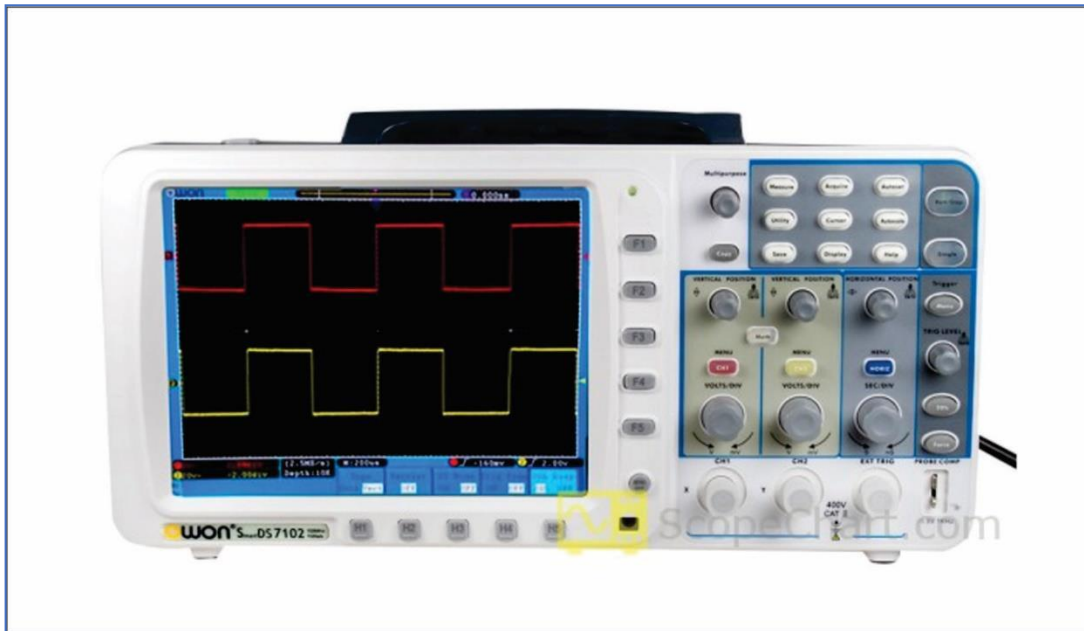


EMF Instrumentation Workshop 2022

Sponsored by: **EMF UNIVERSITY**



September 20 through 23, 2022
(Note: This is a Zoom virtual class)

Cost: \$800.00

This is a class is for anyone interested in learning a more in-depth understanding EMF's.

You do not need to be a building biologist or have any special skill to attend this class.

This class teaches you how to apply advanced techniques to utilize advanced instrumentation not typically taught in other EMF Training Institute Classes or other places in EMF assessments and surveys.

Included in your workshop tuition, each student will learn to use an OWON SDS7102V 2 Channel 100 MHz Bandwidth Oscilloscope with battery and case, a PICO Scope, a Stetzer Ubiquitous filter (High Pass Filter) for detecting MEP/DE signals. Also, there is instruction in the use of the Extech Model 382252 Earth Resistance Tester for checking for Stray/Earth Voltage and Earth System Ground resistance with all the training to operate and create reports from the measurements made with these devices. There is also instruction in the use a Hantek brand amp probe with an oscilloscope. If desired, you obtain this equipment prior to class at your own expense and you will gain all the skills to run them. We provide the full list of optional equipment specs and sources.

There will be a demonstration on the implementation of a new concept not taught anywhere called a “Ground Antenna” to aid in improving ground systems and improving MEP/DE. (Micro surge Electrical Pollution / Dirty Electricity) This is a unique solution to some bad grounding system. We will show how to check for ground current and measure frequencies commonly found on the ground system and how to mitigate this unique problem.

There will be a live demo of the device called the “Blue Box” for mitigation of common wiring errors such as “Net Current”. There will be demonstrations of MEP/DE scenarios and MEP/DE filter comparisons against known MEP/DE Generators. There will be comparisons of various light bulbs, i.e., Fluorescents, LED’s and Incandescent for Current, Voltage Transients, and Light Spectrum.

There will be a live demo of a spectrum analyzer and how to identify power density from dB/m to $\mu\text{W}/\text{M}^2$. we will also do a field test of shielding paints and you can see real results of the shielding effectiveness on a spectrum analyzer.

