



DC POWER TRAINING SERVICES

Technical Courses



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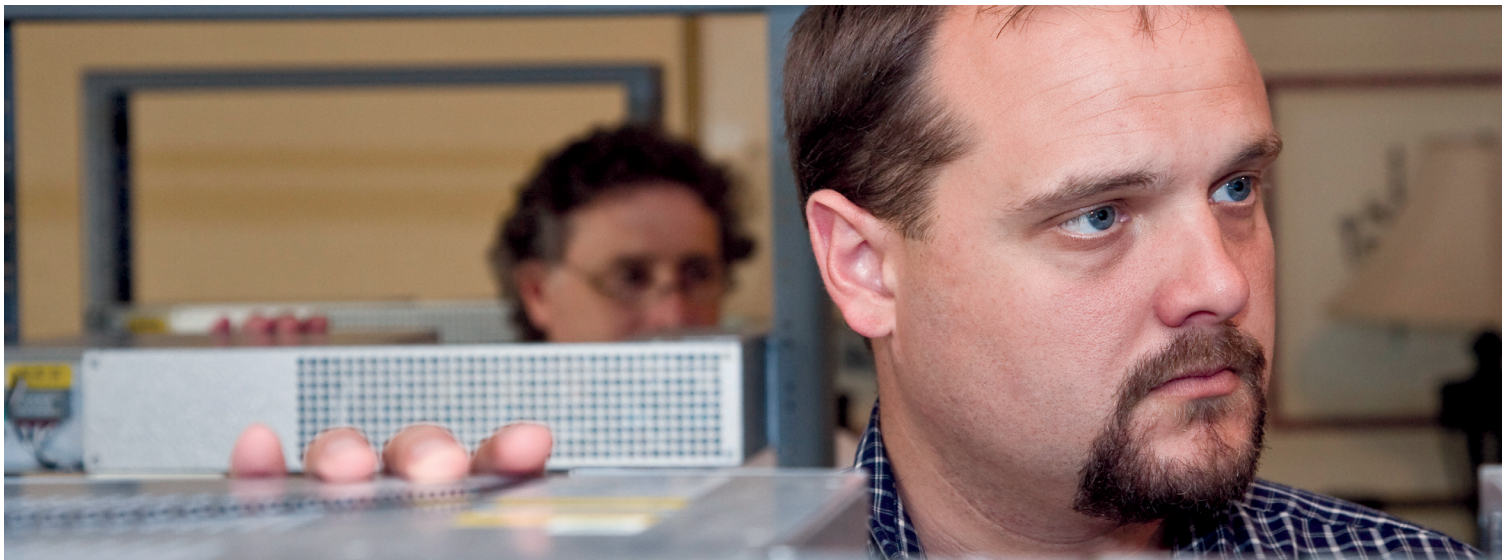
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In the final analysis, what sets your company apart is the people — their unique talents and temperaments. Their knowledge, skill, and passions, are the factors that, ultimately, make the difference between success and failure.

Customer Education

Vertiv™ offers world-class education and training opportunities to help your staff understand the potential of your communication investment.

- Maximize effectiveness of your Vertiv Products.
- Enable your technicians by training on the latest power equipment and techniques.
- Provide experienced trainers with strong technical knowledge and professional training skills.
- Offer training at the Vertiv Training facility in Lorain Ohio in a large classroom environment and state-of-the-art operational and fully equipped power-training lab for practical exercises.
- Offer training at your own site and target the training to the specific needs of your people and organization.
- Assess your power training needs and deliver different levels to suit all needs.



NetSure™ 211 SERIES

NS-211

NetSure™ 211 Series

-48 VDC, 10 A to 120 A

120/208/240 VAC, 4 kW to 6 kW

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will

include designing a complete power room using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings

DAY 2

NetSure 211 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the ACU+ and Rectifiers
- System adjustments using the ACU+

- Performing initial system startup and test
- Low Voltage Disconnect settings (if applicable)
- Alarm operation and connections
- Testing system alarm thresh-holds
- Troubleshooting
- Accessing the ACU+ locally
- Accessing the ACU+ via Web Browser
- IB2 Interface board
- System Interface Circuit Card
- LVD Driver card (optional)
- Manual Battery Disconnect Circuit card (optional)
- Extended Interface Board (optional)
- SMDU+ (optional)
- SMDU (optional)
- System maintenance
- Connection integrity
- Distribution Panels
- Circuit card replacement
- Checking 3000 W or 1500 W rectifier modules
- Transferring files to and from the controller
- Hands-on experience

