

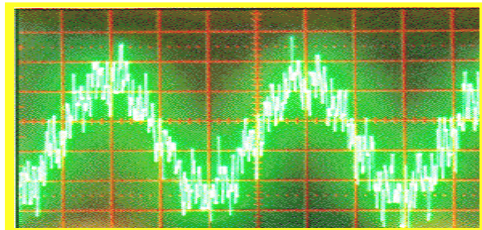


## Sinewave Tracking

Many SPDs include noise filtering, also known as EMI/RFI filtering. These filters attenuate higher frequency noise signals on power lines.

From an engineering perspective, these are basic, first order low-pass filters. The intent is to allow 'low-frequency' 50-60Hz power to 'pass', but not high frequency signals (hence the term low-pass).

Parallel connected capacitors inside a SPD accomplish this. Capacitors have the ability to accommodate multiple frequencies simultaneously. When kilohertz frequencies are modulated onto 50-60Hz carriers, the signal appears to "track" the lower frequency sinewave. Hence the term 'sinewave tracking'. This is demonstrated below:



The gentle sinusoid represents power line frequency. The vertical lines that seem to 'track' on top of the sinusoid are high frequency noise. The filter's purpose is to minimize that noise. This concept is virtually identical to FM radio where higher frequencies are modulated over a lower frequency carrier (hence the name, FM - Frequency Modulation).

NEMA's website ([www.nemasurge.com](http://www.nemasurge.com)) offers the following explanation:

### **What is Sine Wave Tracking technology?**

This is a rather fancy term given to a surge protective device (SPD) which includes radio-frequency interference ([RFI](#))/electromagnetic interference ([EMI](#)) filtering. All SPDs with capacitive RFI/EMI filtering exhibit sine wave tracking abilities.

APT SPD products use UL 1283 EMI/RFI filters and feature Sinewave Tracking (except TEXC).

Marketing terminology promotes this phenomenon's "magical" abilities. It is common to see lively adjectives such as '*Enhanced*', '*Actual*' or '*True*' Sinewave Tracking followed by '*Network*' or '*Circuitry*' to suggest exceptional capability. The root of these is usually a common capacitor.

One tip to circumvent aggressive marketing is to request an unpotted sample & circuit schematic. These are generally withheld on the premise of proprietary technology. Surge savvy professionals usually interpret that as, Does-Not-Exist.

Stay in touch with APT Engineering Sales at 800-237-4567, visit our website, [www.aptspd.com](http://www.aptspd.com), or email us at [info@apttvss.com](mailto:info@apttvss.com).

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