
]90% - 100%]	0
>100%	0

Classification Maximum Load of Lines

Maximum Load [%]	Number of Lines
=0%	0
]0% - 10%]	17
]10% - 20%]	0
]20% - 30%]	0
]30% - 40%]	0
]40% - 50%]	0
]50% - 60%]	0
]60% - 70%]	0
]70% - 80%]	0
]80% - 90%]	1
]90% - 100%]	0
>100%	0

Grid State Analysis and Grid State Diagnosis

Grid Health fN (Line) [%]	98.4742
Grid Health fN (Busbar) [%]	100
Grid Health fN [%]	99.2371

Accuracy of the Load Flow Calculation

3-Phase Source: ø [°]	0.003
3-Phase Source: MAX(ø) [°]	0.003
3-Phase Source: S [kVA]	0.199
3-Phase Source: S [%]	0.020
3-Phase Source: MAX(S) [%]	0.020
Load Impedance, Line, 2-Winding Transformer: S [%]	0.028
Load Impedance, Line, 2-Winding Transformer: Max(S) [%]	0.649
Network Infeed: P [%]	0.000
Network Infeed: V [%]	0.000