POWELL®

JUNE 2025

Training Courses

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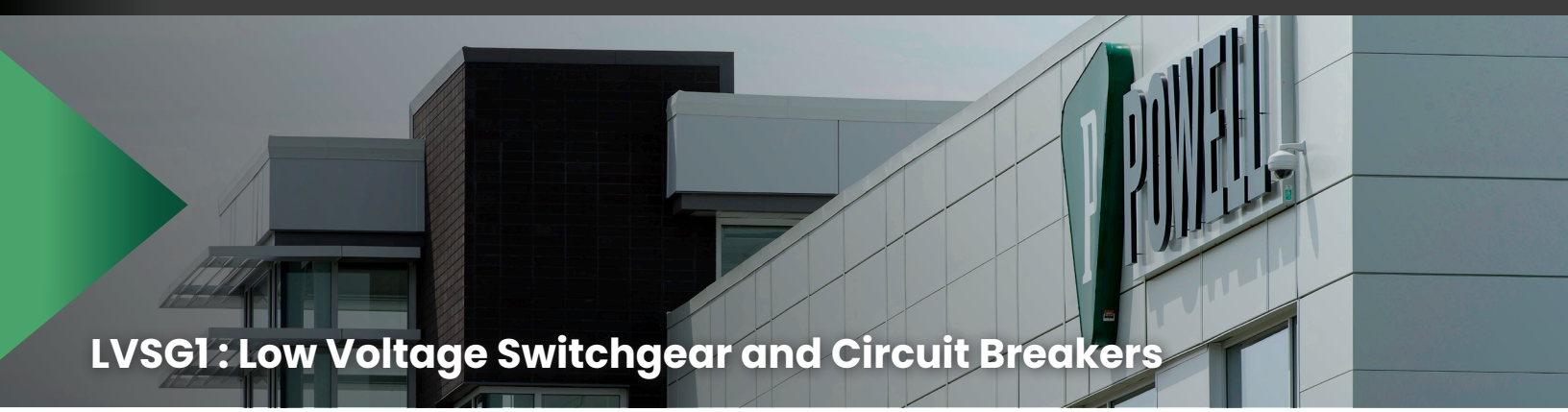


LVSG1 : Low Voltage Switchgear and Circuit Breakers

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

COURSE DURATION:

2 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.

CLASSROOM ENVIRONMENT

- 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)

PowlVac1 : PowlVac Switchgear and PVC Circuit Breaker Training

PowlVac® 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.

CLASSROOM ENVIRONMENT

- 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)

Power/Vac1 : PowerVac Switchgear & ML-17 Circuit Breaker Training

Power/Vac® 5kV to 15kV switchgear and ML-17 circuit breaker operation, control schemes, ratings, testing and general preventative maintenance.

COURSE DURATION:

1 DAY (8 HOURS)

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding of Power/Vac® switchgear and ML-17 internals and requirements, as well as learn the diagnostic techniques to accurately identify

CLASSROOM ENVIRONMENT

- Discuss the basic construction and design properties of Power/Vac® switchgear
- Examine individual switchgear components, their locations and function
- Discuss ML-17 circuit breaker componentry and internal circuit design
- 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)

LVMC1 : Low Voltage Motor Control – Non-Software

Low voltage motor control center and contactor operation, control schemes, ratings, testing and general preventative maintenance.

COURSE DURATION:

2 Hours

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding on low voltage motor control center

CLASSROOM ENVIRONMENT

- 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)

MVMC1 : Medium Voltage Motor Control - Non-Software

Medium voltage motor control center and contactor operation, control schemes, ratings, testing and general preventative maintenance.

COURSE DURATION:

2 Hours

WHO SHOULD ATTEND?

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

CLASSROOM ENVIRONMENT

- 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)

HRG1 : Basic High Resistance Grounding / Ground Protect Plus

Basic theory and operation of Powell Ground-Gard® and Ground Protect Plus control equipment.

COURSE DURATION:

2 Hours

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding of resistanc e grounding purpose, design and applications.

