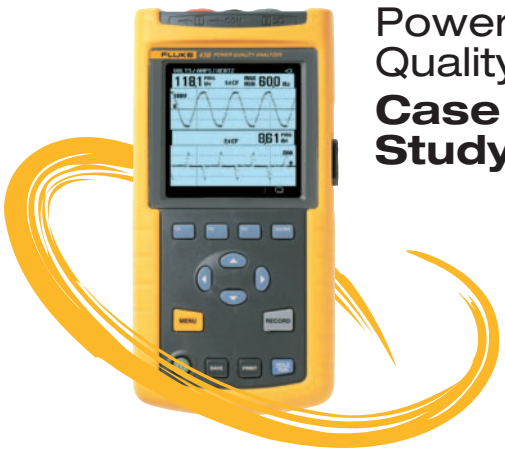
FLUKE®

Business-critical tripping problems in Singapore shopping mall

Application Note

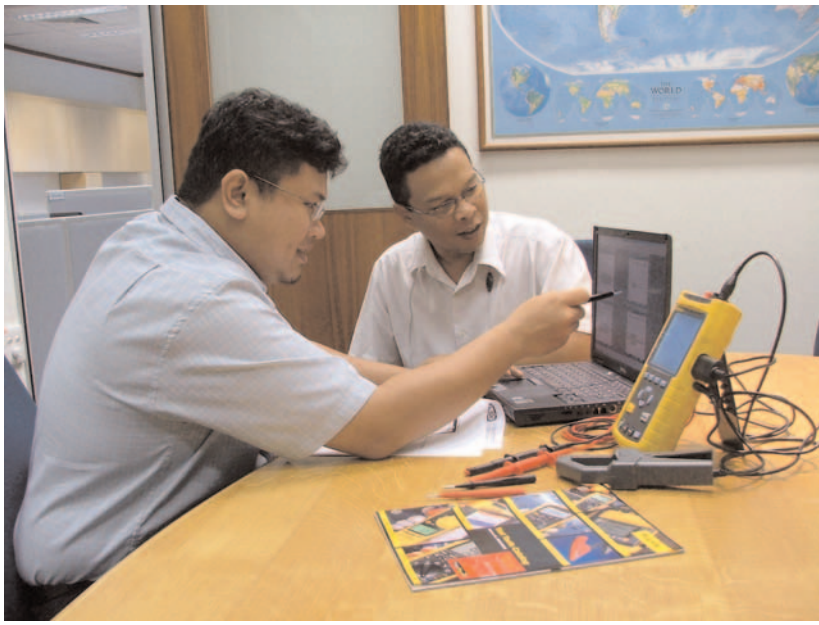


Power Quality **Case Study**

Measuring tools: Fluke 43B Power Quality Analyzer

Operator: Electrical consultant

Features used: Inrush triggering



The Quality Power Management team analyzes data collected with the Fluke 43B Power Quality Analyzer.

No air conditioning, no business

Singapore is geographically located just off the equator — making it hot and humid all year round. All the commercial buildings on the island are kept cool by air conditioners and cooling towers to provide a comfortable shopping and working environment. A breakdown with the cooling system can spell trouble for any facility owner, as the enclosed building units can turn unbearably stuffy very quickly.

These are the problems that electrical consultants, like Quality Power Management Pte Ltd (QPM), face regularly. When all is running smoothly, their work is about maintenance and checks. But when a glitch arises, they have to spring into action to help building management locate the root of the problem. Every minute that passes is another notch of temperature increase — and that is bad news for business.

On one such typically sweltering day, QPM received a call from a shopping mall located in the Singapore suburbs.

QPM is engaged by a property developer to manage eight buildings. It is the licensed engineering company for all electrical fittings within the common areas of these buildings — one of which is this particular shopping mall. The chiller installation had been working fine in the mall for many years when it suddenly developed tripping problems.

Temperature rising

According to Mr. Ken G. Jung, executive director of QPM, the mall has three chillers, two main chillers and one smaller unit that takes over when the mall is closed for the night, to maintain ambient temperature.

