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# The Secrets of Industrial Control Panel Design

Siemens and PIC invites you to an exclusive workshop:

This is a must for those who wish to become proficient in the latest UL and IEC standards. You'll also get a clear picture of differences between U.S. and CE markets as well as North American and European applications.

You will also earn Continuing Education Credits (CEU) for attending the half day seminar.

## Here is what a few of our customers had to say so far!

"Gerhard Flierl is an outstanding presenter who provides topical, relevant information we can use in our panel shop."

– Bob Jacobson of Malloy Electric

"UL training was very thorough and relevant to today's market. Instructor was more than prepared and knowledgeable."

– Jim McRoy of Caterpillar

Date: September 23, 2011

Time: 8AM-1PM

Location: Regional Learning Alliance Cranberry Twp, PA

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Pittsburgh Industrial Controls

Industrial Automation

# The Secrets of Industrial Control Audience

## General Information

**Course Code:** SCT-WSULCE1A

**Length:** 0½ Days

**CEU Credits:** 4 or 0.4

## Audience

This course is designed for individuals involved in the design, specification and assembly of industrial control panels, as well as individuals who provide components for application in such panels.

This is a fast moving course intended for personnel with at least a general knowledge of industrial control components and applications.

Throughout the course, participants will be required to answer review questions to confirm comprehension of the material.

## Profile

The course is a summary of a standard 1 day course on designing industrial control panels for the North American market and another 1 day course on designing Industrial control panels for CE certification for IEC countries.

The introduction will cover the basic differences between the U.S. and CE markets.

A significant amount of the course will be devoted to the explanation of the key requirements to meet UL508A for Industrial Control Panels. Topics include Short Circuit Current Ratings, UL-compliant markings and common stumbling blocks.

This course also covers the basic requirements to design and self certify an industrial control panel with a CE marking for export to IEC countries and markets.

The course format is a combination of instruction and Q & A to allow participants to easily navigate the 268 page support manual titled, "Industrial control panels for the North American market – UL guidelines \* 11/2010".

## Objectives

Upon completion of this course, the student shall be able to:

- Describe the basic differences between U.S./UL and CE/IEC markets.
- Clearly identify power network types.
- Recognize the difference between branch and feeder circuits.
- Explain the differences between various types of motor branch circuits and how they meet UL.
- Compare NEMA enclosure type ratings with similar IEC IP enclosure ratings.
- Layout a complete, UL-compliant control panel label.
- Follow the appropriate processes when including unlisted products.
- Compare UL wire color requirements with wire color requirements from CE.
- Recognize typical stumbling blocks in UL control panel design.
- Navigate the support manual titled, "Industrial control panels for the North American market - UL guidelines \* 11/2010".
- Delineate between the IEC and CE Standards and Directives.
- Describe the most important aspects of the Low Voltage Directive when applied to control panel design.
- Explain the differences between various types of load feeders and motor applications and how they meet CE.
- How to efficiently export UL-compliant panels to IEC countries.

## Topics

1. Introduction
2. Basic Differences between UL and CE Markets
3. UL - Network Types
4. UL - Branch Circuits and Feeder Circuits
5. UL - SCCR
6. UL - Motor Branch Circuits
7. UL - Enclosure Types
8. UL - Compliant Marking
9. UL - Unlisted Product
10. UL - Wiring Colors
11. UL - Stumbling Blocks
12. IEC - Standards and Directives
13. IEC - Low Voltage Directive
14. IEC - Load Feeders, Motor Applications
15. IEC - Verifications
16. Exporting UL Compliant Panels to IEC Countries



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