NetSure™ 502 SERIES

NS-502

NetSure™ 502 Series

-48 VDC, 40 A to 600 A

120/208/240 VAC, 5100 W or 22 kW

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings
- NetSure Model Nomenclature

DAY 2

NetSure 502 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the Controller, Rectifiers and Distribution

- Navigating the controller (SCU+/ACU+)
- System adjustments using the controller
- System adjustments using the Ethernet port on the Controller
- Performing initial system startup and test
- Low Voltage Disconnect setting (if applicable)
- Alarm operation and connection
- Testing system alarm thresh-holds
- System maintenance
- Connection integrity
- Properly cleaning fans and filters
- Troubleshooting
- Checking 2000W rectifier modules
- Distribution modules
- IB2 board (optional)
- Downloading & uploading Controller (requires laptop)
- Hands-on experience
- Transferring files to and from the controller

NetSure™ 701 SERIES

NS-701

NetSure™ 701 Series

**-48 VDC, 60 A to 4000 A
208/240 VAC, 4000 Amp**

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days (If LMS (Lorain Monitoring System) cards are embedded into the NetSure system, additional training is required (3 days))

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings

DAY 2

NetSure 701 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system..

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the MCA and Rectifiers

- Navigating the Meter-Control-Alarm Panel
- System adjustments using the MCA
- System adjustments using the LMS (if applicable)
- Performing initial system startup and test
- Low Voltage Disconnect settings (if applicable)
- Alarm operation and connections
- Testing system alarm thresh-holds
- Optional external power system alarms
- Troubleshooting

- Accessing the MCA via Web Browser (if applicable)
- System maintenance
- Connection integrity
- Properly cleaning fans and filters
- Circuit card replacement
- Checking 3200W rectifier modules
- Downloading & uploading MCA configuration (if applicable)
- Testing the wiring of a complete unit using the proper drawings
- Hands-on experience

NetSure™ 710 SERIES

NS-710

NetSure™ 710 Series

+24 VDC, 125 A to 2000 A

208/240 VAC, 2000 Amp

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings

DAY 2

NetSure 710 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the ACU+ and Rectifiers
- System adjustments using the ACU+

- Performing initial system startup and test
- Low Voltage Disconnect settings (if applicable)
- Alarm operation and connections
- Testing system alarm thresholds
- Troubleshooting
- Accessing the ACU+ locally
- Accessing the ACU+ via Web Browser
- IB2 Interface board
- System Interface Circuit Card
- LVD Driver card (optional)
- Manual Battery Disconnect Circuit card (optional)
- Extended Interface Board (optional)
- SMDU+ (optional)
- SMDU (optional)
- System maintenance
- Connection integrity
- Distribution Panels
- Circuit card replacement
- Checking 3000 W or 1500 W rectifier modules
- Transferring files to and from the controller
- Hands-on experience

NetSure™ 721 SERIES

NS-721

NetSure™ 721 Series

-48 VDC, 480 A to 4000 A

208/240 VAC, 4000 Amp

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings
- NetSure Model Nomenclature

DAY 2

NetSure 721 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the ACU+ and Rectifiers
- System adjustments using the ACU+

- Performing initial system startup and test
- Low Voltage Disconnect settings (if applicable)
- Alarm operation and connections
- Testing system alarm thresh-holds
- Troubleshooting
- Accessing the ACU+ locally
- Accessing the ACU+ via Web Browser
- IB2 Interface board
- System Interface Circuit Card
- LVD Driver card (optional)
- Manual Battery Disconnect Circuit card (optional)
- Extended Interface Board (optional)
- SMDU+ (optional)
- SMDU (optional)
- System maintenance
- Connection integrity
- Distribution Panels
- Circuit card replacement
- Checking 3200 W or 2000 W rectifier modules
- Transferring files to and from the controller
- Hands-on experience

NetSure™ 722 SERIES

NS-721

NetSure™ 722 Series

-48 VDC, 365 A to 2000 A

208/240 VAC, 2000 Amp

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings
- NetSure Model Nomenclature

DAY 2

NetSure 722 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the ACU+ and Rectifiers

- System adjustments using the ACU+
- Performing initial system startup and test
- Alarm operation and connections
- Testing system alarm thresh-holds
- Troubleshooting
- Accessing the Bulk Distribution locally
- Accessing the ACU+ via Web Browser
- IB2 Interface board
- System Interface Circuit Card
- System maintenance
- Connection integrity
- Bulk distribution
- Circuit card replacement
- Checking 3500 W rectifier modules
- Transferring files to and from the ACU+
- SMTemp Concentrator (If Applicable)

