

**Aquinas High School
REPORT AND ANALYSIS
BY DAVID STETZER**

Biographical Sketch of David Stetzer

In 1970 I entered the United States Air Force and in 1971 attended the accredited #1 electronic school in the world, Keesler AFB in Biloxi, Mississippi. There I was trained as a ground Radio Communications Electronics Technician. Then in 1972 I attended KY8-38 Crypto School at Lackland AFB in San Antonio, Texas. I held a top-secret military clearance with Crypto access and worked on troubleshooting and repairing classified electronic equipment, including vacuum tubes, klystron tubes, PC boards, integrated circuits, etc, for the U.S. Air Force. This involved using sophisticated test equipment including spectrum analyzers, oscilloscopes, signal generators, shunts, and digital frequency counters on a daily basis. The training allowed me to have a good knowledge of electricity and Radio Frequency Energy including how to measure it.

After serving 4 years on active duty, I founded Stetzer Electric, Inc. in 1975 with three divisions, including the rewinding and repair of electric motors and apparatus, predictive maintenance involving the capture of waveforms from mechanical equipment, analyzing them, and developing preventive measures to minimize or reduce industrial equipment failures, and the electrical contracting and power quality division. I am also the President of Stetzer Consulting, LLC.

In 1998 I became heavily involved in the measurement of ground currents and voltages on dairy farms. I have measured hundreds of farms and streams in many countries of the world. I have produced documentaries including "Beyond Coincidence, The Perils of Electrical Pollution," and "The Effects of Low Level Non-Linear Voltage Applied to Cows." I have filmed thousands of cows and their reaction to low level electric shocks in their environment. I have correlated the electrical exposure of dairy cows to milk production. I have co-authored scientific papers that have been presented at various conferences around the world including the World Health Organization. I am a frequent guest of various Radio and Television programs around the world including Public Radio. I am the co-inventor of the Microsurge Meter that measures the high frequency energy on electric circuits and of the Graham/Stetzer filters that reduce or remove the radio frequency energy that is on buildings' wires. I have testified in various ground current law suits including the Michigan State Attorney General's lawsuit against Consumers Energy. I continue to be actively involved in EMF/EMR research and the effects on human health in Canada, Russia, Japan, Australia, Kazakhstan, and the United States. I am a member of the Institute of Electric and Electrical Engineers (IEEE)

On January 4th, 2007, I went to Aquinas High School in La Crosse Wisconsin to take some sample electrical measurements from a classroom at the request of Kim Savor, a parent of a student attending the school. Kim had even arranged the financing of filters to be installed in the school. She reported that there were 4 cases of lymphoma at the school, which is statically significant. Research shows that cancer and leukemia is associated with exposure to high frequency energy. (EPRI, 2005, California Health Department 2002)

INTRODUCTION

In 1972 there was an oil embargo that forced countries to become more energy efficient. Energy efficient lightning, variable speed frequency drives, electronic motor starters, light dimmer switches, as well as a host of other electronic loads were rapidly being connected to the electrical grid. These devices use current in short pulses that create harmonics and high frequencies transients on the electrical circuits. Prior to this time the majority of the loads were linear loads. With Linear loads the current was drawn in a continuous manner. The electrical grid was designed for only 60-cycle linear loads like light bulbs and motors and not for the high frequency producing electronic loads that were being added rapidly after 1972. Most electric utilities have not update their obsolete lines to handle the technological load that started being connected to their system in the late 70's and continues to date. The electric utility's primary neutral wire that was designed to bring the current back to the substations was, and still is, no longer capable of handling the excess current and higher than 60-cycle currents now riding on the wire. The wire has too much impedance (Opposition to AC current) due to its inadequate size and causes overheating and a build up of voltage on the wire called Primary Neutral to Earth Voltage (PNEV). The Institute of Electric and Electronic Engineers (IEEE) recognized the problems caused by these changing loads and adopted a national standard, the IEEE-519, in 1980. The IEEE revised the standard in 1986 and again in 1992. It was a problem that was recognized and addressed by industry world wide, except for most electric utilities. It became the topic of most power quality magazines and publications through out the industry.

“Harmonics: It surfaced as a buzzword in the early 1980's,” (EC&M – June 1999).

