

Insulators & Energized Zones



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Agenda

What are insulator energized zones?

Display Options

Structure Clearances

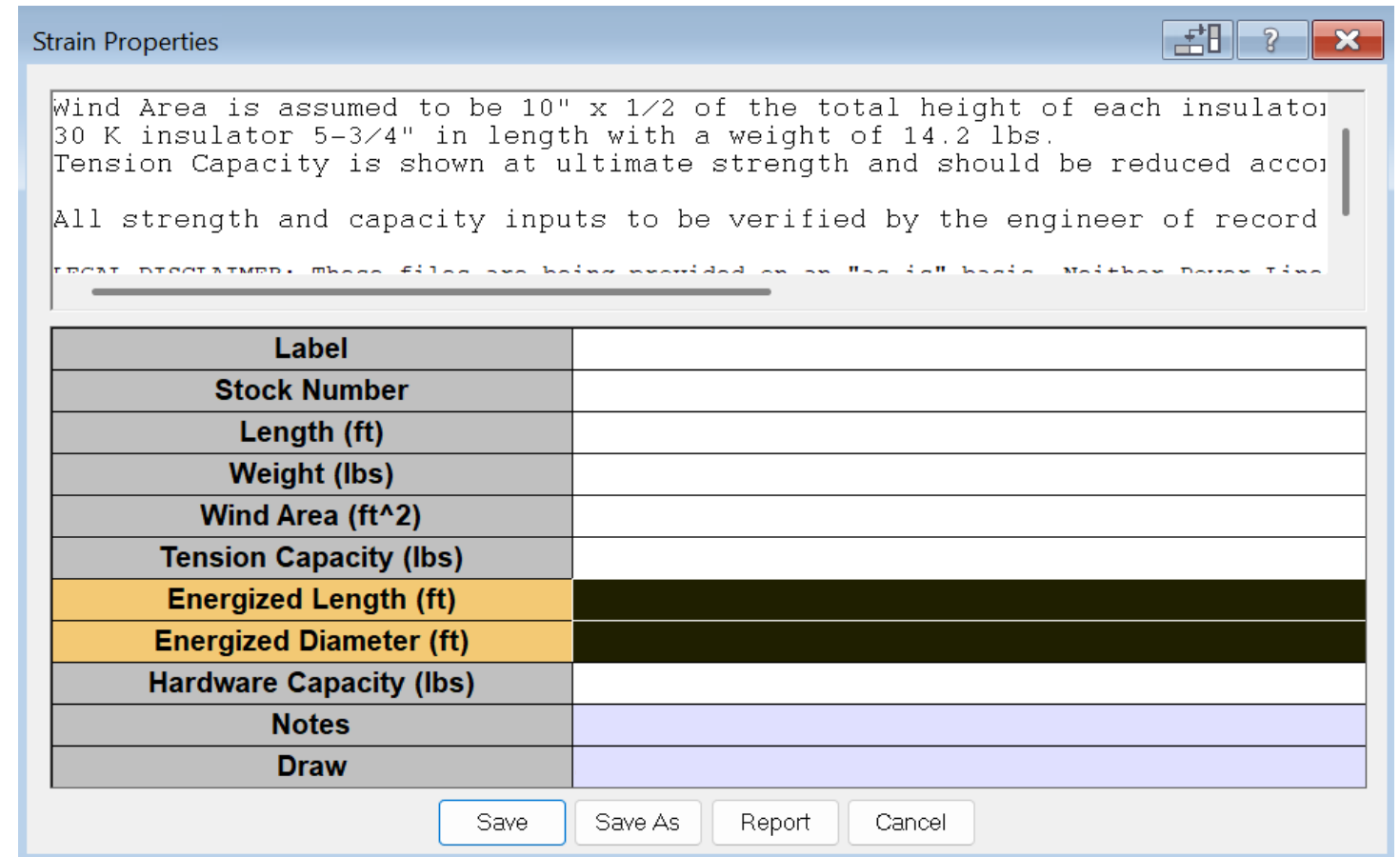
Future proposals

What are insulator energized zones?

What are insulator energized zones?

