

## Case Study: Power Evacuation Scheme Evaluation

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### **Client:**

A Multi National manufacturer of petrochemicals and associated downstream products up to textile raw materials.

### **Location:**

Africa

### **Description:**

The client plant has surplus captive power generation , nearly 3 times the plant requirement. The client wanted to do Power Evacuation Studies to export power to the external bulk consumers and Transmission and Distribution companies.

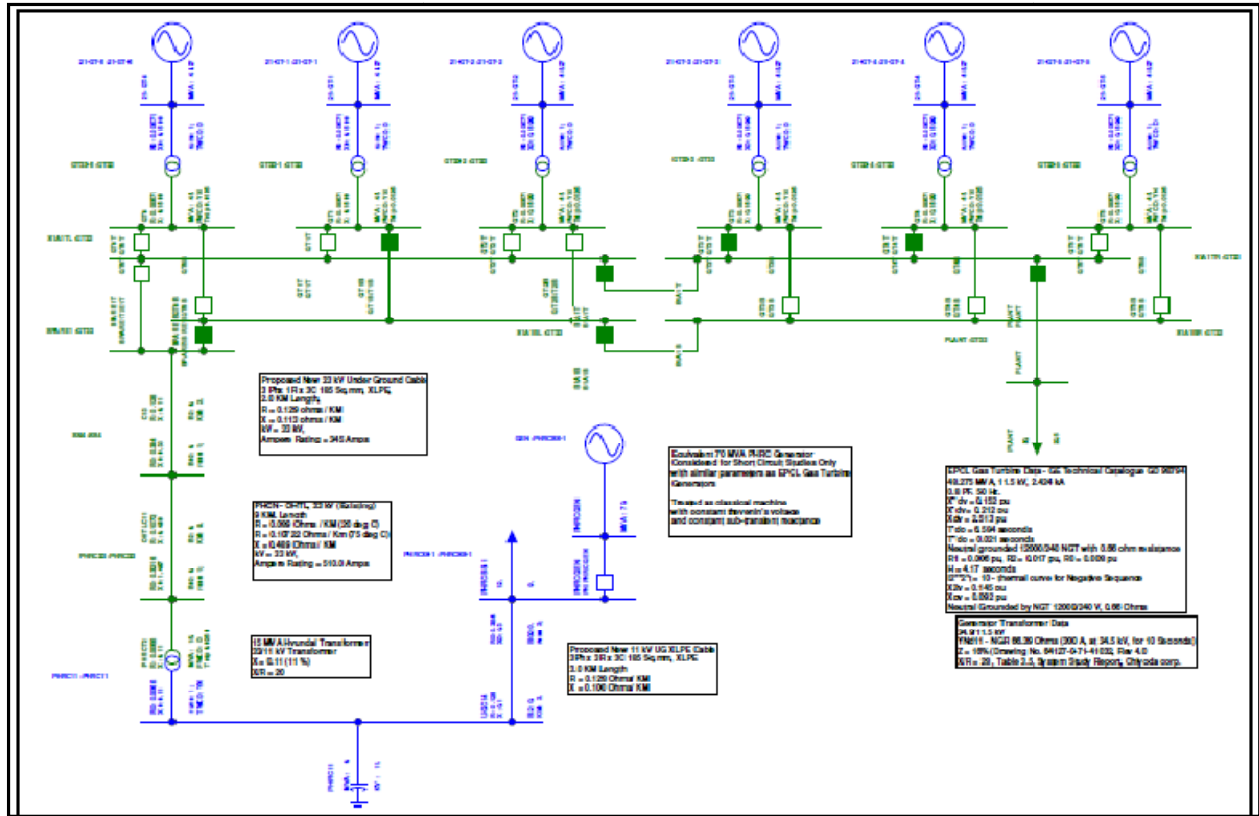
### **Scope of Work:**

- Site visit, Site survey, examination of facilities available for power evacuation to nearby grid substations
- Meeting with the distribution and transmission system authorities and eliciting information from them for various power evacuation plans
- Meeting with nearby bulk power consumers and eliciting their requirements for power purchase from the captive power plant of the client
- Route survey of the possible power transmission route to the grid
- Collection of all the data needed to perform the power system and power evacuation studies
- Power system studies such as load flow studies, short circuit studies, Harmonic analysis, stability studies, protection coordination studies, line parameter estimation, switching over voltage studies, load rejection dynamic over voltage studies, over voltages due to unbalanced fault conditions, insulation coordination studies as per relevant IEC standards
- Studies were performed for short term and long term power evacuation plans

