

# VITAL CONSIDERATIONS FOR POWER FACTOR CORRECTION

## 1- DAY LOW VOLTAGE WORKSHOP

### COMPREHENSIVE TECHNICAL WORKSHOP

This comprehensive technical workshop explains critical factors to be considered when designing power factor improvement equipment that will stand the test of time. Knowledge gained and techniques learned will help you to design long lasting PFC equipment and to quantify the key parameters necessary for ideal component selection.

Methods of analysis and formulae are shared plus typical examples are worked through together. The workshop is taught by an instructor who has 40 years of experience in the design, application and analysis of power quality problems and equipment.

Upon completion, participants should have a broadened understanding of many factors that need to be considered when designing an engineered power factor system.

### PFC DESIGN WORKSHOP

**8 HOURS**

This 8 hour technical workshop explains key factors affecting capacitor life and methods to consider in the design of modern PFC systems. This course explains how system conditions (such as harmonics) can have an adverse effect on capacitors and enclosure heating. It teaches methods of power system analysis to quantify the effects of harmonics for ideal capacitor selection and their effect on heat generation. It also covers the nuances of fixed, automatic and hybrid PFC systems, kVAR step optimization, and various application considerations.

### KEY FEATURES:

- ◇ In-person, On-site
- ◇ Experienced instructor led
- ◇ Enrich your technical team
- ◇ At your location

### WHO

This course is suitable for electrical professionals who are responsible for the design or application of power factor improvement equipment.

### GET THE MAXIMUM BENEFIT

To realize the maximum benefit from this course, participants should have a basic understanding of:

- ◆ Electrical principles
- ◆ Ohms law
- ◆ Electrical power
- ◆ Electrical metering
- ◆ Motors
- ◆ Capacitors
- ◆ Electrical apparatus
- ◆ Electric power systems

### CONTACT:

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**Power Quality Specialists**

*Allied Industrial Marketing, Inc.*

## **PFC DESIGN WORKSHOP AGENDA**

**8 HOURS**

### **INTRODUCTION & KEY CAPACITOR FACTORS**

Voltage (Peak & RMS)  
Current  
Temperature

### **BASIC SYSTEM REQUIREMENTS**

kVAR  
Fixed, automatic, hybrid  
Capacitor stages vs steps

### **HARMONIC & HARMONIC RESONANCE ANALYSIS**

Background voltage & current distortion  
Series & parallel resonance paths

### **POWER SYSTEM HARMONICS VS. CAPACITORS**

Capacitor current  
Capacitor voltage  
Capacitor tuning/detuning objectives

### **MAJOR PFC SYSTEM COMPONENT RATINGS**

### **APPLICATION CONSIDERATIONS**

Instructor: John Houdek



This workshop is led by John Houdek, who is an electrical engineer with 40 years of experience in the design, analysis and application of power quality problems and equipment. John's application experience includes industrial, commercial, municipal, institutional, water treatment, military, data centers, healthcare, petrochemical, food processing, agricultural, mining and more. He takes a practical approach to analyze and resolve electrical power factor and power quality problems, both of which have significance in contemporary electric power systems. John and Susan Houdek have owned this Power Quality consulting business since 2003, and for twenty years (2000-2020) John also taught a power quality course at MSOE University.

### **Optional Power Factor Seminar (4 credit hours)**

This course explains the three types of power factor, (displacement, distortion and total power factor) and teaches the details of each type along with methods to improve them. The seminar demonstrates how power factor can impact the cost of electricity and utilization of electrical resources. Methods for sizing power factor capacitors and analyzing potential harmonic resonance risk are demonstrated.

### **Our Power Quality Services:**

- ◇ Power Quality Problem Diagnosis
- ◇ Harmonic & Power Factor Analysis
- ◇ PQ Filter Design & Optimization
- ◇ PQ Seminars & Training Programs
- ◇ DC Electrolytic Capacitor Reforming



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