Strain Insulators

- *Components/Insulators/Strain Properties...*
 - Energized Length
 - Energized Diameter



Wind Area is assumed to be 10" x 1/2 of the total height of each insulator.
30 K insulator 5-3/4" in length with a weight of 14.2 lbs.
Tension Capacity is shown at ultimate strength and should be reduced according to applicable code.
All strength and capacity inputs to be verified by the engineer of record.
LEGAL DISCLAIMER: These files are being provided on an "as is" basis. Neither Power Line

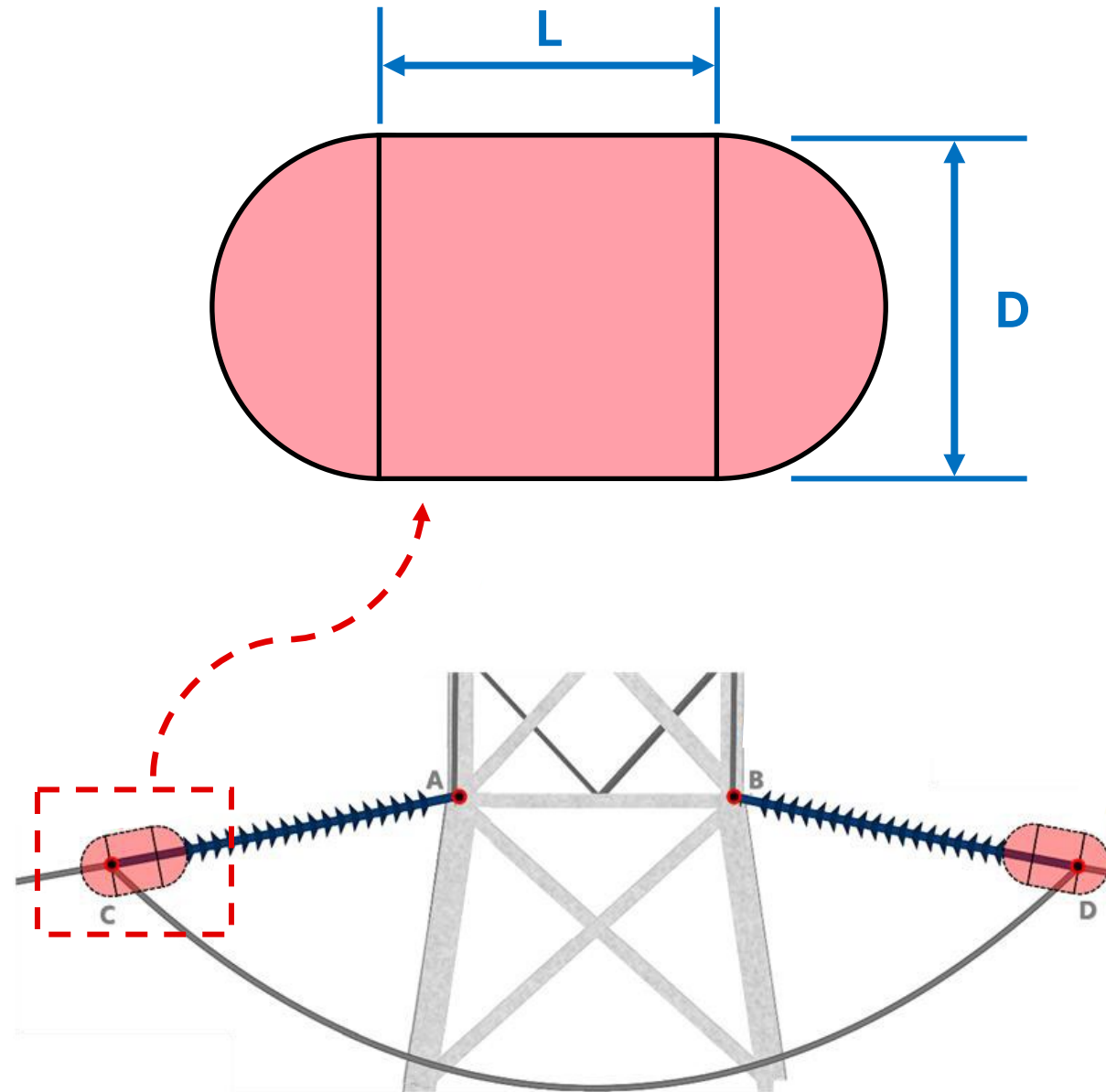
Label	
Stock Number	
Length (ft)	
Weight (lbs)	
Wind Area (ft^2)	
Tension Capacity (lbs)	
Energized Length (ft)	
Energized Diameter (ft)	
Hardware Capacity (lbs)	
Notes	
Draw	

Save Save As Report Cancel

What are insulator energized zones?

