These are our most popular training courses. If you are looking for a course tailored to your needs, please let us know as we would be happy to develop one.

Need more information?
Email: psdtraining@powellind.com
Phone: 1 800 480 7273

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Commitment to Improve

Our commitment to continually improve our technical expertise, our product designs, and our processes is the basis for our drive to perform. It is our catalyst for growth and we are proud of our past and confident in who we are. Our past performance is the solid foundation upon which we build our future.
EL102 Electrical Safety & Arc Flash Awareness

COURSE OBJECTIVES (CLASSROOM)
- Discuss the basics of electrical equipment safety and how to achieve an electrically safe condition in compliance with NFPA70E
- Discuss electrical boundaries and approach distances as they pertain to NFPA70E
- Examine the causes, properties and results of arc faults and flashes
- Discuss worker safety procedures

HANDS-ON APPLICATION
- Walk through of Basic Lock Out Tag Out Procedures
- On-site discussion regarding approach boundaries and use of proper PPE.

LEARNING TOOLS
- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- 10 question review exam (optional)

COURSE DURATION: 1 DAY (8 HOURS)

WHO SHOULD ATTEND?
Electricians, Maintenance, Operating and Engineering personnel working in, on or around electrical equipment, who wish to gain an understanding of the dangers associated with arc faults and flashes as well as how to reduce potential risks.

EL101 Electrical Equipment Basics

COURSE OBJECTIVES (CLASSROOM)
- Electrical History
- AC versus DC
- Motors
- Generators
- General Electrical Transmission and Distribution
- Transformers
- Switchgear
- Protection Relays
- Grounding

HANDS-ON APPLICATION
This course has no hands on applications

LEARNING TOOLS
- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- 10 question review exam (optional)

COURSE DURATION: 1 DAY (8 HOURS)

WHO SHOULD ATTEND?
Non-electrical or electrical personnel new to the industry who wish to gain a basic understanding of the history, theory and equipment used in today’s market.
SWGR102  Low Voltage Switchgear and Circuit Breaker

Low voltage switchgear and circuit breaker operation, control schemes, ratings, testing and general preventative maintenance.

COURSE DURATION: ½ DAY (4 HOURS)

WHO SHOULD ATTEND?
Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding on Powell's low voltage switchgear design and operation.

COURSE OBJECTIVES (CLASSROOM)
• Discuss the basic construction and design properties of Powell's low voltage switchgear
• Examine individual switchgear components, their locations and function
• Discuss circuit breaker components
• Discuss operational procedures

HANDS-ON APPLICATION
• Utilize equipment for identification and explanation of components and functionality
• Insertion and removal demonstrations and exercises using manual and remote electrical as well as associated auxiliary equipment
• Exercises on preventative maintenance
• Demonstration on testing procedures

LEARNING TOOLS
• Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
• Hands-on training using on-site customer equipment or equipment from the manufacturing floor
• 10 question review exam (optional)

SWGR202  Medium Voltage Switchgear

PowiVac® 5kV to 38kV switchgear operation, control schemes, ratings, testing and preventative maintenance.

COURSE DURATION: 1 DAY (8 HOURS)

WHO SHOULD ATTEND?
Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding on Powell's medium voltage switchgear design and operation.

COURSE OBJECTIVES (CLASSROOM)
• Discuss the basic construction and design properties of Powell’s medium voltage switchgear
• Examine individual switchgear components, their locations and function
• Discuss circuit breaker components
• Discuss operational procedures

HANDS-ON APPLICATION
• Utilize equipment for identification and explanation of components and functionality
• Insertion and removal demonstrations and exercises using manual and remote electrical as well as associated auxiliary equipment
• Exercises on preventative maintenance
• Demonstration on testing procedures

LEARNING TOOLS
• Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
• Hands-on training using on-site customer equipment or equipment from the manufacturing floor
• 10 question review exam (optional)
COMBO 1
This course combines the following two courses:
• SWGR202 Medium Voltage Switchgear
• CB102 Medium Voltage Circuit Breaker

COMBO 2
This course combines the following two courses:
• SWGR102 Low Voltage Switchgear
• MCC202 Medium Voltage Motor Control Center

Please review the course details in this catalog for a full understanding of the course objectives, hands-on application and the learning tools.
MCC102  Low Voltage Motor Control Center

COURSE OBJECTIVES (CLASSROOM)
• Discuss the basic construction and design properties of low voltage motor control centers
• Examine individual equipment components, their locations and function
• Discuss operational procedures

HANDS-ON APPLICATION
• Utilize equipment for identification and explanation of components and functionality
• Demonstrations/Exercises on LV MCC operation with contactor insertion and removal
• Exercises on preventative maintenance
• Demonstration on testing procedures

LEARNING TOOLS
• Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
• Hands-on training using on-site customer equipment or equipment from the manufacturing floor
• 10 question review exam (optional)

WHO SHOULD ATTEND?
Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding on low voltage motor control center design and operation.

