EPEC Bronze Module 1: Introduction to Electrical Products

Objectives

Upon completion of this module, you will be able to:
- Identify the professional advantages of knowing a broad range of electrical products and their relationships within electrical systems.
- Define basic electrical terms, functions, and relationships.
- Follow the EPEC Electrical Products Triangle—a concept you can use to uncover product sales opportunities throughout an electrical system.
- Describe all the considerations that play a part in the product selection process.
- Analyze sample plans and specifications to look for sales opportunities.

Chapter Outline

Chapter One: Expanding Your Opportunities in Electrical Distribution
  A. Your Role in, and Contribution to, the Electrical Industry
  B. The EPEC Opportunity

Chapter Two: The Basics of Electricity
  A. Electricity: The Source
  B. Flow, Force, and Resistance in Electric Current
  C. Circuits and Related Terms
  D. The Relationships of Amperes, Volts, Ohms, and Watts

Chapter Three: The EPEC Electrical Products Triangle
  A. Loads: Light, Heat, Power, Communications, and Receptacles
  B. Controls
  C. Distribution System and Physical Protection
  D. Electrical Protection
  E. Service Entrance
  F. Fittings, Boxes, and Supplies
  G. Tools and Instruments

Chapter Four: Considerations for Product Selection
  A. Product Selection Variables
  B. Industry Influences

Chapter Five: Product Selection Application
  A. From Ideas to Reality
  B. Choices and Trade-Offs in Product Selection

Chapter Six: EPEC Assignment
  A. EPEC Electrical System: The Guardhouse
  B. EPEC Assignment
EPEC Bronze Module 2: Residential

Objectives

Upon completion of this module, you will be able to:

- Recognize common considerations for selection of electrical products used in residential environments.
- Practice using the EPEC Triangle and the National Electrical Code or Canadian Electrical Code introduced in Module 1 to analyze product choices for commercial and residential systems.
- Recognize ways that individual electrical products work together as a system in a residential environment.
- Create product submittals for a specific residential scenario.

Chapter Outline

Chapter One: Lighting Basics
A. What is Light?
B. Vision Basics
C. Lighting Metrics
D. What is Color?
E. Color Rendering
F. Color Temperature
G. How Are They Different?
H. Lamp Families

Chapter Two: Electric Comfort Heating and Controls
A. The Advantages of Zonal Electric Heating
B. Zonal Electric Heat Methods
C. Heating Controls

Chapter Three: Communication Devices
A. What is a Transformer?
B. Residential Communications

Chapter Four: Receptacles
A. Residential Applications

Chapter Five: Distribution System
A. Wire and Cable
B. Cable Types and Applications
C. Series and Parallel Circuits
Chapter Six: Electrical Protection
   A. Circuit Protection: Terms and Definitions
   B. Fuse Construction and Operation
   C. Circuit Breakers
   D. GFCI Devices
   E. AFCIs

Chapter Seven: Service Entrance Equipment
   A. Functions and Components
   B. Load Centers

Chapter Eight: Fittings, Boxes, and Supplies
   A. Boxes, Covers, and Connectors

Chapter Nine: In the Tool Box
   A. Product Opportunities

Chapter Ten: EPEC Assignment
   A. EPEC Electrical System: Single-family Residence
   B. EPEC Assignment
EPEC Bronze Module 3: Light Industrial

Objectives

Upon completion of this module, you will be able to:

- Consider lighting, distribution, and installation needs that impact industrial and commercial applications.
- Use the EPEC Triangle to analyze industrial electrical systems.
- Identify the multiple electrical products required to adequately supply an industrial jobsite.

Chapter Outline

Chapter One: Incandescent Lamps
A. What is a light bulb?
B. Other Types of Incandescent Lamps

Chapter Two: Fluorescent Lamps
A. How do Fluorescent Lamps Work?
B. Types of Fluorescent Lamps
C. Fluorescent Ballasts

Chapter Three: Discharge Lamps
A. High-Intensity Discharge (HID)
B. Low-Pressure Sodium
C. Ballasts & Starters

Chapter Four: Light Emitting Diodes (LED)
A. LED Characteristics
B. How LEDs Work
C. Advantages and Disadvantages

Chapter Five: Electric Heating Products
A. Properties of Heat
B. Product Opportunities

Chapter Six: Motors and Motor Controls
A. Motor Ratings and Terminology
B. Motor Controls
C. Motor Control Diagrams
D. Motor Control Circuits

Chapter Seven: Communication Devices
A. Signaling Devices
B. Industrial and Commercial Communications
C. Exit Signs
Chapter Eight: Receptacles
   A. Receptacles in an Industrial Environment

Chapter Nine: Distribution System and Physical Protection
   A. Three-Phase Systems
   B. Industrial Raceways
   C. Raceway Considerations
   D. Distribution Busway
   E. More on Transformers
   F. Electrical Enclosures

Chapter Ten: Electrical Protection and Service Entrance Equipment
   A. Circuit Protections: Industrial Considerations
   B. Safety Switches

Chapter Eleven: Fittings, Boxes, and Supplies
   A. Installation Opportunities

Chapter Twelve: In the Tool Box
   A. Product Opportunities

Chapter Thirteen: EPEC Assignment
   A. EPEC Electrical System: Cabinet Maker Shop
   B. EPEC Assignment
EPEC Bronze Module 4: Commercial & Outdoor

Objectives

Upon completion of this module, you will be able to:

• Identify what impacts appropriate product selection for industrial and commercial environments.
• Use the EPEC Triangle to analyze industrial and commercial electrical systems.
• Make appropriate product selections for given industrial and commercial applications.

Chapter Outline

Chapter One: What’s a Luminaire?
  A. Concepts of Lighting Control
  B. Luminaire Classifications
  C. Luminaire Mounting Methods
  D. Luminaire Types
  E. Roadway Lighting Distribution Types
  F. Lighting for Highlights and Shadows

Chapter Two: Retail Lighting

Chapter Three: Office Lighting

Chapter Four: Communication Devices

Chapter Five: Receptacles
  A. Isolated Ground Receptacles
  B. Other Receptacles

Chapter Six: Distribution System and Physical Protection
  A. Commercial Considerations
  B. Distribution System Options

Chapter Seven: Electrical Protection and Service Entrance Equipment
  A. Electrical Protection Considerations
  B. Panelboard or Load Center?
  C. Panelboard Characteristics
  D. Multiple Metering

Chapter Eight: In the Tool Box
  A. Product Opportunities

Chapter Nine: EPEC Assignment
  A. EPEC Electrical System: The Strip Mall
  B. EPEC Assignment
EPEC Bronze: Final Exam

This exam presents 100 random questions based on the content presented in Bronze Modules 1 through 4. There is no time limit for this exam, and you need to score 75% or higher to pass.

EPEC Bronze: Capstone Project

Objectives

Upon completion of this module, you will be able to:

- Review plans and specifications.
- Create a bill of materials for the products selected.
- Determine the best product for each application.
- Develop a cut package of all selected products including related items from the EPEC Triangle.
- Consider product selection variables and trade-offs.

Chapter Outline

A. EPEC Electrical System: Enhanced Strip Mall
B. EPEC Capstone Project