Each chiller has an incoming feeder attached into the air-con distribution system. Both run simultaneously when the mall is in operation.

While each feeder is ideally hooked up to only one chiller, under emergency situations both chillers should be able to utilize the same feeder if needed.

"Unfortunately, on that afternoon, it was necessary to utilize both chillers through the same feeder," said Ken. "All went well when the first chiller came up. But when the second chiller kicked in, the feeder tripped the entire air-con system."

This was bad news. With two other malls located within a 1 km radius, shoppers would be running to the nearby competitors the moment ambient temperature reach uncomfortable levels.

Immediately, the mall brought in the air-con specialists to do a situation analysis. However, despite their best efforts, they could not locate where the fault originated. Eventually, the mall decided to call in electrical professionals.

Finding faults

Explained Ken, "When we arrived at the mall, we started gathering the basic facts. That was when we deduced that the trip could be caused by an inrush. However, it required more than just deduction to spur remedial action. We needed documented proof, and we also needed to locate any other causes of the trip."

This is where the Fluke 43B Power Quality Analyzer came to good use. With the portable analyzer on hand, the team could immediately see what was happening. Using the Inrush function, they set the Fluke 43B to trigger automatically whenever an inrush event occurred and captured all data for analysis.

The team also did a data comparison for the different chillers, to definitively pinpoint the cause. This data was printed out in a report for further analysis.

"We then went back to the client and produced documentation showing how the system was working and what relay adjustments were necessary. With the information gathered from the Fluke 43B, we were able to adjust the relay to the right level and set it for the correct delays," said Ken.

Thus informed, the client made the critical decisions necessary to quickly rectify the problem.

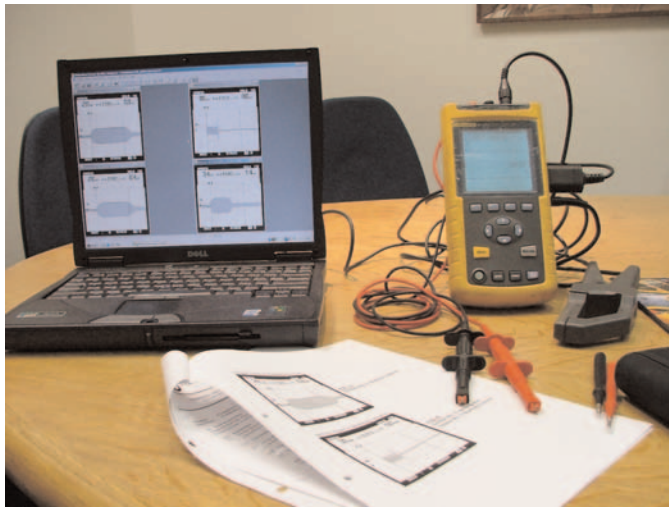
Professional tools

Ken has strong views when it comes to consultancy. The only way to effectively solve the problem is to find the root cause. Band-aid solutions will not work.

That's why QPM insists on Fluke quality instrumentation.

"I have been using Fluke tools for over 20 years," he said. "When I bring out the Fluke meter, people know that this is industry quality. Our customers know that when we read data, the results cannot be blamed on the instrumentation because it is faultless."

"We proudly show the instrument which captured the data, because people trust Fluke instrumentation. Branding is important to us, but so is reliability."



Documented proof of the inrush current measurements captured by the Fluke 43B.

Besides the Fluke 43B, QPM is also looking at supplementing its range of Fluke instruments with the new Fluke 430 Series Power Quality Analyzer. This would give QPM the additional benefit of testing all three phases simultaneously. The 430 Analyzer also automatically calculates whether loads are balanced and captures events as short as five microseconds.

With the new three-phase analyzer in QPM's family of professional tools, the power quality management consultancy is set to raise the bar in providing top service quality to its customers.

Fluke. *Keeping your world up and running.*

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