NetSure™ 801 SERIES

NS-801

NetSure™ 801 Series

**-48 VDC, 1000 A to 16,800 A
208/380/240 VAC, 16,800 Amp**

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days (If LMS (Lorain Monitoring System) cards are embedded into the NetSure system, additional training is required (3 days))

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings
- NetSure Model Nomenclature

DAY 2

NetSure 801 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Local controls and indicators
- Can Bus communication between the ACU+ and Rectifiers
- System adjustments using the ACU+

- Performing initial system startup and test
- Low Voltage Disconnect settings (if applicable)
- Alarm operation and connections
- Testing system alarm thresh-holds
- Troubleshooting
- Accessing the ACU+ locally
- Accessing the ACU+ via Web Browser
- IB2 Interface board
- System Interface Circuit Card
- LVD Driver card (optional)
- Manual Battery Disconnect Circuit card (optional)
- Extended Interface Board (optional)
- SMDU+ (optional)
- SMDU (optional)
- System maintenance
- Connection integrity
- Distribution panels
- Circuit card replacement
- Checking 5,800 W rectifier modules
- Transferring files to and from the controller
- Hands-on experience

NetSure™ 802 SERIES

NS-802

NetSure™ 802 Series

-48 VDC, 2,000 A to 10,000 A

208/240 VAC, 10,000 Amp

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days (If LMS (Lorain Monitoring System) cards are embedded into the NetSure system, additional training is required (3 days))

DAY 1

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DC Power Overview

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will

include designing a complete power room using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Vertiv power equipment.

- Text section
- SAG Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application Drawings

DAY 2

NetSure 802 Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a NetSure power system.

- Theory and operation of the AC input and DC output
- Can Bus and Router operation
- Navigating the Meter-Control-Alarm Panel

- Adjustments the for 200A Power Conversion Units
- Constant power operation
- Testing the High Voltage Shutdown
- Adjustments for the monitoring system
- Voltage alarm set points
- Alarm operation and connections
- Alarm relay mapping
- System maintenance
- Connection integrity
- Troubleshooting
- Properly cleaning fans and filters
- Distribution devices and arrangements
- Identifying and resolving alarm conditions
- Checking 11,600 W or 12,000 W rectifier modules
- Testing the wiring of a complete unit using the proper drawings
- Accessing system via ethernet (optional)
- Downloading and uploading the MCA configurations
- Hands-on experience

BATTERY SYSTEMS

BA-001

Battery Systems

DC Power

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

DAY 1

Application of Central Office Power

This topic will provide a clear understanding of the purpose, function, sizing, and operation of Batteries, Converters, Inverters, Power Boards, and Rectifiers. A walk through of an operating power room will be provided for demonstration, when available.

- Sizing and selecting an appropriate battery plant
- Sizing and selecting an appropriate power board
- Sizing and selecting appropriate rectifiers
- Sizing and selecting appropriate converters
- Sizing and selecting appropriate inverters
- All power equipment sized in reference to customer specified load/s

DAY 1 AND 2

Batteries – Operation, Safety, Sizing and Maintenance

This program provides the operation, sizing and maintenance criteria to understand the function of batteries.

- Flooded Lead Acid Cells
 - Theory of Operation
 - Tools and Supplies Required
 - Safety Precautions
 - Visual Inspections
- Comparison of Lead-Antimony and Lead-Calcium Batteries
- “Maintenance-Free” Cells
 - Term “Maintenance-Free”
 - Safety Precautions
 - Types and Theory of Operation
- Specific Gravity and Hydrometer Readings
- Temperature
- Specific Gravity Correction
- Using the Voltmeter
- Water and Lead-Acid Storage Cells
- Hazards of Equalize & Boost Charging
- Controlling Critical Factors
- “Health” Tips Flooded Cells or Sealed
- Using a Alber Cellcorder

BASIC DC POWER

BP-003

Basic DC Power Ferroresonant Systems

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 4 Days

DAYS 1 THROUGH 3

Introduction

This period is allocated for introductions, registering of the students, and when applicable, a tour of the facility.

Safety

This topic will provide an understanding of the many issues that can affect the safety of those working in a power plant environment. A detailed list of safety issues will be discussed with the students.

Application of Central Office Power

This topic will provide an understanding of the application, function, sizing and operation of batteries, converters, inverters, power boards, and rectifiers. An operating power room will be utilized for demonstration purposes. 1. The purpose of batteries, converters, inverters, power boards, and rectifiers 2. Basic considerations in designing a power plant 3. Sizing and selecting an appropriate battery back-up system 4. Sizing and selecting an appropriate power board 5.

