Transient Stability Calculations in Large Networks

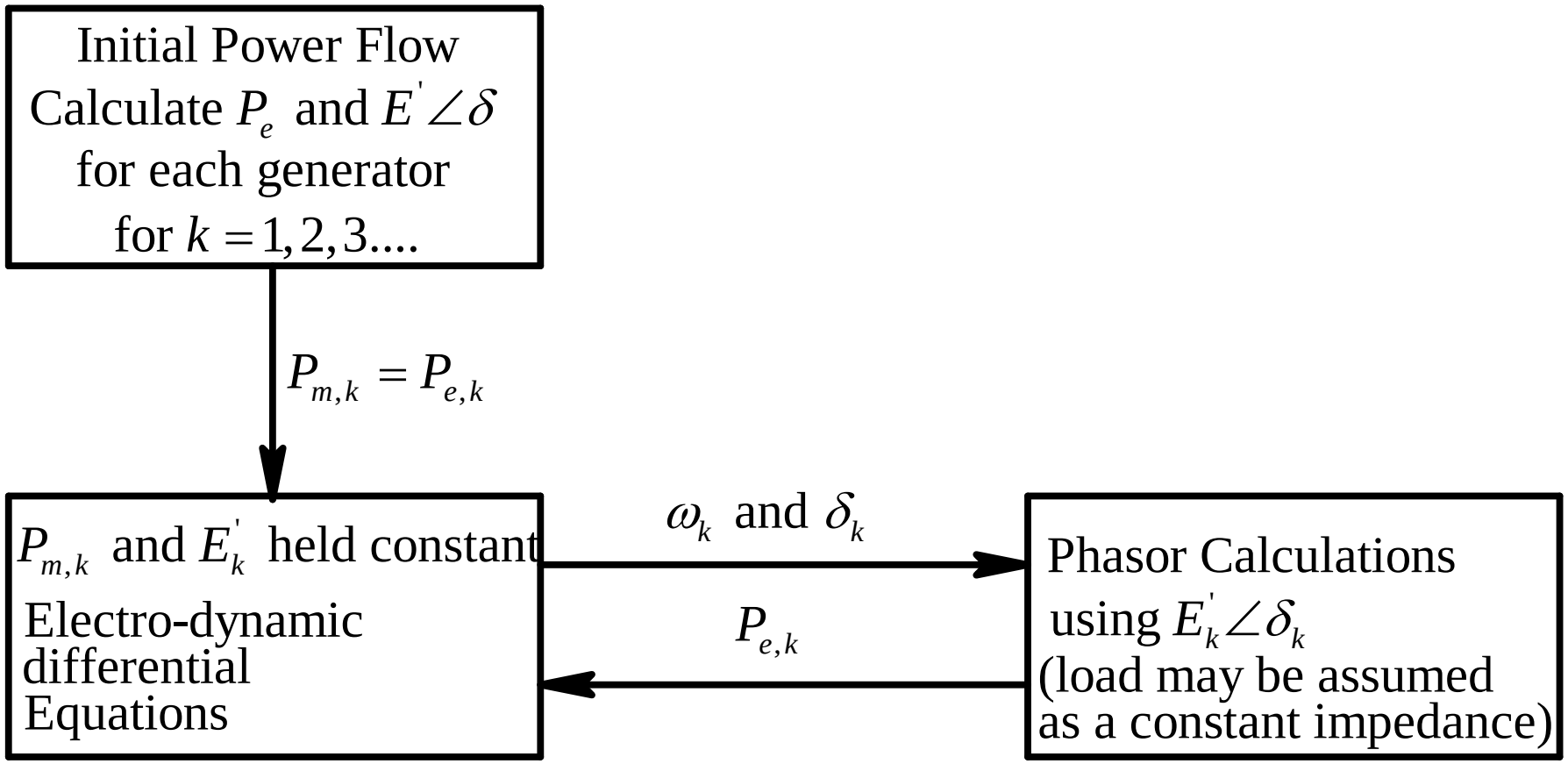

Fig. 11-8 Block diagram of transient stability program for an n-generator case.