COURSE DURATION:
½ DAY (4 HOURS)

MCC202  Medium Voltage Motor Control Center

COURSE OBJECTIVES (CLASSROOM)
• Discuss the basic construction and design properties of medium voltage motor control centers
• Examine individual equipment components, their locations and function
• Discuss operational procedures

HANDS-ON APPLICATION
• Utilize equipment for identification and explanation of components and functionality
• Demonstrations/Exercises on MV MCC operation with contactor insertion and removal
• Exercises on preventative maintenance
• Demonstration on testing procedures

LEARNING TOOLS
• Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
• Hands-on training using on-site customer equipment or equipment from the manufacturing floor
• 10 question review exam (optional)

WHO SHOULD ATTEND?
Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding on medium voltage motor control center design and operation.

COURSE DURATION:
½ DAY (4 HOURS)
HRG102 Resistance Grounding Fundamentals

COURSE OBJECTIVES (CLASSROOM)
• Discuss the basic needs of equipment grounding in regards to safety
• Examine the basic theory behind high resistance grounding
• Discuss LRG/HRG equipment types and componentry
• Review basic equipment setup and operation
• Discuss basic ground fault location techniques

HANDS-ON APPLICATION
• Demonstration of equipment controls and procedures

LEARNING TOOLS
• Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
• Hands-on training using on-site customer equipment or equipment from the manufacturing floor
• 10 question review exam (optional)

RELAY101 Protection Relay Basics

COURSE OBJECTIVES (CLASSROOM)
• Discuss the basic functions, differences and similarities of digital and microprocessor relays
• Review the capabilities of feeder, transformer and motor protection relays
• Review interrogation procedure and basic settings functions of common microprocessor relays
• Discuss the communications and security protocols of common microprocessor relays

HANDS-ON APPLICATION
• A walk through of computer setup and communications connections with relays discussed in the classroom
• Set up of various settings screens offline
• Development of a basic relay settings file
• View and understand real-time relay information
• Walkthrough fault interrogation techniques
• Navigate through relay faceplate human machine interface (HMI/GUI) menus to access, understand and clear relay target event information

LEARNING TOOLS
• Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
• Hands-on training using on-site customer equipment or equipment from the manufacturing floor
• 10 question review exam (optional)
**CB102  Medium Voltage Circuit Breaker**

*COURSE OBJECTIVES (CLASSROOM)*
- Examine PowlVac® circuit breaker components
- Discuss the internal circuit design
- Discuss operational procedures

*HANDS-ON APPLICATION*
- Overview of the tools and safety requirements for PowlVac® breakers
- Exercises on preventative maintenance
- Demonstration of the removal, replacement and adjustment of common field replaceable parts
- Demonstration on testing procedures
- Demonstration on basic troubleshooting techniques

*LEARNING TOOLS*
- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- Hands-on training using on-site customer equipment or equipment from the manufacturing floor
- 10 question review exam (optional)

**CB202  Direct Current Circuit Breakers**

*COURSE OBJECTIVES (CLASSROOM)*
- Examine Powell Legacy DC circuit breaker operation, control schemes, ratings, testing and general preventative maintenance.

*COURSE DURATION: 1 DAY (8 HOURS)*
RECOMMEND SWGR201 AS A PREREQUISITE

*WHO SHOULD ATTEND?*  
Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding of our DC Circuit Breaker internals and requirements as well as learn the diagnostic techniques to accurately identify mechanical and electrical problems when they occur.

