

Using the **Fluke 435 Power Quality Analyzer** for

Solving Power Quality Problems

Troubleshoot, Locate, Predict & Prevent Expensive Electrical Problems at Your Facility!

For a schedule of open enrollment classes or to bring this training to your plant or facility, contact us @

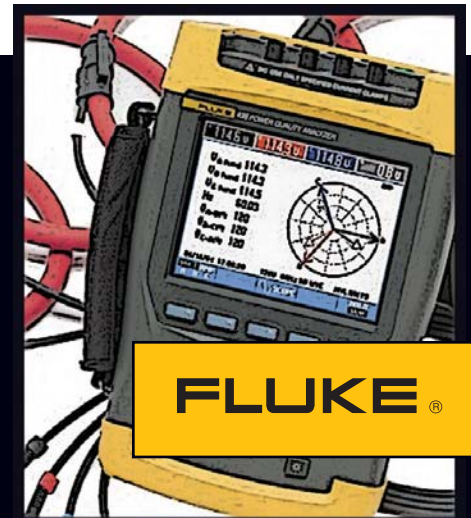
1-877-97-TRAIN

www.AmericanTrainco.com



LEARN TO:

- Troubleshoot in Real Time
- Quickly Diagnose Problems
- Validate Incoming Power Quality
- Verify Electrical System Capacity
- Quantify Energy Consumption
- Generate and Understand Graphs and Reports
- Uncover Hard-to-Find or Intermittent Issues
- Detect & Prevent Problems Before They Happen



Day 1 - Understanding Power Quality Principles, Practical Application and Tools

Day 2 - Using the Fluke 435 PQA for Power Quality Maintenance

- This seminar can also be presented at your facility for larger groups
- Reserve Your Space Now! Call 1-877-97-TRAIN
- Check us out online at www.AmericanTrainco.com for a complete listing of all seminars coming to your area

"...practical..."

"...easy to understand..."

"...removes headaches..."

Real World Training...for Real World Needs™

LEARN TO MEASURE EVERYTHING!

*true-rms and peak voltage and current –
frequency – dips and swells – transients –
interruptions – power and power consumption –
peak demand – harmonics up to the 50th –
interharmonics – flicker – mains signaling –
inrush and unbalance*

Using the **Fluke 435 Power Quality Analyzer** for

Solving Power Quality Problems

Troubleshoot, Locate, Predict & Prevent Expensive Electrical Problems at Your Facility!

PURPOSE OF TRAINING

Estimates put power quality related losses at over \$80 billion per year in the United States. In fact, power quality related downtime can cost over \$5 million per hour in industrial facilities and credit card data centers alone. This course is designed to provide you the knowledge to manage power quality, as well as give you real world "hands-on" hours of practice using the Fluke 435 3-Phase Power Quality Analyzer.

TRAINING OUTCOMES

Upon completion of this course students will receive a training certificate and 1.4 Continuing Education Units indicating the student has learned:

- What power quality is and why it is important to your facility.
- How power quality impacts your electrical system and equipment.
- How to properly and safely measure power quality factors.
- How to read various power quality outputs, charts, graphs and reports.
- How to troubleshoot and diagnose power quality problems.
- How to use the Fluke 435 PQA to address all power quality needs.

ABOUT OUR INSTRUCTORS

All American Trainco instructors are required to have a formal education and real world work experience. They need to be leaders in their field. We don't hire field people without teaching experience, and we don't hire teachers without field experience. They must have both. And since attendees critique the instructor at the end of each class, a positive and enjoyable learning experience is virtually guaranteed.

PQA APPLICATIONS

- Frontline troubleshooting – quickly diagnose problems on-screen to get your operation back online
- Predictive maintenance – detect and prevent power quality issues before they cause downtime
- Quality of service compliance – validate incoming power quality at the service entrance
- Long-term analysis – uncover hard-to-find or intermittent issues
- Load studies – verify electrical system capacity before adding loads
- Energy assessments – quantify energy consumption before and after improvements to justify energy saving devices

FLUKE®

ABOUT THE FLUKE 435 PQA

The Fluke 435 Logging Power Quality Analyzer features 0.1 percent voltage accuracy and GPS time sync option, making it fully compliant with the IEC 61000-4-30 Class A standard. Fluke has doubled the memory, allowing the Fluke 435 to be configured for any test condition with memory for up to 400 parameters at user defined intervals. Users can easily view logged data and generate reports with the new Fluke Power Log software. Additionally, the Fluke 435 features Mains Signaling capability that enables users to measure interference from ripple control signals at specific frequencies. It includes new 3000 A flexible current probes that are 600 V CAT IV-rated and do not require additional powering, eliminating the need for batteries. The Fluke 435 comes complete with a new rugged transit case with rollers. It is available from all Fluke authorized distributors. US list price is \$6,410.