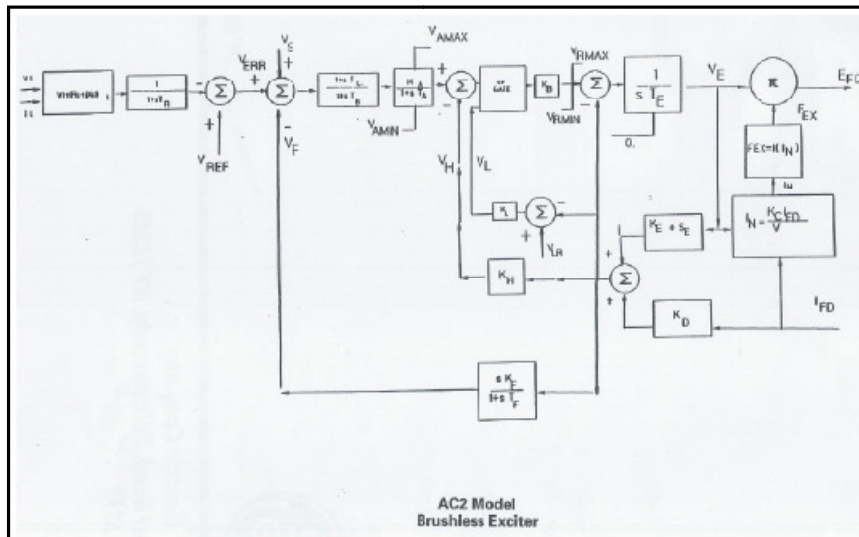
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### Simplified Single Line Diagram for Studies

The following single line diagram does not show the client plant load details.



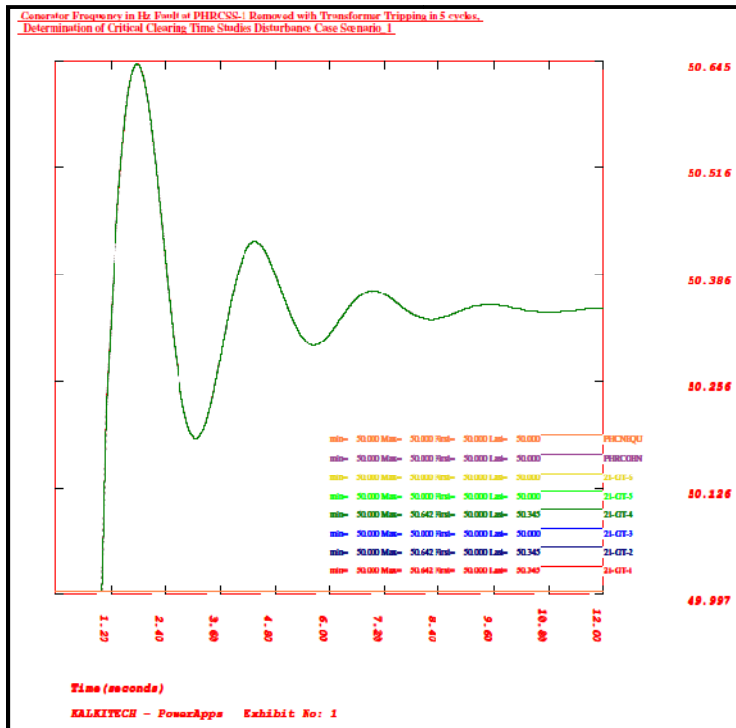
### Excitation System modeled for Stability studies



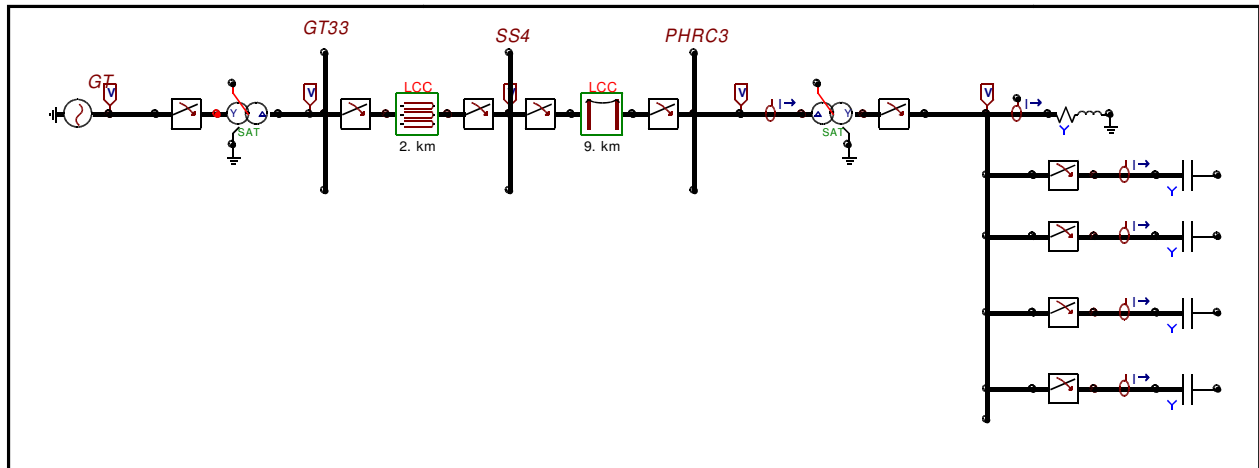


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### Transient Stability Studies, Generator Frequency Plots

