



# Qual-Tech Engineers, Inc.

The Electrical Power Engineers  
\*\*\* Since 1982 \*\*\*

## INDUSTRIAL POWER SYSTEMS WORKSHOP

\*\*\* Including Arc Flash Analysis \*\*\*

October 1-4, 2013  
Pittsburgh, Pennsylvania

### ◆ Course Description & Features

This course focuses on the **application considerations** of the apparatus found in the typical industrial electrical power system. It is important that all of the components of the system be applied properly to insure the optimum operation, reliability, and safety of the system from the programmable controller to the largest power transformer. The participants will **work example problems** based upon the concepts discussed in the workshop, with special emphasis on **practical system considerations**. There will be homework assigned each day. It is important to bring a calculator. **(This course is equivalent to 28 PDH.)**

### ◆ Who Should Attend

Anyone who has **engineering responsibilities** for designing, operating, and maintaining an industrial power distribution system will benefit from this workshop. The course covers a wide range of subjects and it will provide valuable information to such people as plant and corporate engineers, utility service representatives, design engineers, and plant operating and maintenance personnel. A minimum of **three years engineering experience** is recommended.

### ◆ Industrial Power Systems Workshop

This four day course focuses on the application considerations of the apparatus found in the typical industrial electrical power system **(28 PDH)**. **Please register prior to the September 6 cutoff date.**

**Course Fee: The course fee is \$1800.** This includes program materials, break refreshments, and lunches. Advance registration is required for these courses. If you cannot attend, please notify us at least seven days in advance and your fee will be refunded. Cancellations received after that time are subject to a \$50 late charge. A substitute may be registered at any time prior to the start of the course.

### ◆ October 1-4, 2013 – Pittsburgh, PA

Location – SpringHill Suites – Marriott (Washington, PA). Hotel accommodations are made by directly calling SpringHill Suites at 724-223-7800 and referring to the Qual-Tech Workshop. Room rates are \$118 per night. **\*\*\* To receive this special rate, please make your hotel reservation by the September 6 cutoff date! \*\*\***

### ◆ Course Instructor

**W. EDWARD REID, PE**, Director of Analytical Studies at Qual-Tech Engineers, has over 30 years of experience in the analysis of industrial and utility electrical power systems. His experience has contained a special emphasis on problem solving including shunt and series capacitor applications, filter design from low voltage industrial to HVDC applications, harmonic analysis, equipment insulation failures, power outage and disturbance problems, and equipment application considerations. He has been active in numerous industry committees including the Capacitor Subcommittee, Harmonics Working Group, Pulp & Paper Committee, and the T&D Committee.

◆ **Course Schedule**

(Professional Development Hours = 28 PDH)

DAY 1

**AM - Fundamentals**

- Basics
- Per Unit System
- Symmetrical Components

**PM - Voltage & Var Control**

- Load Power Factor Characteristics
- Voltage and Var Flow
- Motor Starting

DAY 2

**AM - Short Circuit Calculations**

- Basic Calculations
- Equipment Standards & Ratings
- Estimating Methods for Typical Systems

**PM - Overvoltage Protection**

- Equipment Withstand Characteristics
- Sources of Overvoltage
- Overvoltage Protection Methods

DAY 3

**AM - Overcurrent Coordination**

- Basic Concepts
- Low & Medium Voltage Applications
- General Guidelines

**PM - Arc Flash Analysis**

- Analysis
- Application Guidelines

DAY 4

**AM - Harmonics**

- Sources of Harmonics
- Application of Capacitors
- Effects of Harmonics
- Harmonic Standards
- Methods of Controlling Harmonics

**PM - System Disturbances**

- Disturbance Characteristics
- Sensitivity of Equipment
- Equipment Standards
- Solutions

◆ **Registration Information**

Register On Line Prior to the September 6 Cutoff Date At:

[www.QualTechEng.com](http://www.QualTechEng.com) – Email: [info@QualTechEng.com](mailto:info@QualTechEng.com) – FAX: 724-873-8910 or

Mail The Registration Form To: Qual-Tech Engineers, Inc., 201 Johnson Road, Building #1 · Suite 203, Houston, PA 15342-1300. For additional information or to arrange INHOUSE WORKSHOPS, please call us at 724-873-9275 and ask for Vicki McGraw.

*(Travel arrangements should only be made after receipt of the final registration confirmation letter.)*

## **Industrial Power Systems Workshop – October 1-4, 2013**

◆ **Registration Form**

Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone # \_\_\_\_\_

Fax # \_\_\_\_\_

Soc. Sec. # \_\_\_\_\_

Email \_\_\_\_\_

**Indicate Method of Payment: (Course Fee \$1800.00)**

\_\_\_ Enclosed is a check for \$ \_\_\_\_\_  
(payable to Qual-Tech Engineers, Inc.)

\_\_\_ Bill my company to the attention of: \_\_\_\_\_

\_\_\_ Enclosed is Purchase Order Number: \_\_\_\_\_

\_\_\_ On-Line Credit Card Payment  
Qual-Tech On-Line Payment

**Send Registration Form By 9/6/13 To:**

Qual-Tech Engineers, Inc.  
201 Johnson Road – Building #1 · Suite 203  
Houston, PA 15342-1300

**Register On-Line By 9/6/13 At:**

Qual-Tech Engineers, Inc.

Phone: 724-873-9275 – Fax: 724-873-8910  
[www.QualTechEng.com](http://www.QualTechEng.com)