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Power Grid Optimization using Ant Colony Optimization
Enter the number of substations: 3
Enter the power demand (MW) for each substation:
Power demand at Substation 1 (MW): 2
Power demand at Substation 2 (MW): 3
Power demand at Substation 3 (MW): 5
Enter the transmission line lengths (km) between substations:
Line length between Substation 1 and Substation 2 (km): 5
Line length between Substation 1 and Substation 3 (km): 4
Line length between Substation 2 and Substation 3 (km): 8
Enter the maximum transmission line capacities (MW):
Maximum capacity of line between Substation 1 and Substation 2 (MW): 3
Maximum capacity of line between Substation 1 and Substation 3 (MW): 2
Maximum capacity of line between Substation 2 and Substation 3 (MW): 1
Starting optimization process...
Iteration 1/100 - Best Power Loss: 0.03
Iteration 2/100 - Best Power Loss: 0.03
Iteration 3/100 - Best Power Loss: 0.03
Iteration 4/100 - Best Power Loss: 0.03
Iteration 5/100 - Best Power Loss: 0.03
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Iteration 30/100 - Best Power Loss: 0.03
Iteration 31/100 - Best Power Loss: 0.03
Iteration 32/100 - Best Power Loss: 0.03
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Iteration 56/100 - Best Power Loss: 0.03
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Iteration 100/100 - Best Power Loss: 0.03
Optimized Power Flow Distribution:
Flow from Substation 1 to Substation 2: 0.46 MW Flow from Substation 1 to Substation 3: 0.88 MW Flow from Substation 2 to Substation 3: 0.60 MW Total Power Loss: 0.03 MW
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Total Power Loss: 0.03 MW
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