

ECE471 INDUSTRIAL POWER SYSTEMS

Homework # 5

1. Run the load-flow for the class example project. Use the Datablock format to display the bus voltages and list the total system losses.
2. Adjust the power factor to 0.95 lag at each large motor and then place a capacitor bank at the 13.8 kV bus that will bring the overall pf up to 0.95 lag. Then adjust the transformer taps so that the bus voltages will be close to nominal. Again, display the bus voltages and list the total system losses.
3. Calculate the total kVAR required in part 2. If the capacitors cost \$50/kVAR and energy costs 10¢/kWh, how long will it take for the capacitors to pay for themselves?