CLASSROOM ENVIRONMENT

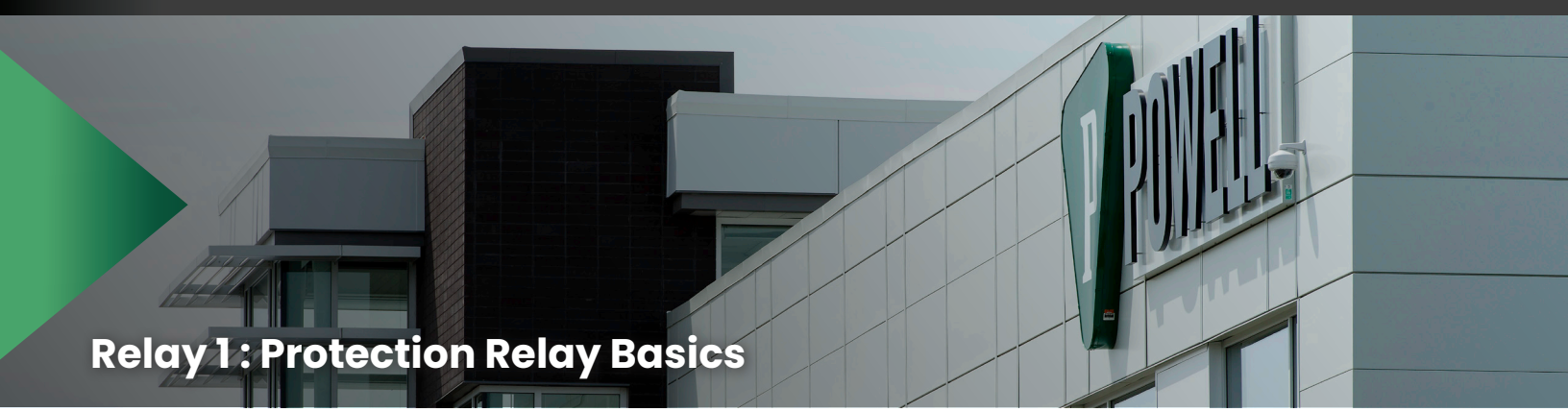
- Discuss the basic needs of equipment grounding with regards to safety
- Examine the basic theory behind high resistance
- Grounding
- Discuss LRG/HRG equipment types and componentry
- Review basic equipment setup and operation
- Discuss basic ground fault location techniques

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)



Relay 1 : Protection Relay Basics

Basic theory as well as application and operation of microprocessor based protection relays.

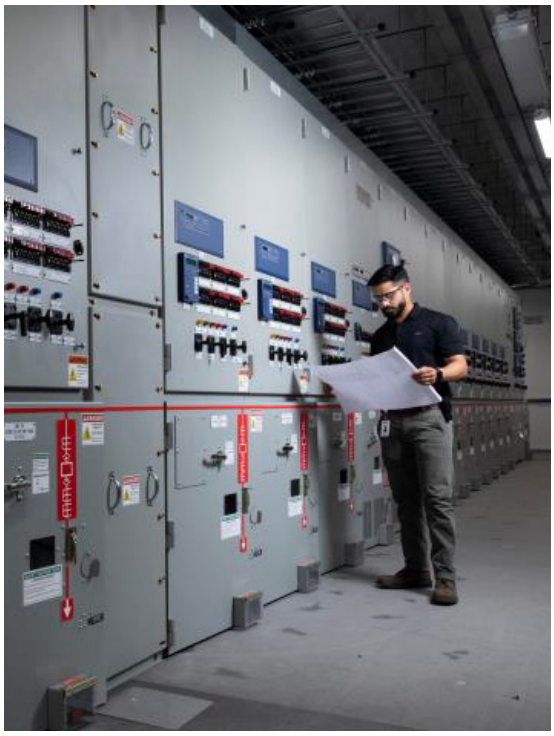
COURSE DURATION:

Standard - ½ DAY (4 HOURS)

Customized - 1 DAY (8 HOURS)

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding of protection theory and relay design, operation and testing.



