

Calculating Conductor Effects on Overhead Utility Line Design

Featuring new discussions and new handouts

July 7-10, 2014
Myrtle Beach, SC

Instructor: Allen L. Clapp, PE

NEW!

About the seminar

This special Tutorial on Calculating Conductor Effects on Overhead Utility Line Design addresses the increasing problem of inadequate consideration of the effects of sags and tensions on overhead utility lines. Unfortunately, line failures and clearance problems have increased in recent years due to overloaded poles, inadequate clearances, and unplanned loads.

This seminar covers the Southwire's Overhead Conductor Manual, Southwire's SWRate v4.1, Southwire's SAG10® software for sag-tension calculations, and NESC clearances, loadings and strength requirements.

Who should attend

- ◆ designers and staking technicians
- ◆ electrical engineers
- ◆ engineering technicians
- ◆ standards developers
- ◆ make-ready and final inspectors
- ◆ contractors

Important topics

- ◆ Effect of conductor properties on line design
- ◆ How to use SWRate v4.1 software to determine IEEE Std 738 bare conductor temperature and current ratings
- ◆ SAG10® software tutorial
- ◆ Setting up SAG10 software for ease of use.
- ◆ How to use SAG10 software to determine conductor movement, sags, and tensions
- ◆ Determine required clearances between wires and cables at the pole and required pole height
- ◆ Determine required Grade of Construction
- ◆ Using SAG10 software to calculate required conductor attachment and pole locations
- ◆ Using SAG10 software to calculate tension differentials, deadends, angles long span next to short span
- ◆ Choosing conductors to solve clearance problems

Bring a PC laptop set up to be able to download and install software. Check with your IT folks to make sure you can install software on the laptop you bring. No Mac or iPad devices.

In addition, you receive

- ◆ 2012 National Electrical Safety Code
- ◆ Southwire's Overhead Conductor Manual
- ◆ Bound Student Workbook
- ◆ Excerpts from Practical Utility Safety
- ◆ Exercise/Answer sets
- ◆ CEUs and NC PDHs awarded upon successful completion of workshop
- ◆ Plus continental breakfasts, lunches, & refreshments

NESC® and National Electrical Safety Code® are registered trademarks of the Institute of Electrical & Electronics Engineers, Inc. SAG10® and SWRate v4.1 are registered trademarks of Southwire Company in the United States. Product availability and prices, and seminar schedules, instructors and prices are subject to change without notice.

3.5 Days — \$1,695

Day 1

- ◆ Introduction to Southwire's Overhead Conductor Manual
 - Conductor characteristics
 - Sag & tension characteristics
 - Thermal ratings
 - Electrical environmental effects
 - Line design considerations

Lunch

- Voltage upgrade issues
- Thermal uprate issues
- ◆ Using SWRate v4.1 to calculate conductor temperature and ampere rating.
- ◆ IEEE Std 738
- ◆ Required inputs
- ◆ Calculating current limit to match temperature limit
- ◆ Calculating thermal rating to match current rating

Day 2

- ◆ Southwire's SAG10 Version 4.0
 - Introduction to the menus and operation
 - Setting options
 - Selecting conductors
 - Metal
 - ADSS
 - Selecting loading criteria and sag/tension limits
 - NESC loading district loads
 - California G.O. 95 loads
 - NESC maximum tension
 - RUS tension limits
 - Setting custom limits
 - Saving and importing load cases
 - Setting ruling spans
 - Calculating sags and tensions
 - Reports
 - Using report information in other programs

Lunch

- Calculating sags in inclined spans
- Calculating weight and diameter of locked cables and using SAG10 software to calculate sag/tension
- Calculating stringing sags
 - Initial
 - Final
- Calculating horizontal deflection of wind blown conductors
- Offset clipping
- Effect of creep
- Elevated temperature
- Graphic output
 - Galloping ellipses
 - Sag curve
 - Stress-strain charts

Day 3

- ◆ Introduction to NESC clearances
 - General rules
 - Ground clearances
 - Crossing clearances
 - Parallel line clearances
 - Building clearances
 - Vertical clearances on the same line

Lunch

- ◆ Using SAG10 software to calculate required conductor attachment and pole locations

Day 4

- ◆ Introduction to NESC strengths and loadings rules
 - Grades of Construction
 - Loadings
 - Strengths
 - Insulators
- ◆ Using SAG10 software to calculate tension differentials
 - Deadends
 - Angles
 - Long span next to short span

Note: Adjourn @ 11:00am; plan flights for 1:30pm or later.