With electronic loads supplied by switch-mode power supplies, the harmonic components in the load currents can result in much higher neutral current magnitudes. This is because the odd triplen harmonics (3, 9, 15, etc.) produced by these loads is show up as zero sequence components for balanced circuits. Instead of canceling in the neutral (as is the case with positive and negative sequence components), zero sequence components add together in the neutral conductor. The third harmonic is usually the largest single harmonic component in single phase power supplies or electronic ballasts”. (6.3.1 Neutral Conductor Overloading - Guide for Applying Harmonic Limits on Power Systems (63) – May 4, 1996)

“Triplen harmonics do not cancel, but add together in the neutral conductor. In systems with many 1-phase nonlinear loads, neutral current can exceed an individual phase current. Generally, the amount of neutral current is between 125% and 225% of the highest phase current. The third harmonic current is usually responsible for most of the neutral current because the third harmonic typically represents the harmonic with the highest current value. High neutral current is dangerous because it causes overheating in the neutral. Because there is no CB in the neutral conductor to limit current, as in the phase conductors (A, B, and C), overheating of the neutral can become a fire hazard.” (Power Quality Measurement and Troubleshooting, Glen A. Mazur-Author, 1992)

“Since most electronic equipment is located at a low voltage level of its associated power distribution system, it is frequently exposed to the effects of voltage notching (see 8.5). Voltage notches frequently introduce frequencies both harmonic and nonharmonic, that are much higher than normally exhibited in 5 KV and higher voltage distribution systems. These frequencies can be in the radio frequency (RF) range, and, as such, can introduce harmful effects associated with spurious RF.” (IEEE STD 519-1992)

Because of the increased use of electronic loads on the electrical grid, these high frequency currents are now on the wires through out the buildings we occupy on a daily and nightly basis. They are on the wires above our heads, below our feet, and in the walls that surround our bodies, and are capacitively coupled into the human body. Energy above 1.7 kilo Hertz is dissipated internal to the human body (Applied Bioelectricity, Reilly). Most laptop PCs put 25 kilo Hertz back on the electrical system. Most of the new energy saving compact fluorescent lights put between 50 kilo Hertz to 100 kilo Hertz back on the electrical wires.

The term radio wave sickness was first used to describe the human health problems cause by exposure to these high frequencies. The symptoms of radio wave sickness have been a well researched and understood health issue since the end of WWII, after radar was developed. Names like Electrical Hypersensitivity or ES have now been attached to it.

Dr. Neil Cherry of Lincoln University, New Zealand, who was commissioned by the European Parliament to do a review of the Literature, published his final report in 1998.

“This review cites a great deal of internationally published peer-reviewed scientific evidence from laboratories and universities around the world, sourced from reports from reputable institutions and in internationally published papers from peer-reviewed journals. This shows compelling evidence of athermal biological changes in cells and in animals which relate to brain function change, sleep disruption, chronic fatigue, reproductive problems and adverse health problems such as immune system impairment and cancers of many organs. Epidemiological studies have identified statistically significant increases of the incidence of most these symptoms and diseases associated with above average exposure to radio-frequency and microwave (RF/MW) exposure.” (Cherry Report, 1998)

The government of Sweden recognizes ES as a disability; an article published May 7th, 2006 in the UK's Independent News Paper stated

“Invisible “smog”, created by the electricity that powers our civilization, is giving children cancer, causing miscarriages and suicides and making some people allergic to modern life, new scientific evidence reveals.”

<http://news.independent.co.uk/environment/article362557.ece>

STATEMENT OF FACTS and SUPPORTING DOCUMENTATION

In January 2007 electrical measurements were collected from the electrical wires at Aquinas High School, La Crosse Wisconsin. Measurements were made with standard industry accepted equipment, including a Fluke 196 Scopemeter, Gigahertz Solutions HF-35C, and the Graham/Stetzer Microsurge meter. Flukeview software was utilized to record and analyze some of the measured data. The values recorded were samples of what the electrical levels were at the time of measurement.

Exhibit 1 is the waveforms collected from a wall receptacle in the 3rd floor library room. The blue trace is 1 cycle of the 120 volt AC, 60 cycle, electrical power measured at the wall receptacle. The red trace is the higher frequency energy riding on the 60 cycles. The frequencies between the cursors represent a frequency of 25 kilo Hertz.

Exhibit 2 was measured from the same 120 volt AC wall as Exhibit 1 except there were 2 Graham/Stetzer filters plugged in to reduce the amount of radio frequency energy riding on the buildings wires. The red trace shows the result if the filters being utilized. The voltage level went from 460 mV to 336 mV, the frequency was reduced by a factor of 10, and the reading on the Microsurge Meter went from 236 to 80 GS units (Measurement of RF energy on building wires).

CONCLUSION

Although the exposure to RF energy is significantly high on the wires within the building at Aquinas High School they were drastically reduced when the Graham/Stetzer filters were installed. Scientific research has been done on the effectiveness of the Graham/Stetzer filters on human health including the symptoms of exposure to high frequency energy. To date all the research reports significant and positive results with implementation of the filters to reduce the RF energy that is on the buildings wires.