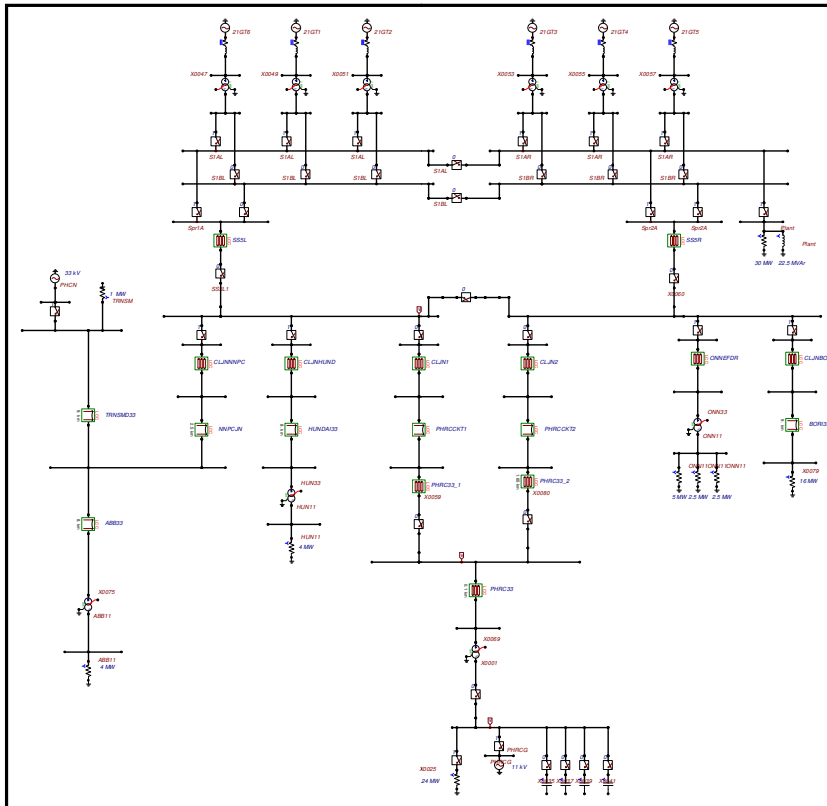


### Network Diagram for Switching Overvoltage Studies

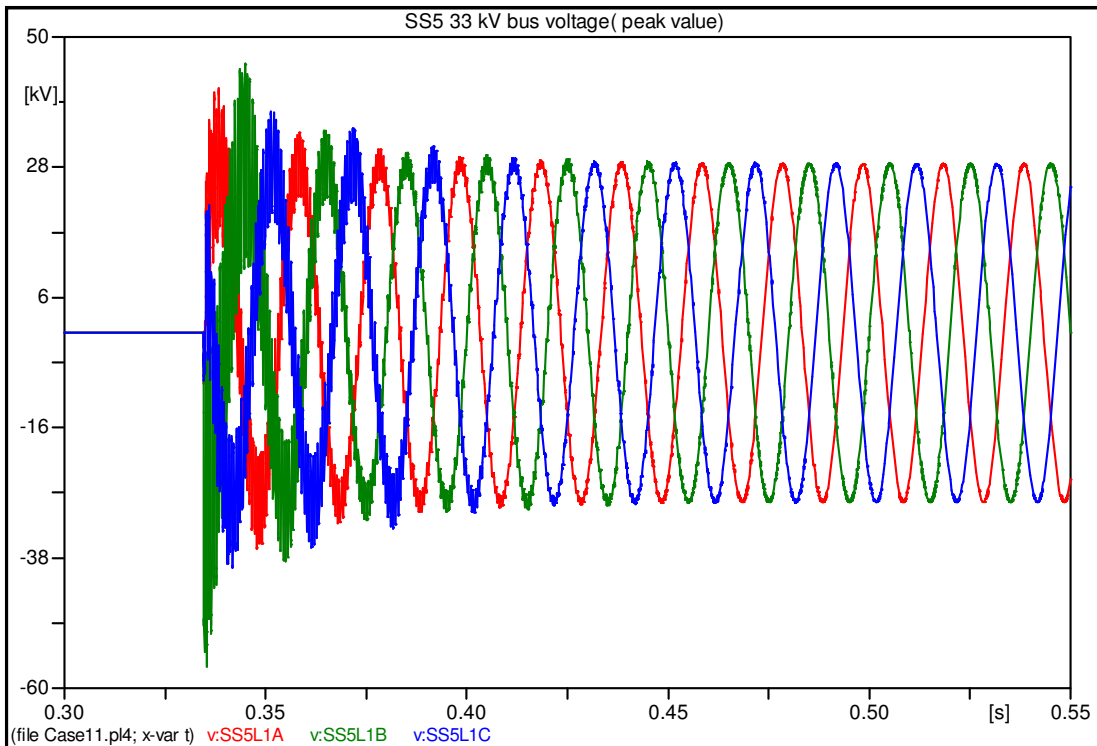


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### Network diagram for switching over voltage studies for another scheme



### A switching Overvoltage Study Plot [energization]



**Single Phase Fault- Single Pole Open – Reclose after fault clearing plot**

