



Institut für Elektrische Energiesysteme, htw saar

E-Mobile: Auslastung der Betriebsmittel

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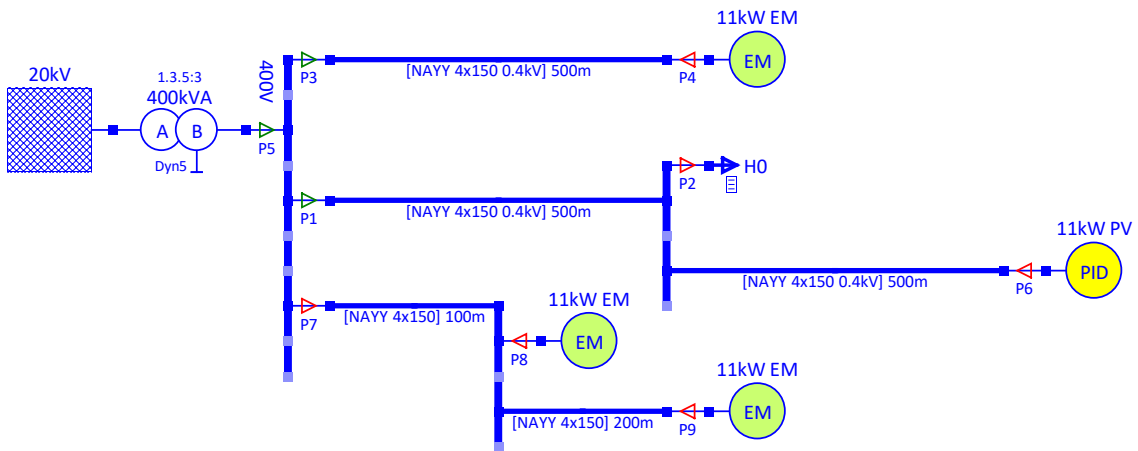
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Bezeichner und Erläuterungen

UL1, UL2, UL3 [V], [%]	Betrag der Leiter-Erd-Spannungen in V und %Un/ $\sqrt{3}$
U12, U23, U31 [V], [%]	Betrag der Leiter-Leiter-Spannungen in V und %Un
Umin, Umax [V], [%]	Betrag der kleinsten und größten Leiter-Erd- und Leiter-Leiter-Spannung UL123 in V und %Un
IL1, IL2, IL3 [A], [%]	Betrag der Leiterströme in A und %In
U1, U2, U0 [V], [%]	Betrag der Mitsystem-, Gegensystem- und Nullsystemspannung in V und %Un/ $\sqrt{3}$
I1, I2, I0 [A], [%]	Betrag des Mitsystem-, Gegensystem- und Nullsystemstroms in A und %In
ILmax [A], [%]	Betrag des größten der Leiterströme IL123 in A und %In
S [VA]	Betrag der Scheinleistung in VA
P [W]	Betrag der Wirkleistung in W
Q [var]	Betrag der Blindleistung in var
CosPhi	Verschiebungsfaktor $\cos \phi = P / S$
SL1, SL2, SL3 [VA]	Einphasige Scheinleistung der drei Leiter L1, L2, L3 in VA
PL1, PL2, PL3 [W]	Einphasige Wirkleistung der drei Leiter L1, L2, L3 in W
QL1, QL2, QL3 [var]	Einphasige Blindleistung der drei Leiter L1, L2, L3 in var
HB	Handlungsbedarf
ILmax [%]	Maximaler Leiterstrom IL123 in %In
fN [%]	Netzfaktor (Grid Health) in %
m [p.u.]	Belastungsgrad nach VDE 0276
LF	Status Lastflussberechnung: Konvergenz=1, Divergenz=0, Abbruch=2, ungültig=-1

