Power Line Systems

IT'S ALL ABOUT YOUR POWER LINES

2017 PLS-CADD Advanced Training and User Group

Jumpers in PLS-CADD

by

Eric Peyrot
Power Line Systems, Inc.

POWER LINE®
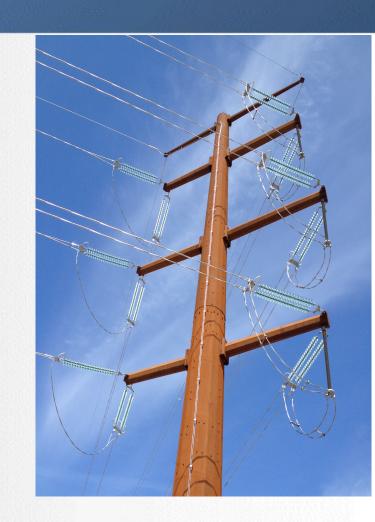SYSTEMS · INC ·

IT'S THE SOLUTION

Jumpers in PLS-CADD

- Goals
  - Clearances from jumpers to structures, guys & wires
  - Visual of jumper behavior
  - Track jumper material

- Jumper Types
  - Flexible
  - Rigid

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Flexible Jumpers

- Wires connecting 2 sections and up to 3 idlers
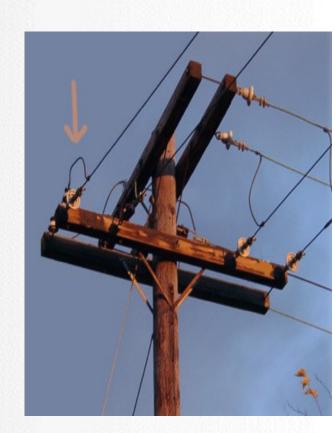
- Geometry options
  - Jumper length
  - Jumper sag

- Included in FE Sag-Tension model
  - Nonlinear catenary shape cable element
  - Properties, wind & ice same as start section wire

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Rigid Jumpers

- Line segments connecting 2 sections and up to 3 idlers

- Geometry options
  - Straight line
  - Custom shape with 10 intermediate points

- Not part of FE Sag-Tension model
  - Shape stretched to fit FE geometry post analysis
  - Load added post analysis
  - Properties, wind & ice load same as start section wire

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Performance

- Speed
  - Requires use of FE condition
  - L2 FE sag-tension models grow up to 3x (slower)
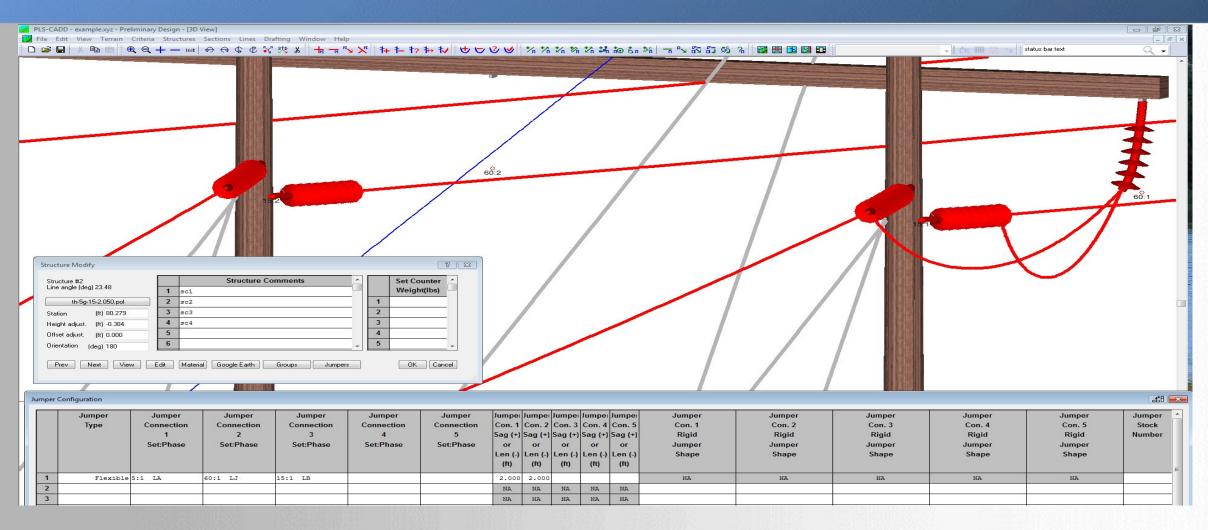 - L3/L4 FE sag-tension not impacted