CLASSROOM ENVIRONMENT

- 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
- Walk-through 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)

PWLSMART1 : Condition Monitoring Basics / CBM, EcoVisor, PinPoint

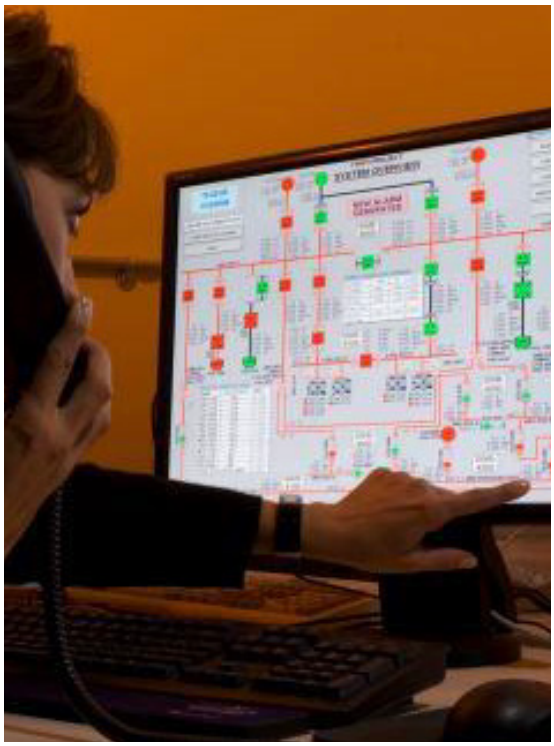
Basic theory and application of Powell Condition Monitoring Devices and Software.

COURSE DURATION:

*1 Day (8 HOURS)****

WHO SHOULD ATTEND?

Electricians, Operators and Junior Engineering Personnel who wish to gain an understanding of Powell's Circuit Breaker Monitor, EcoVisor, and PinPoint/ devices and software.



CLASSROOM ENVIRONMENT

- Understand the basic function of applicable Condition Based Monitoring Equipment
- Review in-detail the capabilities of CBM, EcoVisor, and Pinpoint as applicable
- Review interrogation procedures and basic settings functions
- Discuss communications and security protocols

HANDS-ON APPLICATION

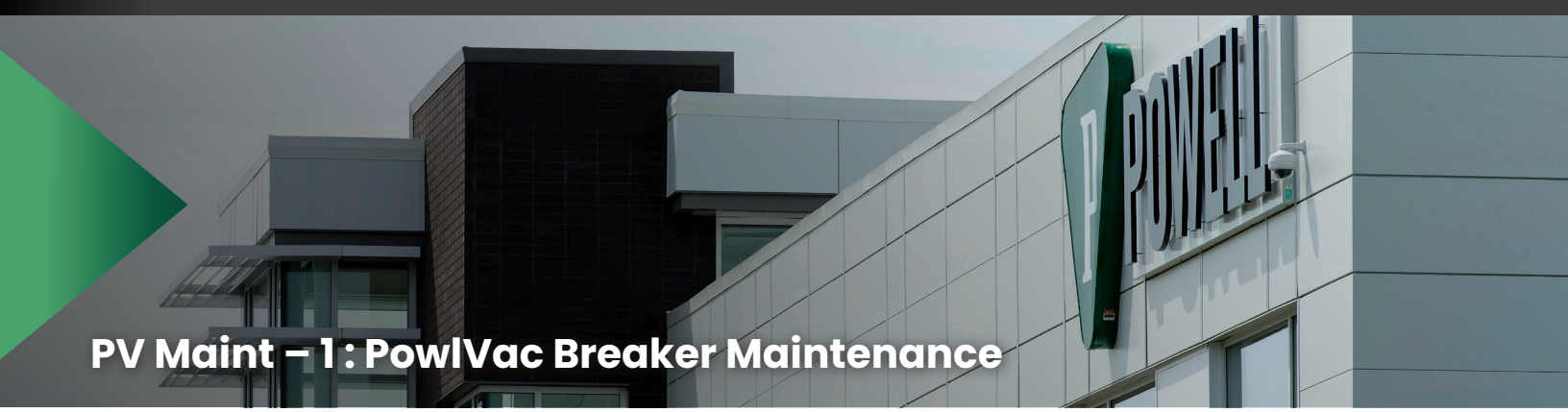
- A walk-through of computer and software set-up and communication connections
- Set-up of communication and devices
- Review of uploaded settings
- Walk-through of viewing and interrogation techniques