Topologie des Stromnetzes



Ergebnisse der Lastflussberechnung

Netzzustandsanalyse: Ergebnisse des Referenznetzstatus

Name	U1 [V]	I1 [A]	ILmax [A]	ILmax [%]
[Line 4] [NAYY 4x150 0.4kV] 500m	215.924	137.368	137.368	49.9521%
[Line 5] [NAYY 4x150 0.4kV] 500m	228.487	16.0476	16.0476	5.83548%
[Line 6] [NAYY 4x150 0.4kV] 500m	217.658	16.8461	16.8461	6.12587%
[Line 7] [NAYY 4x150] 100m	229.691	23.495	23.495	8.54362%
[Line 8] [NAYY 4x150] 200m	229.448	8.07092	8.07092	2.93488%

Name	Un [kV]	I1 [A]	S [kVA]	P [kW]	Q [kvar]	Last [%]
[Tra 1] 400kVA	0.4	177.282	122.814	56.6831	108.951	30.7035

Messrichtung Leistungen P, Q: Wicklung A -> Wicklung B

Name	Un [kV]	I1 [A]	U1 [V]	S [kVA]	P [kW]	Q [kvar]	Akt./Ina.
[3Ph 1] 11kW EM	0.4	16.0476	228.487	11	-11	-4.49037e-16	1
[3Ph 2] 11kW PV	0.4	16.8461	217.658	11.0001	11.0001	0	1
[3Ph 3] 11kW EM	0.4	15.9635	229.691	11	-11	-4.49037e-16	1
[3Ph 4] 11kW EM	0.4	8.07092	229.448	5.55556	-5.00177	2.41795	1

Ergebnisse der Lastflussberechnung

Netzzustandsanalyse Nr. 1: E-Mobil aktiviert - 11kW EM [3Ph 1]

Name	U1 [V]	I1 [A]	ILmax [A]	ILmax [%]
[Line 4] [NAYY 4x150 0.4kV] 500m	230.779	6.75687e-06	6.75687e-06	2.45704e-06%
[Line 5] [NAYY 4x150 0.4kV] 500m	229.13	16.0024	16.0024	5.81906%
[Line 6] [NAYY 4x150 0.4kV] 500m	230.779	3.39858e-06	3.39858e-06	1.23585e-06%
[Line 7] [NAYY 4x150] 100m	230.779	6.47433e-06	6.47433e-06	2.3543e-06%
[Line 8] [NAYY 4x150] 200m	230.779	3.3394e-06	3.3394e-06	1.21433e-06%

Name	Un [kV]	I1 [A]	S [kVA]	P [kW]	Q [kvar]	Last [%]
[Tra 1] 400kVA	0.4	17.5664	12.17	2.2622	11.9579	3.04251

Messrichtung Leistungen P, Q: Wicklung A -> Wicklung B

Name	Un [kV]	I1 [A]	U1 [V]	S [kVA]	P [kW]	Q [kvar]	Akt./Ina.
[3Ph 1] 11kW EM	0.4	16.0024	229.13	10.9999	-10.9999	-4.49033e-16	1
[3Ph 2] 11kW PV	0.4	---	---	---	---	---	0
[3Ph 3] 11kW EM	0.4	---	---	---	---	---	0
[3Ph 4] 11kW EM	0.4	---	---	---	---	---	0

Ergebnisse der Datenanalyse

Summe der Einspeiseleistung P=2.2622 kW

Ergebnisse der Lastflussberechnung

Netzzustandsanalyse Nr. 2: E-Mobil aktiviert - 11kW EM [3Ph 3]

Name	U1 [V]	I1 [A]	ILmax [A]	ILmax [%]
[Line 4] [NAYY 4x150 0.4kV] 500m	230.78	6.7569e-06	6.7569e-06	2.45705e-06%
[Line 5] [NAYY 4x150 0.4kV] 500m	230.78	3.39859e-06	3.39859e-06	1.23585e-06%
[Line 6] [NAYY 4x150 0.4kV] 500m	230.78	3.39859e-06	3.39859e-06	1.23585e-06%
[Line 7] [NAYY 4x150] 100m	230.452	15.9108	15.9108	5.78573%
[Line 8] [NAYY 4x150] 200m	230.452	3.33467e-06	3.33467e-06	1.21261e-06%