- Accuracy
  - Real wire neither perfectly flexible or rigid
  - Not modeling rigidity & departure angle at hardware
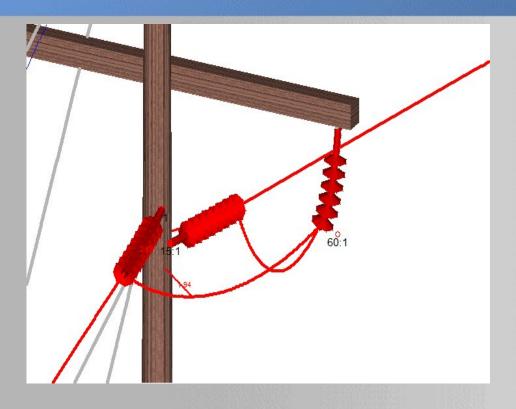 - Line construction isn't inch accurate business
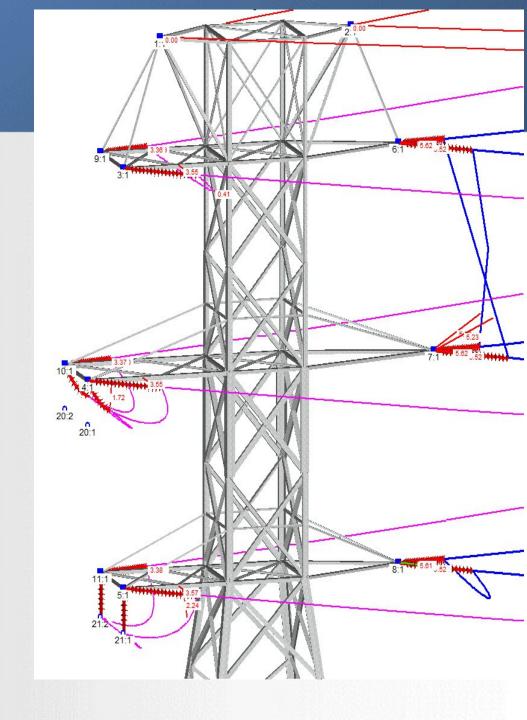
Relevant PLS-CADD Commands

- "Criteria/SAPS Finite Element Sag-Tension" has on/off switch for jumpers

- "Structures/Modify" dialog "Jumpers" button to edit jumpers

- "Lines/Reports/Summary" includes "Jumper Report"

- "Sections/Clearances/To Ground" with "Centerline", "TIN Vertical" and "TIN Minimum Distance" options

- "Sections/Clearances/To Structure"

- "Sections/Clearances/Between Sections"

- "Lines/Reports/Structure Clearances"

- "Lines/Reports/Wire Clearances"

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Jumper Configuration Input

Jumper Clearances to Structure

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Possible Future Improvements

- Edit jumper by clicking on it

- String graphically clicking on attachments to jumper

- Define rigid shape graphically from selected LiDAR survey points

- Copy jumpers between structures

- Predefine jumpers in PLS-POLE & TOWER

- Electrical feature integration

  - Use jumpers to trace circuit & phase

  - Use electrical feature circuit & phase to identify missing jumpers

Advanced Sag & Tension
IEC
FAC 008/009
Materials Management
NESC
LiDAR Modeling
Structural Analysis
PLS-CADD
CSA
Pole Analysis
CENELEC
Distribution
Transmission
NERC Ratings
Line
Optimization
Project Estimating
Jumpers
FAC 003
ASCE
Joint Use
PLS-POLE
GO95
Vegetation Management
1000+ Users in 100+ Countries
Storm Hardening
IEEE
Line Ratings
TOWER
Drafting

POWER LINE
SYSTEMS · INC ·

Madison, Wisconsin 53705, USA
Phone: 608-238-2171 Fax: 608-238-9241
info@powline.com   www.powline.com