Your tuition also includes full instruction materials and a series of books for the class including the full series of the Andrew MacAfee “Killing Current” series of books, the Mike Holt Grounding and Bonding book and a copy of the current NEC Code Book. All sessions will be recorded if you need a refresher of what was covered and need to replay any section of the course.

The daily schedule includes lectures, instrument demonstrations, group labs with recommended instrumentation techniques, interactive discussions of lab results and, finally, a full assessment of the course. Enrollment is open to any students who have some understanding of EMF’s or the Other Institute’s electromagnetic radiation seminars; candidates with real- world experience can all attend even if they have not been to any formal EMF Training Institute training.

(EMF University Phone 734-845-9555/734-627-7610), To contact the administrator email bill.bathgate@defiltersllc.com

EMF UNIVERSITY

All material is authored and presented by Building Biologists and highly trained EMF team members (please see page 6 for bios), except where third-party sources are cited expressly.

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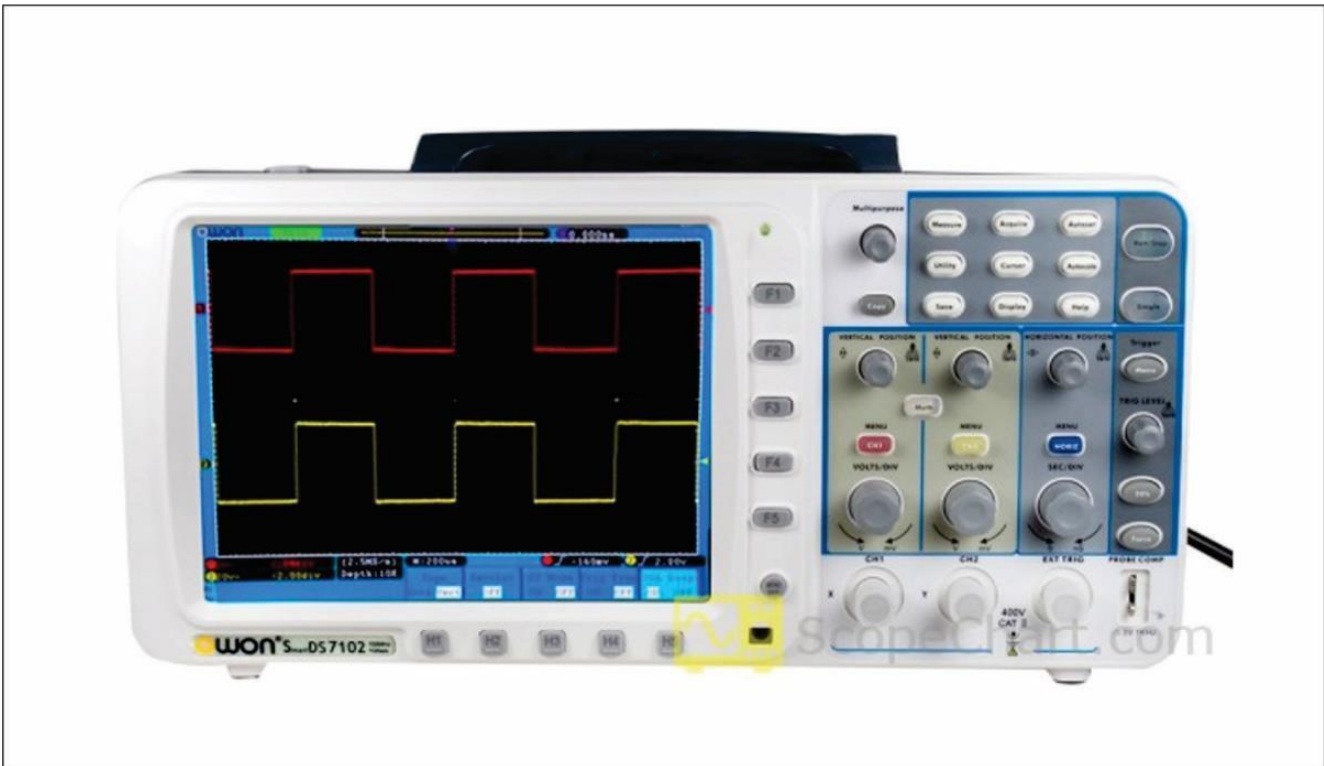
Prerequisites

The optional software required to download and analyze OWON scope data and PICO scope data runs on Windows 10 laptops only (Apple PC products will not run the OWON software nor the PICO Scope). If you do not have one, basic Windows 10 laptops are available from Wall Mart for less than \$300.00.