HIGH QUALITY PRESENTATIONS

Black and white transparencies never made it in the door at American Trainco. From the start we demanded that all our presentations would be lively, attractive, crisp and clear. Our instructors use state-of-the-art computers, projection equipment and software to bring you a high quality visual experience. And our books are designed with the maintenance person in mind too. We know that they don't always have a lot of time to read volumes of literature so our manuals are quick and to the point, providing students the same charts, descriptions, pictures and bulleted items they'll see in the presentation.

WHO SHOULD ATTEND

This course is designed for anyone who is responsible for electrical system installation, maintenance and troubleshooting in commercial and industrial facilities. It is designed so that, when completed, the individual will have a solid understanding of how to use the Fluke 435 Power Quality Analyzer to locate and solve power quality problems. Attendees come from a wide variety of industries, skill levels, company sizes, and job titles, so if you're not sure you'll fit in or will benefit from the class, don't worry – you will – as long as you have an interest in power quality and system reliability. People who will benefit from attending this seminar include...

- Plant Electricians
- All Building Maintenance Personnel
- All Plant & Facility Maintenance Personnel
- Building Engineers
- Plant & Facility Managers
- Apprentice and Experienced HVAC Technicians
- Energy Management Personnel
- Electrical Contractors
- Any Technician needing to develop Multi-Craft Skills

UNAFFILIATED & NON-COMMERCIAL

While American Trainco and Fluke have collaborated to bring you this important Power Quality seminar, American Trainco does not sell or profit from the sale of any Fluke 435 Power Quality Analyzers. This ensures a high quality educational experience for the student using specific technology to help resolve electrical problems, but in a training platform that is free from sales pressure.

Reserve Your Space Now! **CALL 1-877-97-TRAIN** Or Online at: www.AmericanTrainco.com

C O U R S E O V E R V I E W

Power quality is often an invisible and overlooked factor when trying to get the most out of your plant or facility electrical systems and equipment. So the first day of this seminar will concentrate on teaching the student exactly what power quality is, how it can be monitored, and the effect it can have on your equipment and maintenance operations. By the end of this first day, students will have a clear understanding of why it is important to monitor power quality and how proper management of power quality can save your plant or facility tens or even hundreds of thousands of dollars depending on its size. Training like this doesn't cost – it pays.

In the second day, students will apply what they have learned from day one in a “hands-on” session using the Fluke 435 Logging Power Quality Analyzer. During this session students will learn how to set the analyzer up, what different modes are available to help you perform your work, how to read the various charts, graphs and reports, and how to use this information to improve performance of your systems and equipment. By the end of this second day, students will not only have received a solid education on power quality, but they will have been introduced to practical, real-world tools that will help them immediately apply what they have learned the moment they get back to work.

Day 1 Understanding Power Quality Principles, Practical Application and Tools

Electrical Refresher

- Introduction
- Electrical Fundamentals
- Safety

Understanding Power Quality

- What it is
- Why it is Important
- How it is measured
- Cause and Effect


Diagnosing Power Quality Problems

- Troubleshooting Overview
- Symptoms of Power Quality Problems
 - Power outages
 - Tripping circuit breakers and ASDs
 - High utility bills
 - Flickering lights
 - Equipment running noisy and hot
 - Premature equipment failure
 - Poor performance & unexpected shutdowns
 - Lost data in electronics

Understanding Common Power Quality Disturbances

- Causes and Fixes
 - Voltage dips & swells
 - Transients
 - Noise interference
 - Harmonic distortion
 - Under / over voltage or current
 - Voltage unbalance

Tools for Power Quality

 **“The perfect power quality course...”**

Day 2 Using the Fluke 435 PQA for Power Quality Maintenance

Introduction to the Fluke 435 PQA

Applications for the Fluke 435 PQA

Using the Fluke 435 PQA to Identify Power Quality Problems

- Understand the user interface and how to setup the tool
 - Setup
 - Function preferences
 - Parameters for each testing mode
 - User preferences
 - Set general operation parameters of the 435
- Use the Scope mode
- Use detail zoom and cursors to analyze while recording continues
- Capture Dips & Swells
- Measure harmonics (voltage, current, and power harmonics up to the 50th)

Inter-Harmonics

- Make Power & Energy measurements
 - Real Power (kW)
 - Apparent Power (kVA)
 - Reactive Power (kVAR)
 - Power Factor (W/VA) and DPF (cos Φ)
- Monitor energy use
- Measure Flicker including short and long term severity
- Measure Unbalance
- Capture Transients
- Measure Inrush
- Monitor a power system for conformity to limits specified in EN50160 or to your own custom limits
- Use FlukeView Software
- Use Mains Signaling
- Set up and use Logger and PowerLog
- Use the Report Generator



“Great examples with hands-on exercises”

