

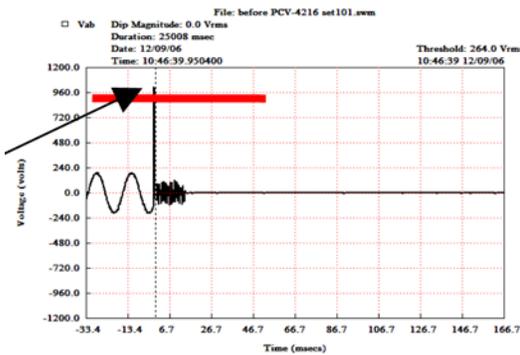


Switching Transients: Powering On and Off in the Digital Age

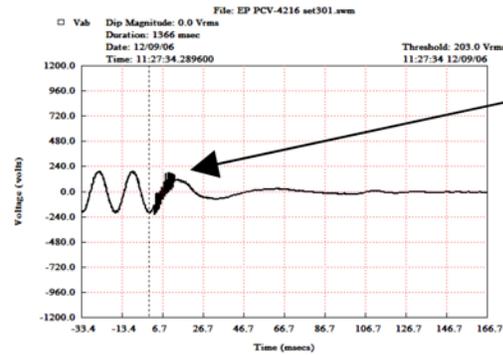
Facility managers are usually required to keep the facility powered up 24 hours a day, 7 days a week. This increases energy consumption and adds unnecessary miles to expensive equipment. However, facility managers cannot shut down the facility's power unless they want to risk burning control boards and damaging expensive equipment. This is because fuse and protection relays generate large switching transients.

Although fuse and protection relays are a necessary safety component, both fuse and protection relays generate switching transients when the relays/breakers are turned both on and off. A typical switching transient can create voltage peaks up to 20kV with a duration of 10-100usec. A typical industrial facility will use hundreds of fuse and protection relays most of which are turned on and off several times each day.

Examine the solid black line. This represents an extreme overvoltage caused by switching the relay off.



After installing the EFC equipment, the voltage is kept to harmless levels.



The graph on the left was taken as the magnetic relay was turned off before installing EFC equipment, while the graph on the right is the same magnetic relay was turned off after installing EFC equipment. The voltage reaches approximately 980V and there is a significant amount of noise for 20 seconds. This massive surge is the main reason why facility managers cannot risk powering off the facility overnight or over the weekends or holidays. Even as facilities explore every option to lower energy consumption, facility managers cannot risk generating 1000V transients.

Energy and Financial Consultings waveform correction technology absorbs and dissipates switching transients and noise generated by the turning on and off of magnetic relays. This is an extremely important leap in power quality technology and cannot be overstated.