

Lecture 4

Methodology of Study

Data Collection

Data Analysis

Load Flow Study

Data Collection

- The following data was collected:
 - Single line diagram of the GPL Demerara system.
 - Reactances of all generators at the Demerara Power stations, and GPL's Garden of Eden and Versailles power stations and the Sophia frequency converters.
 - Impedances of all transmission and distribution lines and transformers.

Data Collection

Hourly operations data for the system for weekdays (2) and Saturday and Sunday

- Data from recent power analyser recordings giving feeders power factor and voltages

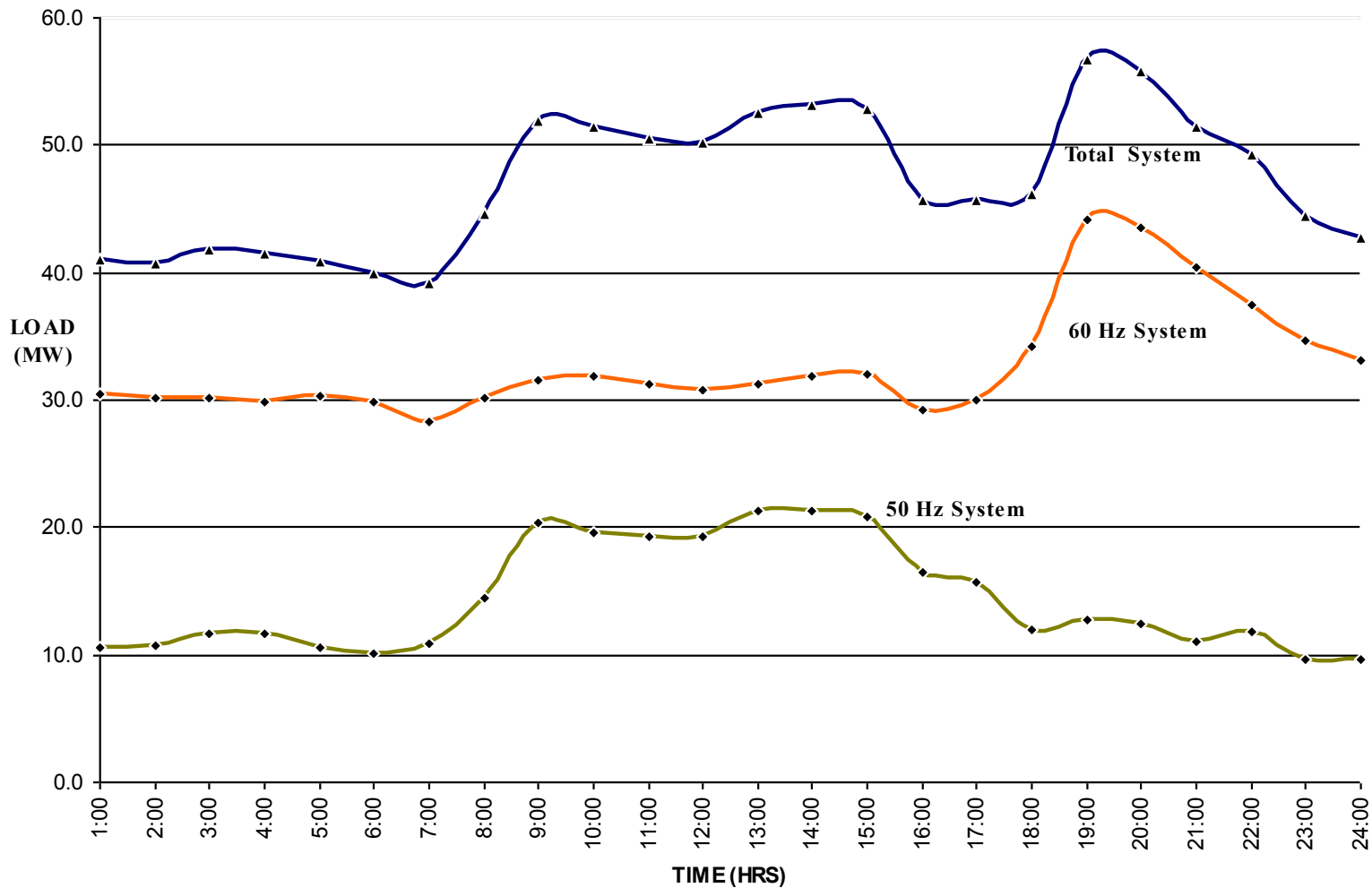
Analysis of Data

- The loads (MW and MVar) for the various busbars were calculated using hourly feeder current and voltages from the log sheets and the corresponding hourly power factor data recorded on a power demand analyser.

Analysis of Data

- Sophia was found to be the major load centre for the Demerara system with an evening peak of nearly 30 MW
- The peak 60 Hz load is about 45 MW and is primarily residential
- The 50 Hz load is mainly industrial /commercial and has a day peak of around 20 MW.

Demerara 50 AND 60 HZ System Loads (Weekday)



Analysis of Data

- 50 Hz system hourly power factors range from 0.79 to 0.89 and the 60 Hz system power factors are from 0.81 to 0.85.
- The frequency converters produce between 20 to 30 % of the MVar requirement of the Demerara system.