Name	Un [kV]	I1 [A]	S [kVA]	P [kW]	Q [kvar]	Last [%]
[Tra 1] 400kVA	0.4	17.468	12.1019	2.25231	11.8904	3.02547

Messrichtung Leistungen P, Q: Wicklung A -> Wicklung B

Name	Un [kV]	I1 [A]	U1 [V]	S [kVA]	P [kW]	Q [kvar]	Akt./Ina.
[3Ph 1] 11kW EM	0.4	---	---	---	---	---	0
[3Ph 2] 11kW PV	0.4	---	---	---	---	---	0
[3Ph 3] 11kW EM	0.4	15.9107	230.452	11	-11	-4.49037e-16	1
[3Ph 4] 11kW EM	0.4	---	---	---	---	---	0

Ergebnisse der Datenanalyse

Summe der Einspeiseleistung P=4.51451 kW

Ergebnisse der Lastflussberechnung

Netzzustandsanalyse Nr. 3: E-Mobil aktiviert - 11kW EM [3Ph 4]

Name	U1 [V]	I1 [A]	ILmax [A]	ILmax [%]
[Line 4] [NAYY 4x150 0.4kV] 500m	230.872	6.7596e-06	6.7596e-06	2.45804e-06%
[Line 5] [NAYY 4x150 0.4kV] 500m	230.872	3.39995e-06	3.39995e-06	1.23635e-06%
[Line 6] [NAYY 4x150 0.4kV] 500m	230.872	3.39995e-06	3.39995e-06	1.23635e-06%
[Line 7] [NAYY 4x150] 100m	230.751	8.03375	8.03375	2.92136%
[Line 8] [NAYY 4x150] 200m	230.509	8.03375	8.03375	2.92136%

Name	Un [kV]	I1 [A]	S [kVA]	P [kW]	Q [kvar]	Last [%]
[Tra 1] 400kVA	0.4	8.13864	5.63856	1.35488	5.47335	1.40964

Messrichtung Leistungen P, Q: Wicklung A -> Wicklung B

Name	Un [kV]	I1 [A]	U1 [V]	S [kVA]	P [kW]	Q [kvar]	Akt./Ina.
[3Ph 1] 11kW EM	0.4	---	---	---	---	---	0
[3Ph 2] 11kW PV	0.4	---	---	---	---	---	0
[3Ph 3] 11kW EM	0.4	---	---	---	---	---	0
[3Ph 4] 11kW EM	0.4	8.03374	230.509	5.55555	-5.00177	2.41795	1

Ergebnisse der Datenanalyse

Summe der Einspeiseleistung P=5.86939 kW

Auslastung der Leitungen

Ladestation	Leitung	Last [%]	Last [A]
11kW EM [3Ph 1]	[NAYY 4x150 0.4kV] 500m [Line 4]	2.45704e-06	6.75687e-06
11kW EM [3Ph 1]	[NAYY 4x150 0.4kV] 500m [Line 5]	5.81906	16.0024
11kW EM [3Ph 1]	[NAYY 4x150 0.4kV] 500m [Line 6]	1.23585e-06	3.39858e-06
11kW EM [3Ph 1]	[NAYY 4x150] 100m [Line 7]	2.3543e-06	6.47433e-06
11kW EM [3Ph 1]	[NAYY 4x150] 200m [Line 8]	1.21433e-06	3.3394e-06