LEARNING TOOLS

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

* Devices used can be based on purchased customer equipment

*** Based on equipment availability. Applies training done at PSD Airport Facility in Houston, Texas.



PV Maint – 1 : PowlVac Breaker Maintenance

PowlVac® circuit breaker operation, control schemes, ratings, testing and preventative maintenance.

COURSE DURATION:

3 Days (24 hours total)

WHO SHOULD ATTEND?

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

CLASSROOM ENVIRONMENT

- 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)

ML Maint 1 : Power/Vac ML-17 Breaker Maintenance

Power/Vac® circuit breaker operation, control schemes, ratings, testing and preventative maintenance.

COURSE DURATION:

3 Days (24 hours total)

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding of our Power/ Vac® Circuit Breaker internals and requirements, as well as learn the diagnostic techniques to accurately identify mechanical and electrical problems when they occur.

CLASSROOM ENVIRONMENT

- Examine Power/Vac® circuit breaker components
- Discuss the internal circuit design
- Discuss operational procedures

HANDS-ON APPLICATION

- Overview of the tools and safety requirements for Power/Vac® 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)

Transit 1 : Rectifier Transformer and Rectifier and Controls

Theory and application of Traction Power rectifier systems

COURSE DURATION:

1 Day (8 Hours)

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding of the purpose, design and application of rectifiers, rectifier transformers and applicable safety systems.

CLASSROOM ENVIRONMENT

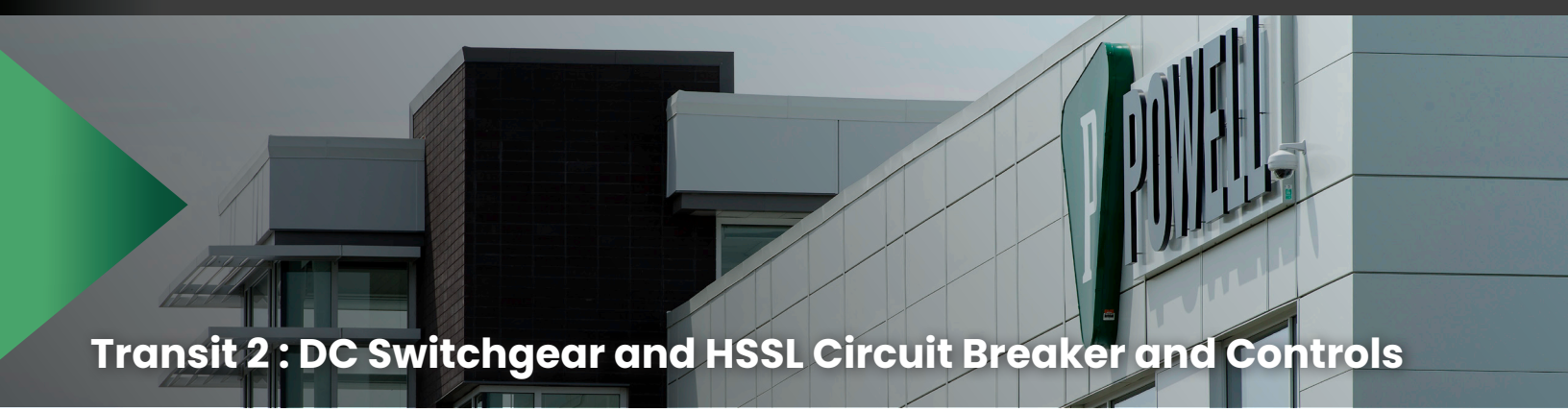
- Discuss the purpose of design and ratings for rectification equipment in traction power substations
- Examine the basic electronic theory of wave shaping and voltage rectification
- Discuss the major components and operation of traction power specific transformers and silicon diode rectifiers
- Discuss 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