Participants are required to review the prerequisite course work for EMF Evaluation or have equivalent EMF experience as this fundamental material will not be re-reviewed. If you only have limited knowledge that's OK you will still do well in this class. It is assumed that participants know adequate information on EMF's and are familiar with it, and able to make measurements with the basic instrumentation used in an EMF Evaluation or practical experience or equivalent.

Participants are also recommended to purchase and read prior to arrival *Tracing EMRs in Building Wiring and Grounding*, by Karl Riley: Available at Less EMF, Barnes & Noble and Amazon for about \$28.

You will be provided by EMF University (mailed) with the hard copies of the Mike Holt book on grounding and bonding, the NEC code book, and the 6 books published by Andrew MacAfee, including: Killing Current, EMF Tracing 102, Meter Disconnect Installation, Neutrals Aren't and Equipment Ground Conductors Don't, The Water Pipe Solution, Parallel Path Magnetic Fields. These are excellent resources that you will use over and over again.



OWON SDS7102

Seminar Synopsis

Course Fee: \$800.00

This class is for almost anyone interested in finding out the proper way to measure EMF's. This advanced seminar amplifies the measurement and remediation techniques information learned in the other EMF Training i.e., Electromagnetic Radiation, or you can leverage your existing experience in EMF's. The seminar will include more detailed information on power systems, grounding, magnetic and electric fields, power system VLF fields and radio frequency radiation, including 5G.

The seminar will more fully explore remediation techniques and materials along with remediation planning, costing and installation. Along with use of basic instrumentation to assess environments for EMF/EMR, advanced measurement techniques and instrumentation will be introduced. The *Protocol for Measurement of Non-ionizing EMR in Low Rise Residential Buildings* will be used throughout the seminar to guide measurement techniques.

Although there will be lectures to introduce new concepts and instrumentation, this seminar will be heavily devoted to lab work. In a team setting, basic and advanced equipment will be used by attendees to assess realistic environments and models constructed to produce typical problems found in buildings. Team members will discuss findings and produce remediation plans to be shared with the other teams during debriefing sessions. A certificate of completion is provided.

This seminar possibly conveys 32 Continuing Education Credits (CEUs), accepted by the various EMF Training organizations. You must apply to those Institutes for CEU approvals.

Seminar Objectives

1. Understand complexities of measuring EMR in low rise buildings including power system ELF magnetic and electric fields, Power system VLF electric fields and radio frequency radiation.
2. Understand/use specific instruments to measure specific EMRs; learn/practice how meters can be used to measure and map EMR in buildings; learn/practice data and its uses in the assessment.
3. Study and understand the various EMF Training organizations EMR Measurement Protocol for Low Rise Buildings.
4. Learn how to detect and measure 5G cell tower radiation and methods for mitigation
5. Learn about various methods of shield/blocking EMR and the application criteria for each type of RF shielding.
6. Learn how to effectively mitigate EMFs in your home or business.
7. Learn how to construct and cost a remediation plan for each of these energies.
8. Each student will need to obtain as part of the course an OWON SDS7102V 2 Channel 100 MHz Bandwidth Oscilloscope with battery and case, a Pico Scope 2204A-D2 10 MHz 2 channel Oscilloscope, a Hantek CC-65 Scope ready Amp Probe , a Stetzer Ubiquitous filter (High Pass Filter) for detecting MEP/DE signals and an Extech Model 382252 Earth Resistance Tester for checking for Stray Voltage and Earth System Ground resistance with all the training to operate and create reports from the measurements made with these devices.



Extech 382252 Earth Resistance Tester

Seminar Schedule

Classes will convene at 9:00 AM EDT and end between 5:00 and 6:00 PM EDT, daily. Lunch break will be from 12:00 PM to 1:00 PM, and there will be breaks at 10:30 AM and 3:00 PM, daily.

