Topics for Today:

- Announcements
  - Software: online students - apply for ATP/ATPDraw license, verify licensing when you receive it by e-mail, and we will mail you the install CD.
  - ASPEN software - run off of MTU server via internet, see e-mail instructions.
  - Office: EERC 614. Phone: 906.487.2857
  - Recommended problems & all solutions: Ch.13 solns now posted.

Ongoing topics...
- Chapter 13 - Power system operation, AGC, economic dispatch
  - Constrained optimization methods - LaGrange multipliers
  - Optimal Dispatch, Generator Scheduling
    - Economics
    - Other constraints - environmental, contractual, availability
    - System load characteristics
  - Application to lossless system
  - System including losses - use $[B]$ loss coefficient matrix
Loadflow

- "Flat" Start vs. "hot" Start

Key: Must give initial values to $V_2$, $S$.

Slack Bus: $V$ is fixed; $S = 0$.

PV Bus: $V$ is ""; $S = ?$

PV Bus: $V = ?$; $S = ?$

At PV Bus: $S = 0^\circ$. (Flat start)

$\text{p}_a$ "" $V = 1.0 \text{ p.u.}$

$\text{p}_a$ "" $S = 0^\circ$"
Hot Start: Use \( S \) & \( V \) values from a similar converged case.

Is convergence guaranteed?
No! Nonlinear system of eqns. NR uses first-order (i.e. LINEAR) approximation at each iteration to move toward the soln.
Risk: - May converge to 1 local soln
- May blow up F. P. overthrew
- Not global soln.
ASPEN Tutorial

Intro to Software Capabilities
  • Loadflow
  • Short circuit, arc flash
  • Relay application, coordination

Basics of setting up a loadflow
  • Get the system data, parameters
  • Basics of program
  • Draw system configuration
  • Parameters
    • Buses
    • Lines
    • Transformers
    • Generators
    • Loadflow configuration
  • Output
  • Remedial actions