- 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)



Transit 2 : DC Switchgear and HSSL Circuit Breaker and Controls

Direct current switchgear and circuit breaker operation, control schemes, ratings, testing and general preventative maintenance.

COURSE DURATION:

1 DAY (8 Hours)

WHO SHOULD ATTEND?

Electricians, Maintenance, Operating and Engineering personnel who wish to gain an understanding on DC distribution switchgear design and operation.

CLASSROOM ENVIRONMENT

- 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

- 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)

Customized Training Courses

Are you looking for a program that is tailored to match your equipment?

We can combine elements of our existing courses or work with you to develop specific training material to suit your application or engineering specifications.

Customized training can be conducted at the customer site.

CLASSROOM ENVIRONMENT

- Discuss theory and practical applications tailored to meet the requirements of your team
- Information and teachings are custom to your specific equipment and applications

HANDS-ON APPLICATION

- Utilize equipment for identification and explanation of components and functionality
- Insertion and removal demonstrations and exercises using manual and remote electrical racking devices 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)

Get the Most Out Of Your Employees with Powell Technical Training

TRAINING LOCATION
Courses can be held at a Powell Facility or on-site at our customer's facilities. Other facilities can be arranged and are subject to additional room and equipment charges. Trainees' accommodations, travel costs and expenses are not included; this should be handled directly by the customer. Powell will provide directions as well as a list of preferred hotels once booking is confirmed, upon request. For flights greater than 6 hours in duration or overseas travel, the trainer will travel business class or equivalent. The trainer's standby and travel time will be charged at an additional rate. If required, a fixed cost can be agreed upon once the location and number of trainees have been confirmed.

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, for an additional cost. 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. As a result, Powell, 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.

NEED MORE INFORMATION?
Please e-mail at info@powellind.com and a service advisor will contact you to discuss your specific training needs and requirements.

OTHER POWELL LOCATIONS

Corporate Headquarters – Electrical Division Houston
8550 Mosley Road, Houston, Texas, USA 77075
Phone: +1 713.944.6900 | Fax: +1 713.947.4453

United States
Electrical Division Airport / Global Services / Automation Division - Houston, TX
Electrical Division Houston Fabrication Yard - Houston, TX
Electrical Division North Canton, OH
Electrical Division Northlake, IL

Canada
Powell Canada Inc. - Acheson, Alberta

Middle East
Powell (Middle East) B.V. Bahrain - Al Seef, Bahrain

Asia
Powell Industries Asia Pte. Ltd. - Asia, Singapore

Custom Engineered Solutions

Powell's Overall Product Overview

- ANSI MV and LV Switchgear, Motor Control
  - Underground Distribution Switches
- IEC MV and LV Controlgear
- DC Switchgear and Rectifiers
- Iso-Phase, Non-Segregated Phase and Cable Bus Systems
  - Segregated Phase Bus and DC Bus
- Power Control Rooms, E-Houses, Offshore Modules
- Digital Solutions and Power Automation Services
- Product Life Extentions, Maintenance and Support

Core Competencies

Meeting electrical energy distribution and control needs with multifaceted resources in engineering, project management, manufacturing, field services, technical support, and product development.

Markets & Industries

- Data Centers
- Utilities
- Renewables
- Commuter Railways
- Pulp & Paper
- Petrochemical Plants
- EV Charging Infrastructure
- LNG Facilities
- Mining & Metals
- Oil & Gas

POWELL®

Scan the QR code for a direct link or find us online at www.powellind.com
For more info, see the drop downs in the main menu or contact our sales representatives today!