

# LOAD FLOW STUDY

Pioneer Power Group was contracted to perform a load-flow study for a large commercial facility. The end goals of the load flow study were twofold. One study goal was to prove that the loading within the system would not cause voltages in the system to sag or swell to the point where system performance was impacted, or equipment would be damaged. A second goal of the study was to ensure that distribution equipment, transformers, and cables were not subjected to continuous currents above their rated values.

## ▶ CHALLENGES

This project contained challenges on both the front end and back end of the study.



Data for load flow studies is often provided in the form of panel schedules prepared by the Engineer of Record. When the study engineer was entering data into the computer model for the project, it was observed that the loading on the panels appeared to be suspect. The study engineer discovered that the loading was in excess of the ratings of certain panelboards.



On the back end of the project, after the load flow model was verified and the analysis was performed, several locations were found to contain voltage sags in excess of 5%, which is outside of the acceptable range defined by IEEE standards. Voltage sags of this magnitude can result in adverse system performances and could potentially cause damage to electrical equipment.

### CONTACT US:



(301) 569-7931



info@pioneerpwr.com



www.pioneerpwr.com

## ▶ OUR SOLUTION



Pioneer Power Group's study engineers pride themselves in paying attention to details. When the system loading provided by the Engineer of Record was found to be suspect, the lead project engineer communicated the issue back through the proper channels in order to find a solution prior to releasing the report. During an evaluation of the system, it was determined that there was a typographical error on certain panel schedules. These errors were corrected by the Engineer of Record, and the study was performed using the correct data.



Once the analysis was completed, our team flagged several key results in the report and offered solutions for the Engineer of Record. By identifying critical areas of concern in our report, the Engineer of Record was able to take steps to address potential project issues. One voltage sag issue was solved simply by recommending an adjustment to a transformer top. Another issue was solved by increasing the size of a cable to a panel. A final issue was solved by having the Engineer of Record change the location where an electrical load was fed from. Pioneer Power Group's reports are custom tailored to each individual distribution system and we recommend solutions in a practical manner such that they do not impact project lead times or costs.

## ▶ RESULTS



A quality study submittal was provided to our customer that considered the correct input data. Had this not been done and the report was provided with erroneous data, the results would not be meaningful and a study revision cycle would have been needed that would have drawn out the completion of the project.



Pioneer worked with the Engineer of Record to mitigate all issues noted in the initial report submittal. After direction was given by the Engineer of Record on the final as-built system, a report revision was provided to our customer that showed all results were satisfactory.



PPG engineers are committed to providing quality reports in a timely manner and providing practical solutions for our customers.



**CONTACT US:**



(301) 569-7931



info@pioneerpwr.com



www.pioneerpwr.com