Real World Training...for Real World Needs™

SEMINAR AGENDA

7:30 am	Registration
8:00am	Class Begins
12:00-1:00pm	Lunch (on your own)
4:30pm	Class Ends

SEMINAR FEE

\$990 Both Days

NO RISK REGISTRATION & MONEY-BACK GUARANTEE

If you're not sure you'll be able to attend this seminar, you can still make a reservation to hold your space in class. While payment is due prior to the start of the seminar, you may choose a full refund or credit for cancellations made at least 24 hours in advance. Student substitutions can also be freely made at any time prior to the start of the seminar. Refunds will not be issued for registered attendees who fail to show up and have not given a notice of cancellation. In the rare event that you do not receive the expected value after attending our seminar, simply notify us in writing of your reasons and your money will be promptly refunded.

OTHER SEMINARS

American Trainco presents a variety of maintenance training seminars throughout the country on a regular basis. Contact us to find out more about the training courses coming to your area, including:

- **Basic Electricity for the Non-Electrician™**
- **Electrical Troubleshooting**
- **Air Conditioning & Refrigeration**
- **Boiler Operation, Maintenance & Safety™**
- **Arc Flash Protection & Electrical Safety™**
- **2011 National Electrical Code®**

And 20+ other courses in the following areas:

- **Electrical / Electrical Controls**
- **HVACR**
- **Mechanical**
- **Facility & Plant Management**
- **Fluid Power**
- **Pumps / Piping**
- **Codes / Standards / Safety**

IN-HOUSE TRAINING

You can bring this or any other maintenance training program directly to your facility. Simply give us a call, tell us what you're looking for, and we'll provide you a quote. We also provide custom training for courses not listed in this brochure.

Call **1-877-97-TRAIN** and ask for Dan or Adam, or email AdamC@AmericanTrainco.com. Visit us on the web at www.AmericanTrainco.com

Reserve Your Space Now!

CALL 1-877-97-TRAIN

Or Online at: www.AmericanTrainco.com



REGISTRATION

Using the **Fluke 435 Power Quality Analyzer** for

Solving Power Quality Problems

For a schedule of open enrollment classes or to bring this training to your plant or facility, contact us @

1-877-97-TRAIN

www.AmericanTrainco.com

Reduce Downtime & Equipment Failures by Improving Your Power Quality

SEMINAR FEE
\$990 Both Days

FIVE EASY WAYS TO REGISTER:

- 1) **Internet** www.AmericanTrainco.com
- 2) **Fax** (303) 531-4565
- 3) **Phone** Toll Free 1-877-97-TRAIN 1-877-978-7246 or (303) 531-4560
- 4) **Mail** this form to: American Trainco, Inc. P.O. Box 3397 Englewood, CO 80155
- 5) **E-mail** the information requested on this form to: Sales@AmericanTrainco.com

Authorizing Person/Supervisor: Name _____

Title	Company Name		
Address			
City	State	Zip	
Phone	Fax	Email	

 **"The perfect 2-day Course!"**

Seminar Attendees:	Name	Title	E-Mail	Seminar City

Billing Information: (Please fill out this section only if the "Bill To" name and address is different than the Authorizing Person's name and address above.)

Individual's Name	Title	Company Name	
Address	City	State	Zip
Phone	Fax	Email	

Fluke 435 **3-Phase Logging Power Quality Analyzer**

- Troubleshoot real-time:**
 - Analyze trends using the cursors and zoom tools-even while background recording continues
- Highest safety rating in the industry:**
 - 600 V CAT IV/1000 V CAT III rated for use at the service entrance
- Automatic Transient Mode:**
 - Capture 200 kHz waveform data on all phases simultaneously up to 6 kV
- Fully Class-A compliant:**
 - Conduct tests according to the stringent international IEC 61000-4-30 Class-A standard
- Measure all three phases and neutral:**
 - With included four current probes
- AutoTrend:**
 - Every measurement you see is always automatically recorded, without any setup
- System-Monitor:**
 - Up to seven power quality parameters on one screen according to EN50160 power quality standard
- Inrush mode:**
 - For troubleshooting nuisance circuit breaker tripping
- View graphs and generate reports:**
 - With included analysis software
- Logger function:**
 - Configure for any test condition with memory for over 400 parameters at user defined intervals
- Mains signaling:**
 - Measure interference from ripple control signals at specific frequencies
- Battery Life:**
 - Seven hours operating time per charge on NiMH battery pack

Payment Method:

- Visa MasterCard Discover American Express

Card Number: _____

Expiration Date: _____

Name on Card: _____

Signature: _____

Check Enclosed (Make payable to: American Trainco, Inc.)

Bill Purchase Order #: _____



PO Box 3397
Englewood, CO 80155

PROMOTION CODE

X05



Contact Your Fluke Representative Today!

PUB FLK2R