



Streamlined Design

How to Streamline and Automate Electrical Design

In today's business climate, it is essential to work faster, smarter and more efficient to stay competitive. This class not only teaches you power system design, it also shows you how to streamline and automate much of the design and analysis process to give you a competitive edge! See how to automate the design of an electric power system. Design the system, run the studies determined device settings - automatically!

Course Credit: 2 Days - 1.6 CEUs or 16 PDHs



Course Agenda

DAY ONE

DEFINING NECESSARY DESIGN DOCUMENTS

One Lines, Panel, Switchboard and Switchgear Schedules, Conductor and Load Schedules, MCC Schedules

REVIEWING THE BUILDING LAYOUT

Building Size, Equipment Location and Size, Electrical Rooms, HVAC, Available Electric Utilities

EQUIPMENT SCHEDULES

Motor Schedules, Laboratory Equipment, Kitchen Equipment, General Equipment Schedules

LIGHTING CIRCUITS

General Lighting Loads, Types of Lighting, Sizing Lighting Circuits, Protection Requirements

GENERAL PURPOSE RECEPTACLES

Locating Receptacles, Number of Receptacles per Circuit, Load Calculations, Demand, Sizing Receptacle Circuits

SIZING CONDUCTORS AND CONDUITS

Ampacity Tables, Phase Conductors, Temperature Correction, Derating, Neutral and Ground Conductors, Conduit Sizing, Oversized Neutrals, Voltage Drop

CIRCUIT PROTECTION

Conductor Protection, Tap Rules, Circuit Breakers, Fuses, Ground Fault Protection, Arc Fault Protection

PANELBOARDS

Sizing Branch Circuits and Devices for Loads, Sizing Panels, Main Device vs. Main Lug, Series vs. Fully Rated, Developing Panel Schedules and Load Schedules

STANDARDIZED TABLES FOR SIZING CIRCUITS

Streamline Circuit Layout With Design Tables. Select Phase, Neutral and Ground Conductors, Conduit Sizing, Overcurrent Protection, by Looking Up Circuit Size

MOTOR CIRCUITS

Motor Loads, Motor Conductors, Short Circuit and Overload Protection, Starter Types and Sizes

DAY TWO

MOTOR CONTROL CENTERS

Sizing the MCC, Laying Out the MCC, Space Factors, Short Circuit Ratings, Main Device Rating

STANDARD TABLES FOR SIZING MOTOR CIRCUITS

Tables for Streamlined Motor Circuit Design, Phase and Ground Conductors, Conduit, Short Circuit Protection

SIZING CIRCUITS FOR HVAC EQUIPMENT

Characteristics of HVAC Equipment, MOCP, MCA, HACR Devices, Local Ground Fault Receptacle Requirements

TRANSFORMERS

Sizing Transformers, Voltage Selection, Transformer Types, Grounding, Delta vs. Wye, Primary and Secondary Conductor Selection and Overcurrent Protection

STANDARDIZED TABLES FOR TRANSFORMERS

Streamline Transformer Circuit Design, Quickly Select Transformer Size, Primary and Secondary Protection and Conductors all by Looking it up in a Table

SERVICE ENTRANCES

Service Entrance Calculations, Demand and Diversity Factors, Main Service Equipment, Ground Fault Protection

COORDINATION WITH THE ELECTRIC UTILITY

Requesting New Service, Voltages, Rates, Utility Owned vs. Customer Owned Equipment, The Final Hook Up

GROUNDING REQUIREMENTS

Separately Derived Systems, Grounding of Transformers and Services, Grounded vs. Ungrounded Systems

AUTOMATING THE DESIGN PROCESS

Computer Programs, Automated Design Examples, Load and Panel Schedules, Circuit Design

BEYOND BASIC DESIGN

Taking Advantage of the Automated Data Base, Coordination, Short Circuit and Arc Flash Studies, Automatic Coordination of Overcurrent Devices