Sizing and selecting appropriate rectifiers 6. Sizing and selecting appropriate converters 7. Sizing and selecting appropriate inverters 8. Determining the sizes of cables required for the power plant.

Documentation and Support

This topic will provide an understanding of how to utilize the technical manuals that are provided for Vertiv power equipment. 1. Documentation and part numbering system 2. Customer documentation 3. Power Data sheets 4. Engineering drawings 5. Electrical/recommended spare parts list 6. Model designations 7. Customer support services

Lorain Rectifiers

This topic will provide an understanding of the purpose, operation, and maintenance of two types of rectifiers; a Silicon Controlled Rectifier (SCR) type rectifier, and a ferroresonant type rectifier. Hands-on training is provided. Note: Rectifier models other than those mentioned may be used for this training.

- Functions of a rectifier
- Definition of terms associated with rectifiers
- Safety
- Recommended test equipment
- Transformers, diodes, and capacitors
- Differences between ferroresonant and SCR rectifiers
- Controls and alarms
- Rectifier connections
- Precharging capacitors on the DC output of the rectifier
- Isolating and reconnecting a rectifier in an operating power plant
- Location and function of parts within the RHM400D50 model rectifier
- Theory of operation for the RHM/RL model rectifier
- Adjustments to the RHM/RL model rectifier

BASIC DC POWER

BP-003

Basic DC Power
Ferroresonant Systems
(continued)

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 4 Days

DAYS 3 THROUGH 4

Lorain Inverters

This topic will provide an understanding of the purpose, operation, and maintenance of two types of inverters; a mechanical switching inverter, and a static switching inverter. Hands-on training is provided. Note: Inverter models other than those mentioned may be used for this training.

- Functions of an inverter
- Safety
- Principle of operation
- Differences between mechanical switch and static switch inverters
- SCR and static switch operation
- Output option
- Inverter theory

- Location and function of parts within the WDA502B model inverter
- Theory of operation for the WDA502B model inverter
- Adjustments to the WDA502B model inverter
- Location and function of parts within the WAA103B model inverter
- Theory of operation for the WAA103B model inverter
- Adjustments to the WAA103B model inverter

Lorain Converters

This topic will provide an understanding of the application and operation of various model converters.

- General operation and application of converters
- Types of converters and their features

Lorain Power Boards

This topic will provide an understanding of the purpose, operation, and maintenance of a power board. Hands-on training is provided.

- Power Board overview
- Functions of a Power Board
- Safety
- Components of the Power Board
- Alarm control
- Low Voltage Disconnect theory
- Indicator LED's
- Test circuit
- Connection points
- Function and setup of a High Voltage Shutdown panel
- Function and setup of an Auto/Manual Equalize panel
- Low Voltage Disconnect adjustment
- Meter Control, and Alarm Panel

DGU MONITORING

DG-002

DGU Monitoring

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 3 Days

This course provides exclusive training on the Lorain S.M.A.R.T. Data Gathering Unit. The theory of operation and application scenarios will be discussed to enhance the usage of the DGU. Hands-on training will be provided throughout the duration of the course.

DAY 1

Circuit Card Description

- Power Supply
- Central Processing Unit
- Analog
- Binary
- Relay
- Status Led
- Communications Assembly
- Printer
- Front Panel Display Assemblies
- Modem Assembly
- Voice Assembly
- Option Assembly

DAY 2

Documentation

- J Drawings
- SD Drawings
- T Drawings
- Application Drawings
- Programming commands
- Programming

DAY 3

Documentation Continued

- Software options and applications
- Basic configuration and programming examples
- Monitoring and alarm exercises
- Wiring list and block schematic training examples
- Installation details
- Data Gathering Unit Editor Software feature
- Hands on training for all items

LMS1000 MONITORING

LM-001

LMS1000 Monitoring

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 3 Days

This course provides exclusive training on the LMS1000 Unit. The theory of operation and application scenarios will be discussed to enhance the usage of the LMS1000. Hands-on training will be provided throughout the duration of the course. Circuit Cards & Drawing.

DAY 1

Description

- Circuit card
- Central Processing Unit / Power Supply
- Analog
- Binary
- Modem
- Relay
- Temperature
- Embedded nodes
- Expansion nodes
- Communication Ports
- System Application Guide Drawings
- Schematic Diagram Drawings

DAY 2

Documentation

- Programming commands
- Creating program lines
- Configuring channels
- Configuring nodes
- Uploading & Downloading data
- Network commands

DAY 3

Documentation Continued

- Software options and applications
- Basic configuration and programming examples
- Monitoring and alarm exercises
- Local and Remote Accessibility
- Hands on training throughout entire training

LARGE VORTEX 200 A

PPW-001

Large Vortex 200 A

Location: Vertiv™ Learning Center (Ohio) / Customer Site

Fee: Call 800-398-8867 for pricing information.