Example Power System for Transient Stability Analysis

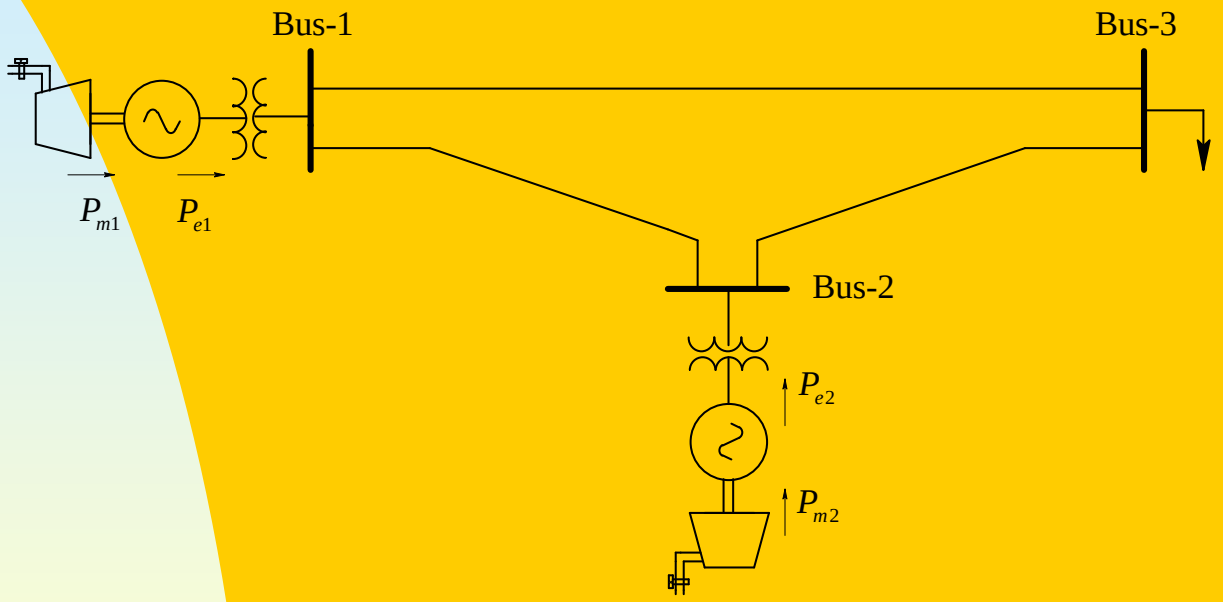

Fig. 11-9 A 345-kV test example system.

Rotor Angle Swings in the Example Power System Following a Fault

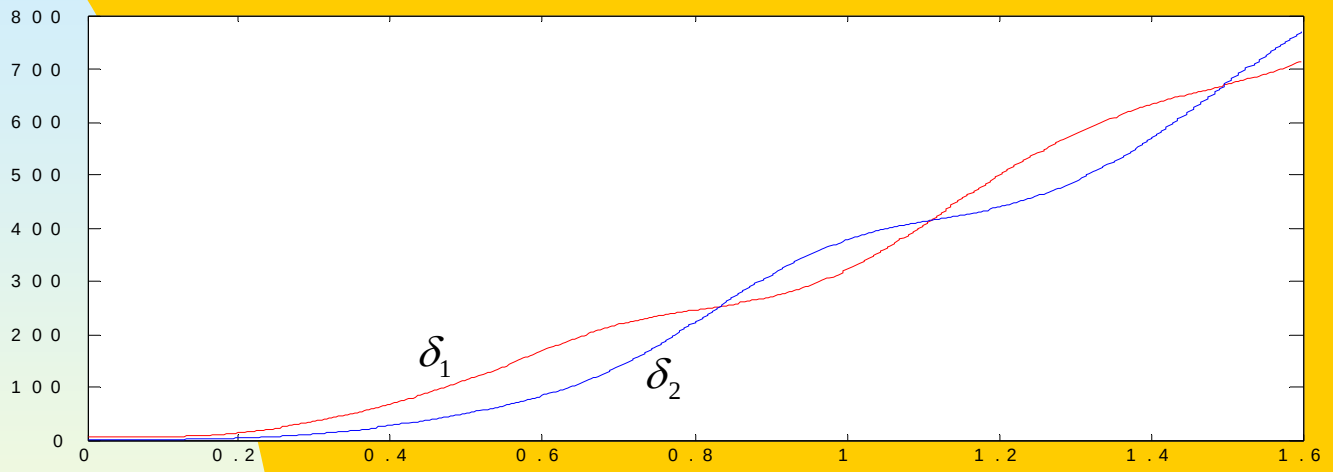

Fig. 11-10 Rotor-angle swings of δ_1 and δ_2 in Example 11-3.

Importance of Dynamic Stability

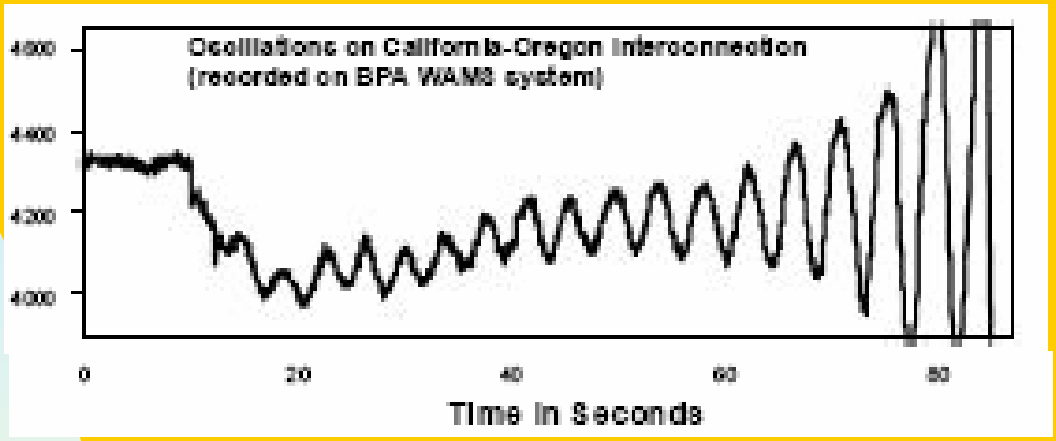

Fig. 11-11 Growing Power Oscillations: Western USA/Canada system, Aug 10, 1996 [4].

- **Cause is inadequate damping**
- **Due to Fast-acting Excitation Systems, HVDC, FACT**
- **Possible to prevent by PSS, HVDC Control**
- **Beyond the scope of the First Course**

Summary

- Introduction
- Principle of Transient Stability
- Equal-Area Criterion
- Critical Clearing Time
- Transient Stability Evaluation in Large Systems
- Dynamic Stability