Ladestation	Leitung	Last [%]	Last [A]
11kW EM [3Ph 3]	[NAYY 4x150 0.4kV] 500m [Line 4]	2.45705e-06	6.7569e-06
11kW EM [3Ph 3]	[NAYY 4x150 0.4kV] 500m [Line 5]	1.23585e-06	3.39859e-06
11kW EM [3Ph 3]	[NAYY 4x150 0.4kV] 500m [Line 6]	1.23585e-06	3.39859e-06
11kW EM [3Ph 3]	[NAYY 4x150] 100m [Line 7]	5.78573	15.9108
11kW EM [3Ph 3]	[NAYY 4x150] 200m [Line 8]	1.21261e-06	3.33467e-06

Ladestation	Leitung	Last [%]	Last [A]
11kW EM [3Ph 4]	[NAYY 4x150 0.4kV] 500m [Line 4]	2.45804e-06	6.7596e-06
11kW EM [3Ph 4]	[NAYY 4x150 0.4kV] 500m [Line 5]	1.23635e-06	3.39995e-06
11kW EM [3Ph 4]	[NAYY 4x150 0.4kV] 500m [Line 6]	1.23635e-06	3.39995e-06
11kW EM [3Ph 4]	[NAYY 4x150] 100m [Line 7]	2.92136	8.03375
11kW EM [3Ph 4]	[NAYY 4x150] 200m [Line 8]	2.92136	8.03375

Leitung	Ladestation	Last [%]	Last [A]
[NAYY 4x150 0.4kV] 500m [Line 4]	11kW EM [3Ph 1]	2.45704e-06	6.75687e-06
[NAYY 4x150 0.4kV] 500m [Line 4]	11kW EM [3Ph 3]	2.45705e-06	6.7569e-06
[NAYY 4x150 0.4kV] 500m [Line 4]	11kW EM [3Ph 4]	2.45804e-06	6.7596e-06
[NAYY 4x150 0.4kV] 500m [Line 4]	Summe	7.37213e-06	2.02734e-05

Leitung	Ladestation	Last [%]	Last [A]
[NAYY 4x150 0.4kV] 500m [Line 5]	11kW EM [3Ph 1]	5.81906	16.0024
[NAYY 4x150 0.4kV] 500m [Line 5]	11kW EM [3Ph 3]	1.23585e-06	3.39859e-06
[NAYY 4x150 0.4kV] 500m [Line 5]	11kW EM [3Ph 4]	1.23635e-06	3.39995e-06
[NAYY 4x150 0.4kV] 500m [Line 5]	Summe	5.81907	16.0024

Leitung	Ladestation	Last [%]	Last [A]
[NAYY 4x150 0.4kV] 500m [Line 6]	11kW EM [3Ph 1]	1.23585e-06	3.39858e-06
[NAYY 4x150 0.4kV] 500m [Line 6]	11kW EM [3Ph 3]	1.23585e-06	3.39859e-06
[NAYY 4x150 0.4kV] 500m [Line 6]	11kW EM [3Ph 4]	1.23635e-06	3.39995e-06
[NAYY 4x150 0.4kV] 500m [Line 6]	Summe	3.70805e-06	1.01971e-05

Leitung	Ladestation	Last [%]	Last [A]
[NAYY 4x150] 100m [Line 7]	11kW EM [3Ph 1]	2.3543e-06	6.47433e-06
[NAYY 4x150] 100m [Line 7]	11kW EM [3Ph 3]	5.78573	15.9108
[NAYY 4x150] 100m [Line 7]	11kW EM [3Ph 4]	2.92136	8.03375
[NAYY 4x150] 100m [Line 7]	Summe	8.70709	23.9445

Leitung	Ladestation	Last [%]	Last [A]
[NAYY 4x150] 200m [Line 8]	11kW EM [3Ph 1]	1.21433e-06	3.3394e-06
[NAYY 4x150] 200m [Line 8]	11kW EM [3Ph 3]	1.21261e-06	3.33467e-06
[NAYY 4x150] 200m [Line 8]	11kW EM [3Ph 4]	2.92136	8.03375

[NAYY 4x150] 200m [Line 8]	Summe	2.92137	8.03375
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