*LEARNING TOOLS*
- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- Hands-on training using on-site customer equipment or equipment from the manufacturing floor
- 10 question review exam (optional)
COURSE OBJECTIVES (CLASSROOM)

- Discuss the basic construction and design properties of traction power switchgear
- Examine individual switchgear components, their locations and function
- Discuss design characteristics and basic components of the DC circuit breaker operation in relationship to downstream and upstream safety systems
- Discuss alarms specific to DC equipment
- Discuss operational procedures

HANDS-ON APPLICATION (OPTIONAL)

- Utilize equipment for identification and explanation of components and functionality
- Insertion and removal demonstrations and exercises using manual and remote electrical as well as associated auxiliary equipment
- Exercises on preventative maintenance
- Demonstration on testing procedures

LEARNING TOOLS

- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- Hands-on training using on-site customer equipment or equipment from the manufacturing floor
- 10 question review exam (optional)

SWGR401 Direct Current Switchgear and Circuit Breakers

COURSE OBJECTIVES (CLASSROOM)

- Discuss the purpose of design and ratings for rectification equipment in traction power substations.
- Examine the basic electronic theory of wave shaping and voltage rectification.
- Discuss the major components and operation of traction power specific transformers and silicon diode rectifiers.
- Discuss the purpose and operation of the embedded power safety systems.
- Discuss the importance of positive and negative bus distribution, monitoring and relay protection associated with DC systems.
- Discuss SCADA systems indications, alarms, applicable troubleshooting techniques and grounding safety.
- Discuss preventative maintenance.

HANDS-ON APPLICATION (OPTIONAL)

- Utilize equipment for identification and explanation of components and functionality
- Exercises on preventative maintenance
- Demonstration on testing procedures

LEARNING TOOLS

- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- Hands-on training using on-site customer equipment or equipment from the manufacturing floor
- 10 question review exam (optional)

RCT401 Rectifiers and Rectifier Transformers

COURSE OBJECTIVES (CLASSROOM)

- Discuss the purpose of design and ratings for rectification equipment in traction power substations.
- Examine the basic electronic theory of wave shaping and voltage rectification.
- Discuss the major components and operation of traction power specific transformers and silicon diode rectifiers.
- Discuss the purpose and operation of the embedded power safety systems.
- Discuss the importance of positive and negative bus distribution, monitoring and relay protection associated with DC systems.
- Discuss SCADA systems indications, alarms, applicable troubleshooting techniques and grounding safety.
- Discuss preventative maintenance.

HANDS-ON APPLICATION (OPTIONAL)

- Utilize equipment for identification and explanation of components and functionality

LEARNING TOOLS

- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- Hands-on training using on-site customer equipment or equipment from the manufacturing floor
- 10 question review exam (optional)
Custom Courses

Are you looking for a program that is tailored to match your equipment or even the requirements of your safety program? We can combine elements for existing courses or work with you to develop training material to suit your application.

COURSE OBJECTIVES (CLASSROOM)
- Discuss theory and practical applications tailored to meet the requirements of your team
- Information and teaching to are custom to your specific equipment

HANDS-ON APPLICATION
- Utilize equipment for identification and explanation of components and functionality
- Insertion and removal demonstrations and exercises using manual and remote electrical as well as associated auxiliary equipment
- Exercises on preventative maintenance
- Demonstration on testing procedures

LEARNING TOOLS
- Classroom discussion utilizing presentations, equipment manuals and project electrical drawings, as applicable
- Hands-on training using on-site customer equipment or equipment from the manufacturing floor
- 10 question review exam (optional)

WHO SHOULD ATTEND?
Individuals you feel would benefit from the course material.

Additonal Information

Training Location
Courses can be held at a Powell Facility or at on-site at our customer’s facilities. Other facilities can be arranged and are subject to additional room and equipment charges. Trainees’ accommodation, travel costs and expenses are not included; this should be handled directly by the customers.

Training classes are scheduled and accepted only when confirmed by receipt of Purchase Order.

Language
Courses are all presented in the English language. The courses can be given in any language by the customer’s technical translator or Powell can provide one for an additional cost. Timing of courses may need to be extended to cover translations.

Learning Assessments
When requested, a course assessment can be carried out during the training and the results provided to the training organizer upon completion of the course. Powell does not confirm the competency of participants based solely on their attendance during training courses.

Training Aids
When deemed practical, at least one of each device being covered in the training course will be made available for trainees to use during the course. Powell believes that training is an interactive environment, presented in an informal manner by experienced engineers and subject matter experts in the topics covered. Powell as a result, does not release or allow the copying of any of the original visual training aids and material used on the courses. Copies of all presented material will be given to each trainee in the form of hard copy manuals or on USB flash drives in PDF format which is available upon request.

Scheduling
Training courses are offered subject to availability. Two (2) to four (4) weeks minimum notice is required. Training classes are scheduled and accepted only when confirmed by receipt of Purchase Order.

Standard Courses
Visit our website for a calendar of our standard course offerings that take place at our facility.
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