



# *Qual-Tech Engineers, Inc.*

*The Electrical Power Engineers*  
\*\*\* Since 1983 \*\*\*

## *INDUSTRIAL POWER SYSTEMS WORKSHOP*

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

### **– WEBINAR –**

*Interactive Class On-Line*

*Part 1 – November 10-13, 2020*

*Part 2 – January 19-21, 2021*

#### ◆ **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. **(This course is equivalent to 31 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 two part course focuses on the application considerations of the apparatus found in the typical industrial electrical power system **(31 PDH)**.

#### ◆ **PART 1 – Overcurrent Protection**

*4 Days – November 10-13, 2020 – 18 PDH*  
(Time: 10:00 AM – 3:00 PM EST)

#### ◆ **PART 2 – System Voltage – Control & Protection**

*3 Days – January 19-21, 2021 – 13 PDH*  
(Time: 10:00 AM – 3:00 PM EST)

**Course Fee: Parts 1 & 2 = \$2300 \* Part 1 Only = \$1450.00 \* Part 2 Only = \$1150.00.** This includes program materials. 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.

#### ◆ **Primary Course Instructor**

**W. EDWARD REID, PE**, Principal Engineer 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 = 31 PDH)

**PART 1 – Overcurrent Protection**

4 Days – November 10-13, 2020 – 18 PDH

– **Fundamentals**

- Basics
- Per Unit System
- Symmetrical Components

– **Short Circuit Calculations**

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

– **Overcurrent Coordination**

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

– **Arc Flash Analysis**

- Analysis
- Application Guidelines

**PART 2 – System Voltage – Control & Protection**

3 Days – January 19-21, 2021 – 13 PDH

– **Fundamentals**

– **Voltage & Var Control**

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

– **System Disturbances**

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

– **Overvoltage Protection**

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

– **Harmonics**

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

***The course will be held on-line and attendance is limited in order to maintain an interactive learning environment.***

**Industrial Power Systems Workshop – Registration Form**

◆ **Indicate Class & Method of Payment:**

Parts 1 & 2	\$2300.00	_____
Part 1	\$1450.00	_____
Part 2	\$1150.00	_____

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Phone # \_\_\_\_\_  
Fax # \_\_\_\_\_  
Email \_\_\_\_\_

**Register On-Line At:**

[www.QualTechEng.com](http://www.QualTechEng.com)

◆ **Registration Information:**

Register On-Line At: [www.QualTechEng.com](http://www.QualTechEng.com)  
or Email: [Info@QualTechEng.com](mailto:Info@QualTechEng.com)  
or FAX: 724-873-8910

\_\_\_\_ 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 To:**

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

Phone: 724-873-9275 – Fax: 724-873-8910