: “(1) poor power quality may be contributing to electrical hypersensitivity; (2) a much larger population than originally assumed may be electrically hypersensitive (50% vs. 2%); (3) children may be more sensitive than adults; (4) dirty electricity in schools may be interfering with education and (5) possibly contributing to disruptive behavior associated with attention deficit disorder (ADD); (6) dirty electricity may elevate plasma glucose levels among some diabetics and it may exacerbate the symptoms for those suffering from (8) tinnitus and (9) multiple sclerosis. If these results are representative of what is happening in countries worldwide, then dirty electricity is adversely affecting the lives of millions of people.” (Havas, 2004)

“These data suggest that poor power quality may be interfering with the education of students, particularly younger students, and the performance of teachers. If the improvements in well being, behavior and performance that coincided with improved power quality at Willow Wood is a sign of electrical sensitivity than the proportion of electrically sensitive people in the population may be 20-60% than the 2% reported in Sweden [3]. This situation is likely to get worse as we continue to promote the use of computers in the classroom and as we move towards wireless computer and communication technologies that generate radio frequency radiation.

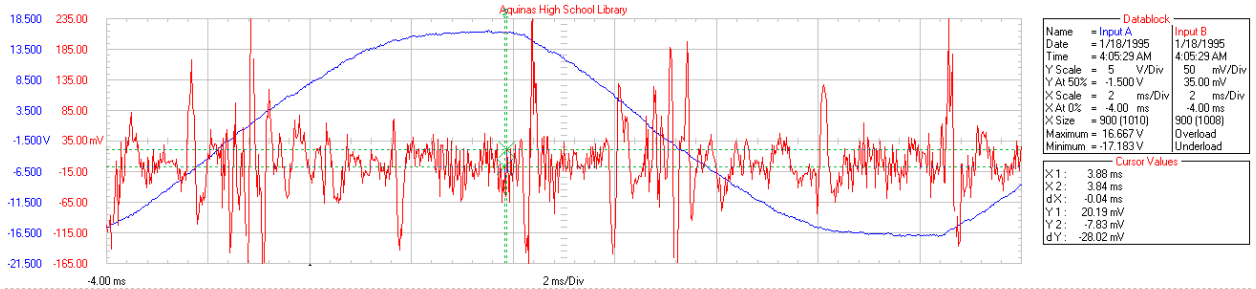
The Graham/Stetzer filters provide one method by which individuals can improve power quality in their home, work, or school environment. They also provide a tool than enables scientist to study the biological effects of poor power quality [10].” (Havas, Illiatovitch, Proctor, 2004)

“In each of the case studies, health benefits including improved sleep, reduced blood sugar in diabetics, reduced body aches and headaches and symptoms associated with multiple sclerosis as well as reduced ringing in the ears for tinnitus sufferers, have been realized, prompting Prof. Havas to further her research. She has recently traveled to England, Greece, Czech Republic as well as Trinidad and Tobago to present her findings.” (Trent News Release, Trent University November 29, 2004)

Graham/Stetzer (GS) filters have been installed in schools with sick building syndrome and both staff and students reported improved health and more energy. (Havas, Electromagnetic Biology and Medicine, 25: 259-268, 20)

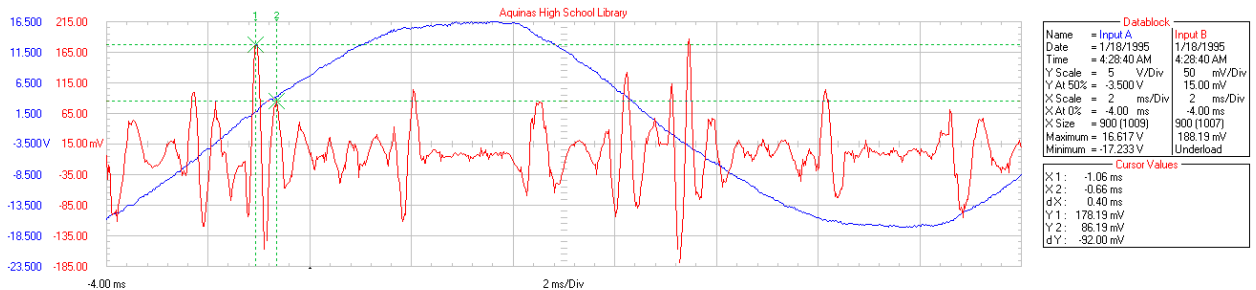
These are all engineering problems and can be solved with engineering solutions.

Exhibits



The waveforms were collected from the 3rd floor library at Aquinas High School with a Fluke 196 Scopemeter. Channel 1 was connected to the 120 volt receptacle. Channel 2 was connected to the same potential except through the Graham Ubiquitous filter (Removes the 60 cycle). The amplitude of the high frequency riding on the line is 460 mV. The area between the cursors represents a frequency of 25 kilo Hertz. No Graham Stetzer filters were used at the time. The number on the Microsurge meter was 213.

Exhibit 1



The waveforms were collected from the 3rd floor library at Aquinas High School with a Fluke 196 Scopemeter. Channel 1 was connected to the 120 volt receptacle. Channel 2 was connected to the same potential except through the Graham Ubiquitous filter (Removes the 60 cycle). The amplitude of the high frequency riding on the line is 336 mV. The area between the cursors represents a frequency of 2.5 kilo Hertz. 2 Graham Stetzer filters were used at the time. The number on the Microsurge meter was 80.

Exhibit 2