Day One, Tuesday

Grounding Concepts

1. Learning Objectives & Seminar Overview
2. Grounding Systems Design and NEC Code Compliance
 - a. System Ground Design Purpose and Principles
 - b. System Ground Measuring Techniques & Tools
 - c. Earth Voltage Measurement Protocol and sources/remediations
3. Grounding optimization and its effects on MEP/DE
4. The Ground “Antenna” Concept, principles and results
5. Lab – Exercises – Extech Earth Resistance Tester Training and Ground Antenna Exercise
6. OWON Oscilloscope initial set up and initial readings

Day Two, Wednesday

Advanced Oscilloscope Testing, Measuring for Primary Voltage and identifying transients, peak to peak voltage and waveforms

1. Measuring for MEP/DE using a high pass filter and an Oscilloscope
2. Observing the Spectral Image of frequencies above 60 Hz
3. Source Identification techniques at the breaker panel
4. Effects of Dimmer Switches on the wave form
5. Effects of LED lights on the wave form, electric field and retina (eyes)
6. Effects of various SMPS on the wave form
7. Introduction to the PICO USB Scope, functions and limitations

Day Three, Thursday

Spectrum Analyzers, MEP/DE Advanced Filtering, Wiring Error Detections, 5G Mitigation

1. Lab – Testing and recording of readings (including how to recover your scope to the correct settings, once you have screwed it up by pushing all the wrong buttons!)
2. Introduction to the RF Spectrum Analyzer
 - a. Conducting a field survey for 5G cell tower radiation patterns and exposure
3. 5G Radio Frequency Radiation Shielding Paints, the types available, application, efficacy and demo
4. Advanced Smart Meter Mitigation Techniques
5. MEP/DE advanced filtering products and applications, Sine Tamer, DNA, Green Wave, Stetzer, SATIC, Maher Designs, and the Miracle Watt. This will be done in controlled experiments against known MEP/DE sources. Measurements for Current, Voltage Transient suppression, and Spectrum amplitudes Suppression. This will include against a simulated Solar application source.

Day Four, Friday

Net Current, Spectrum Analyzers, MEP/DE Advanced Filtering, Wiring Error Detections, 5G Mitigation

1. Demo of the Meter Power Disconnect Installation
2. Net Current Testing, and remediation with the “Blue Box”
3. Reporting Templates and the “5G Protection Plan”, business model and financing
4. Lab - RF Measurement using a spectrum analyzer and introduction to an inexpensive Spectrum Analyzer.
5. Final Exam

Meet the Instructors

Bill Bathgate



William S. Bathgate is a retired senior management professional and engineer with 40 years' experience in several high-tech industries. Mr. Bathgate is currently a Certified BBEC with an EMRS Certification (currently in training) by about Fall 2022. Bill is also an IEEE Certified Radio Frequency Safety Officer (RFSO) doing antenna site surveys for certification of FCC compliance. Mr. Bathgate previous employers include Sundstrand Corp. leading a project to modernization to the commercial aircraft "Black Box" recorder, flight controls, crash avoidance systems and aircraft power systems. Bill was also employed by IBM corporation leading engineering efforts for the S/390 Mainframe CPU and peripherals, networks and PC distributed systems. While at IBM Bill lead efforts to modernize the NASA Space Shuttle launch systems using the new PC technologies as part of the original IBM PC engineering team in Boca Raton, Florida. After IBM, Bill worked for Hewlett-Packard Co. leading instrument development of Oscilloscopes, Power Supplies, and Spectrum Analyzers, very large data center support systems (Microsoft and Amazon) and leading consulting services teams to Fortune's Top 100 corporations. After Hewlett-Packard, Bill worked for Emerson Electric as a Senior Program Manager for new product development of large utility grid grade power distribution systems. In his last work before retirement Bill lead a team of engineers in the development of autonomous navigation vehicle controls and communications at one of the "big three" auto makers. Bill holds a USA patent and has several trademarks and trade secrets in his name.

Bill currently owns two private companies, VAL-IT, Inc and DE Filters LLC. As President of VAL-IT, Inc., he and his affiliates perform consulting work for the DoD across the Globe at military installations and field deployments in the USA and foreign countries. Bill holds a DoD Top Secret clearance in performance of this work. This business was formed in 2009 and is still going strong. There are 6 affiliates currently delivering consulting work as part of Val-IT, Inc to the DoD.

DE Filters LLC is a relatively company that does building environmental assessments and remediations helping persons with EHS to recover from their symptoms. This business was formed in 2017. Mr. Bathgate considers this new business to be one of the most rewarding experiences of his career. When a customer says thank you for keeping them healthy and in their home, he feels blessed to have the knowledge to help them restore their health. EMF Training has dramatically enhanced those skills.