Length: 2 Days

Safety

- Power Plant Safety
- General Safety Precautions
- Personal Protective Equipment
- Power Plant Precautions
- Electrical Hazards
- Tools
- Ladders – Central Office

DAY 1

Application Engineering for DC Power Systems

To provide a thorough understanding of how each piece of equipment operates together in a power plant, this session will include designing a complete power room

using each type of identified power equipment. Several considerations must be taken when properly designing a central office.

- Sizing a DC system for efficient use of AC and DC power
- Sizing and selecting the proper power conversion units for the power plant
- Sizing and selecting DC to AC Inverters
- Sizing and selecting an appropriate string/s of batteries
- Sizing and configuring the Power Distribution Board
- Sizing and selecting DC to DC converters

Documentation and Support

This topic will enable a person to understand how to properly use the manuals that are provided with all Lorain power equipment.

- Text section
- J Drawings
- PD Drawings
- SD Drawings
- T Drawings
- Engineering Application drawings

DAY 1 AND 2

Vortex Power System

Detailed technical training will be provided for the proper use of schematic drawings, adjustments, hands-on training, and the theory of operation of a Vortex power system.

- Theory and operation of the AC input and DC output
- Adjustments using the VLINK software for remote access (if applicable)
- Adjustments for Power Conversion Units

- Voltages
- Current limit
- High voltage shutdown
- Adjustments for the monitoring system
- Voltage alarm set points
- Low Voltage Disconnect setting (if applicable)
- Alarm operation and connection
- Maintenance
- Connection integrity
- Properly cleaning fans and filters
- Troubleshooting

- Identifying and resolving alarm conditions
- Checking rectifier modules
- Testing the wiring of a complete unit using the proper drawings
- Definitions and terms used with the unit such as Float, Equalize, Current Limit, Load share, High voltage shutdown, Shunts, meter calibrations, and electrical components.
- Hands-on experience

Additional Information For Attendees

If you are attending a training program at Vertiv™, Lorain Ohio, here is some information to help you plan your visit.

Location:

The Training Facility is located at 1510 Kansas Avenue, Lorain, Ohio 44052, approximately 24 miles northwest of Cleveland Hopkins International Airport. Travel time between the airport and the Lorain facility is typically 45 minutes. Due to the proximity of the training facility to the airport and area hotels, a rental car is recommended. Parking is available on site.

Contact:

The Training Services Representative may be contacted at 1-800-398-8867 or email address: dcpower.training@VertivCo.com to discuss pricing or any questions that you may have regarding our training services. Our call center is available 8 AM to 5 PM Eastern Standard Time, Monday through Friday, to assist you. If you need an immediate response during off-hours, you may contact Lamont Eatmon's cell phone 440-328-7334.

Arrival:

Classroom hours will be 8:30 AM to 4:30 PM daily unless otherwise specified. Upon arrival, if a receptionist is not at the desk, contact 440-240-0454 (Lynette Smith) to meet and direct you to the training area and your classroom. Breaks will be offered to enable you to stretch, walk, talk or make phone calls. Refreshments will be available AM and PM during breaks. Lunch will be provided by our on-site Charleston Café.

Comfort:

Please select a seat for yourself in the Training Room – you will find each table has been prepared with course material including student manuals, name cards, pens and note pads, etc. for use during the classroom presentation.

Dress:

Due to practical exercises conducted in the training lab, wear cotton clothing – long-sleeved shirts and pants; safety shoes are preferred. A Visitor's Badge must be worn at all times. Please notify us in advance if you need any special assistance while attending the course.

Be sure to bring your laptop computer for all applicable training programs.



Legal Disclaimer

Training proposed is intended to familiarize attendees with the equipment, it is not our intent to prepare personnel to make changes or repair the power equipment. Should the equipment require attention, please contact our Technical Support team at 800-800-5260.

Course material provided, is for use by the trainees, and cannot be reproduced, sold or distributed without the prior written consent of Vertiv.

Prices are subject to change without notice. Cancellation of training after receipt of order with less than 21 days written notice of start date is liable for 50% of the course fee; with less than 14 days notice of start date customer is liable for full tuition.

Program fees do not include state or local taxes.



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