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Milestone 3: Newton Raphson

Below see the results of a verification of our simulator for the Newton Raphson Power Flow solver.

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Converged in 3 iterations!
System Parameters:
      Voltage (MV)  Angle (deg)
Bus
1          1.000      0.000
2          0.935     -4.447
3          0.917     -5.636
4          0.927     -4.755
5          0.923     -4.909
6          0.938     -3.886
7          1.000      2.219

Bus Powers:
      Real (MW)  Reactive (Mvar)
Bus
1    116.003955    88.802750
2     -0.000143     0.000090
3   -109.999819   -50.000005
4    -99.999884   -70.000002
5    -99.999883   -64.999989
6     -0.000172     0.000098
7   199.999974   112.553811
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Line Currents and Angles:

	Current (A)	Angle (deg)	From Bus	To Bus
Line				
1	177.684	-46.637	4.0	2.0
2	199.358	-32.490	3.0	2.0
3	126.926	-19.292	5.0	3.0
4	167.833	-25.871	6.0	4.0
5	413.089	-29.138	6.0	5.0
6	22.937	-42.921	5.0	4.0

Transmission Line Ampacity:

	% Ampacity
Line	
1	19.313499
2	21.669382
3	13.796291
4	18.242717
5	44.901015
6	2.493182

Transmission Line Power Losses:

Losses (kW)	
Line	
1	182.326407
2	573.800203
3	186.072571
4	325.339425
5	985.462191
6	10.634175

Transformer Power Losses:

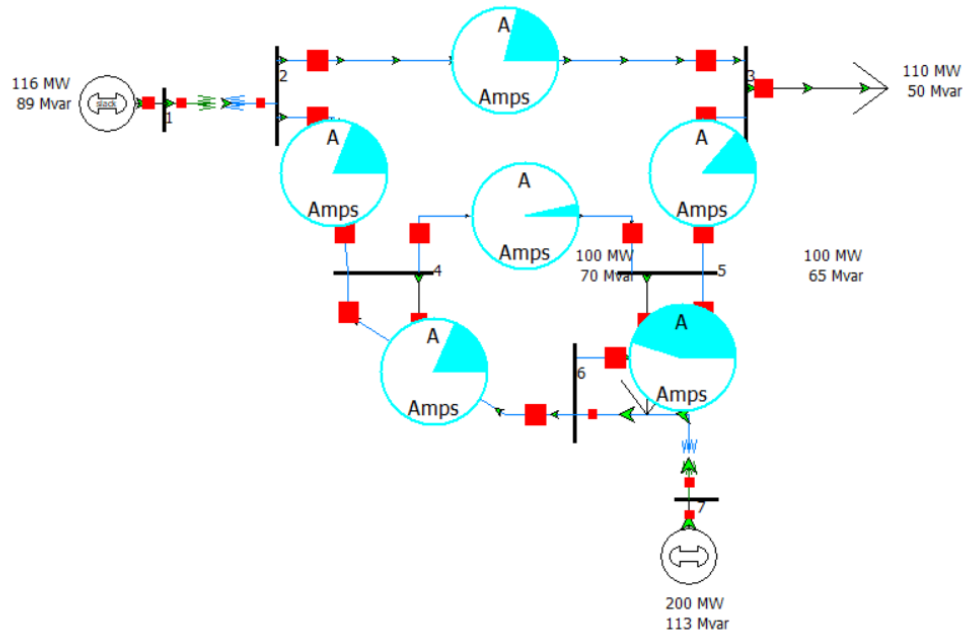
Losses (kW)	
Transformer	
1	1444.110932
2	2296.280909

Total Line Losses: 2263.635 kW

Total Transformer Losses: 3740.392 kW

Total System Losses: 6004.027 kW

Power World Results:



	Number	Name	Area Name	Nom kV	PU Volt	Volt (kV)	Angle (Deg)	Load MW	Load Mvar	Gen MW	Gen Mvar	Switched Shunts Mvar	Act G Shunt MW	Act B Shunt Mvar	Area Num	Zone Num
1	1	1	1	20.00	1.00000	20.000	0.00			115.97	88.81		0.00	0.00	1	1
2	2	2	1	230.00	0.93488	215.022	-4.45						0.00	0.00	1	1
3	3	3	1	230.00	0.91676	210.854	-5.63	110.00	50.00				0.00	0.00	1	1
4	4	4	1	230.00	0.92690	213.187	-4.75	100.00	70.00				0.00	0.00	1	1
5	5	5	1	230.00	0.92346	212.396	-4.91	100.00	65.00				0.00	0.00	1	1
6	6	6	1	230.00	0.93771	215.673	-3.88						0.00	0.00	1	1
7	7	7	1	18.00	0.99999	18.000	2.22			200.00	112.54		0.00	0.00	1	1

	From Number	From Name	To Number	To Name	Circuit	Status	Branch Device Type	Xfrmr	MW From	Mvar From	MVA From	Lim MVA	% of MVA Limit (Max)	MW Loss	Mvar Loss
1	1	1	2	2	1	Closed	Transforme	YES	116.0	88.8	146.1	0.0	0.0	1.44	14.44
2	2	2	3	3	1	Closed	Line	NO	65.5	31.3	72.6	366.5	20.3	0.57	-4.97
3	2	2	4	4	1	Closed	Line	NO	49.0	43.0	65.2	366.5	18.2	0.18	-2.18
4	3	3	5	5	1	Closed	Line	NO	-45.0	-13.7	47.1	366.5	12.8	0.19	-4.87
5	5	5	4	4	1	Closed	Line	NO	-6.6	-10.1	12.1	366.5	3.3	0.01	-9.73
6	4	4	6	6	1	Closed	Line	NO	-57.8	-25.1	63.0	366.5	17.2	0.33	-4.52
7	5	5	6	6	1	Closed	Line	NO	-138.6	-63.7	152.5	366.5	41.9	0.99	0.64
8	6	6	7	7	1	Closed	Transforme	YES	-197.7	-85.0	215.2	0.0	0.0	2.30	27.56