Terry Stotyn



Terry is a retired Red Sealed HVAC Refrigeration, Air Conditioning, and Controls Tradesman with over 40 years' experience in the trades. His expertise and knowledge of commercial and industrial HVAC systems, as well as power and control systems are very respected and distinguished. Terry has been an independent business owner and contractor for almost all his career, owning HVAC companies as well as other businesses over the years. Terry has been involved in the Power Testing Analysis for many years and is co-owner of two companies presently that market and distribute the Sine Tamer brand of Surge

suppression worldwide with the focus on North American sales. His expertise involves finding solutions to issues associated with Dirty Power as well performing testing for unwanted and troublesome power entities for many large corporations that have trouble finding solutions to existing problems. Terry was a major speaker at the recent 5G Crisis Summit held on August 2021. Terry presently is co-owner of Cratus Canada Ltd. as well as Cratus America Inc. including the www.PowerEMT.com website.

Andrew McAfee, MM



After becoming electrically sensitive in 2001, Andrew left music after 15 years as Principal Horn of the NC Symphony and earning a master's degree in conducting. He was fortunate to have Charles Keen and Karl Riley as early mentors. Andrew successfully petitioned the NC Utility Commission to order Duke Energy to provide a no-cost, non-emitting meter for its customers. Andrew was featured in a 2014 TIME docu-film "Searching for a Golden Cage" about electro-sensitivity and in the 2021 web course "Staying Healthy in a 5G World." Utilizing electrical training materials from Mike Holt, Andrew earned a Residential Electrician's Career Diploma in Penn Foster's electrician training program. In 2020, he wrote 6 short books as a part of his [Killing Current series](#) to raise awareness about the dangers of contact current. He created a device called a Nuisance Current Blocker (Patent Pending), to remove current and noise from grounding systems, yet allows breakers to trip in fault conditions. www.homeEMFtracing.com.

Robert Workman, BS, BBEC



Robert Workman has had an extensive 25-year career in the Residential remodeling industry and is currently a managing partner in a St. Louis Missouri based remodeling company - Jones Home Improvements. In addition to being an expert in exterior Home Remodeling, Robert has become St. Louis' first certified Building Biologist Environmental Consultant (BBEC) specializing in assessing and mitigating harmful electromagnetic fields within both the residential and commercial industries. With his in-depth knowledge of residential building construction and materials, Robert offers a unique insight into the physics of a home's construction to help homeowners create a healthy living environment. Robert knows firsthand the health risk that can exist in a home that has been miss-wired or that has unsafe EMF exposure. After many years of research trying figure out the cause of health conditions he was suffering, and that many doctors couldn't diagnose, Robert discovered he was suffering from a disease called Electro-hypersensitivity (EHS). Robert has spent the greater part of his life helping improve homes only to discover that it was his own home and living environment that was contributing to his health conditions. Now Robert has expanded his ability to help homeowners improve their homes.



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Recommended/Suggested Equipment:

1. OWON SDS7102V 100 MHz Scope (Amazon) \$435.00
2. OWON SDS 7102V Back Up Battery (Amazon) \$64.00
3. PICO scope 2205A 25 MHz Scope or 2204A Scope (SAELIG) \$225.00
4. Extech Model 382252 Earth Resistance Tester (Test Equipment Depot) \$260.00
5. Hantek CC-65 Scope ready Amp Probe (Amazon) \$56.00
6. Hantek HT-201, 20 to 1 Passive Attenuator (Amazon) \$20.00
7. A Stetzer Ubiquitous filter (ElectraHealth EMF) \$150.00
8. Leviton Plastic Medium Lamp Holder - Item no.30853 (Ace Hardware) \$9.49
9. Leviton Plastic Medium Base Socket Adapter - Item no 3161023 (ACE Hardware) \$6.99
10. 1 LED Bulb, 1 Incandescent/Halogen Bulb, 1 Fluorescent bulb (Cost Varies by store)

Optional Equipment:

Low-Cost Spectrum Analyzer - RSP1A SDR Radio – RF Range 1KHz to 2 GHz (Ham Radio Outlet) \$119.95

Low-Cost Spectrum Analyzer Antenna – SMA Connection – Comet SMA-W100RX – SMA (Amazon) \$41.95

Spectrum Analyzer Software - <https://www.sdrplay.com/spectrum-analyser>

Optional Software for Spectrum Analyzer:

<https://www.sdrplay.com/sdruno>