CYMCAP Basic Web Training

March 19th to 21st, 2024

Overview of Training

This training course reviews the fundamental use of the software dedicated to the calculation of ampacity and temperature rise for power cable installations.

This training is designed to help you use the software more effectively. Users learn to collect and assemble cable and installation data to build a model of the power cable installation. Furthermore, the course explores the full range of functionality that is offered in CYMCAP as well as its output capabilities. Finally, users will gain the skills necessary to analyze and interpret the simulation results.

EATON personnel who are thoroughly familiar with the software products and techniques applied instruct the course. Class size is limited so that each user receives personal attention.

SESSION 1 - *Tuesday March 19th 9h00AM-12h30PM EDT*

1.   Introduction to CYMCAP

   a. Purpose
   b. Theoretical background
   c. Operating philosophy
   d. Scope and limitations
   e. Demonstration

2.   Description of the Navigator

3.   The Cable Library and Cable Design Facilities

   a. Brief description
   b. Data preparation

   ➢ Example: Building cable models

4.   The Duct Bank Library and the Duct Bank Designer

   a. Brief description
   b. Data preparation

   ➢ Exercise: Building duct bank models

5.   The Study Library and Steady-State Simulations

   a. Description of studies and executions

   ➢ Example: Create a new study and execution
   ➢ Example: Setup and compute ampacity for a duct bank installation
   ➢ Example: Create a new execution in an existent study – Load Factor
   ➢ Example: Modify an existing execution to perform temperature runs
   ➢ Example: Modify an existing execution to add a heat source

   b. Excel report

SESSION 2 – *Wednesday March 20th 9h00AM-12h30PM EDT*

1. **Steady-State Simulations**
   - a.   Bonding types
   - b.   Modeling exercises: buried cables, cables in ducts, etc.
   - c.   Comparison of results
   - d.   Modeling heat sources
   - e.   Isotherms
   - f.   Major factors affecting ampacity
   - g.   Multiple conductors per phase and circuits
   - h.   Temperature mode
   - i.   Cables in air and Riser poles

2. **Cyclic loading**
   - a. Neher McGrath vs. IEC Method
   - b. Modeling exercises

3. **Transient vs. Steady-State Ratings**
   - a. Time-temperature-ampacity interactions
   - b. Transient engine: Scopes and limitations

4. **The Shape Library – Daily Load Profile**
   - a. Description
   - b. Data preparation
   - c. Scaling factor
   - ➤ Example: Building shapes

5. **The Load Library – Weekly Load Profile**
   - a. Description
   - b. Data preparation
   - c. Meaning of per unit values
   - d. Scaling factors
   - ➤ Example: Building loads by hand

6. **Transient Simulations**
   - a. Activating the transient analysis
   - b. Description of the 6 solution options
   - c. Assigning load to cables

   - ➤ Example: Compute ampacity given time and temperature
   - ➤ Example: Compute temperature given time and current
   - ➤ Example: Compute time given current and temperature
   - ➤ Example: Plot temperature as function of time

SESSION 3 - *Thursday March 21st 9h00AM-12h00PM EDT*

1.   Overview of some add-On Modules
a. Multiple duct-banks and backfills
b. Short-circuit
c. Detailed impedance calculations
d. Unfilled trough
e. Cables crossing
f. Extended report with formulas

2.   Advanced Features
a.   Utilities tab of the Navigator
       i. Change working directory
      ii. Backup your database
      iii. Append a database
      iv. Restore a backed-up database
      v. Copy tagged to