Strain Insulators

- *Components/Insulators/Strain Properties...*
 - Energized Length: **L**
 - Energized Diameter: **D**
- Energized cylinder with spherical ends
 - 3D
 - Only used in PLS-CADD



What are insulator energized zones?

Suspension Insulators

- *Components/Insulators/Suspension Properties...*
 - Top Rectangle Width
 - Top Rectangle Height
 - Bottom Rectangle Width
 - Bottom Rectangle Height
 - Vertical Rectangle Height
 - Vertical Rectangle Height

Suspension Properties

Tension Capacity of insulators are at ultimate strength. The strength sh...
Wind Area is assumed to be 10" x 1/2 of the total height of each insulato:
20 K insulator 5-3/4" in length with a weight of 11.8 lbs.
30 K insulator 5-3/4" in length with a weight of 14.2 lbs.

All values should be verified by engineer of record for strength and capa

Label	
Stock Number	
Length (ft)	
Weight (lbs)	
Wind Area (ft^2)	
Tension Capacity (lbs)	
Top Rect Width (ft)	
Top Rect Height (ft)	
Bot. Rect Width (ft)	
Bot. Rect Height (ft)	
Vert. Rect Width (ft)	
Vert. Rect Height (ft)	
Hardware Capacity (lbs)	
Notes	
Draw	
Rigid	

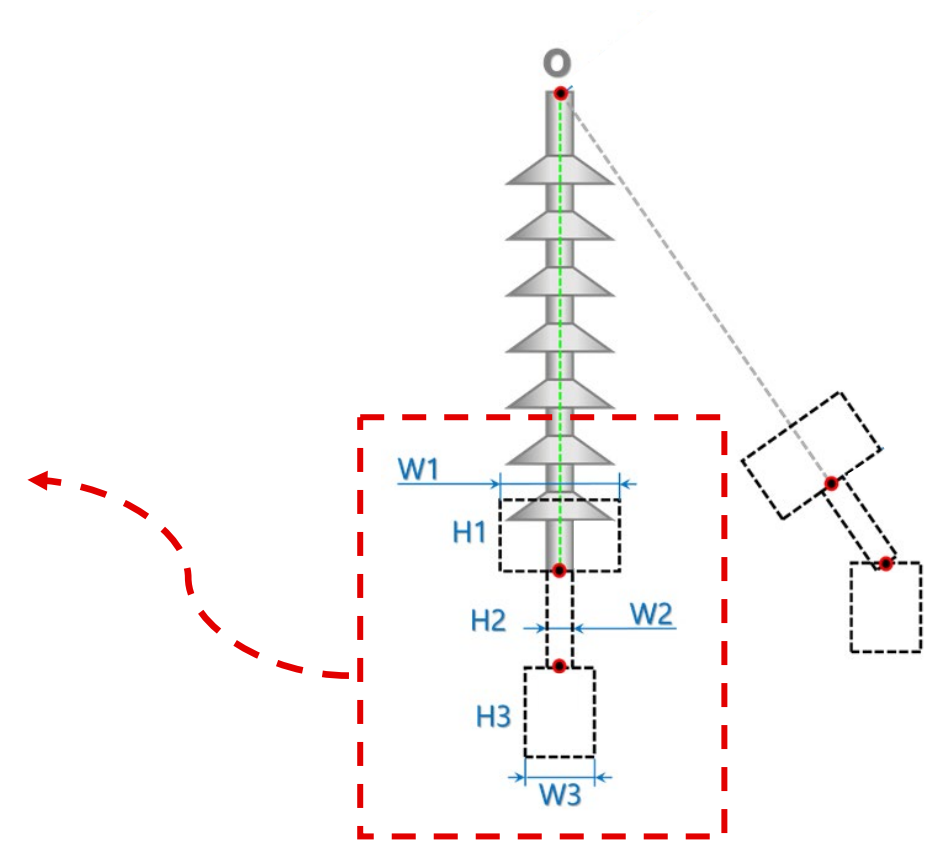
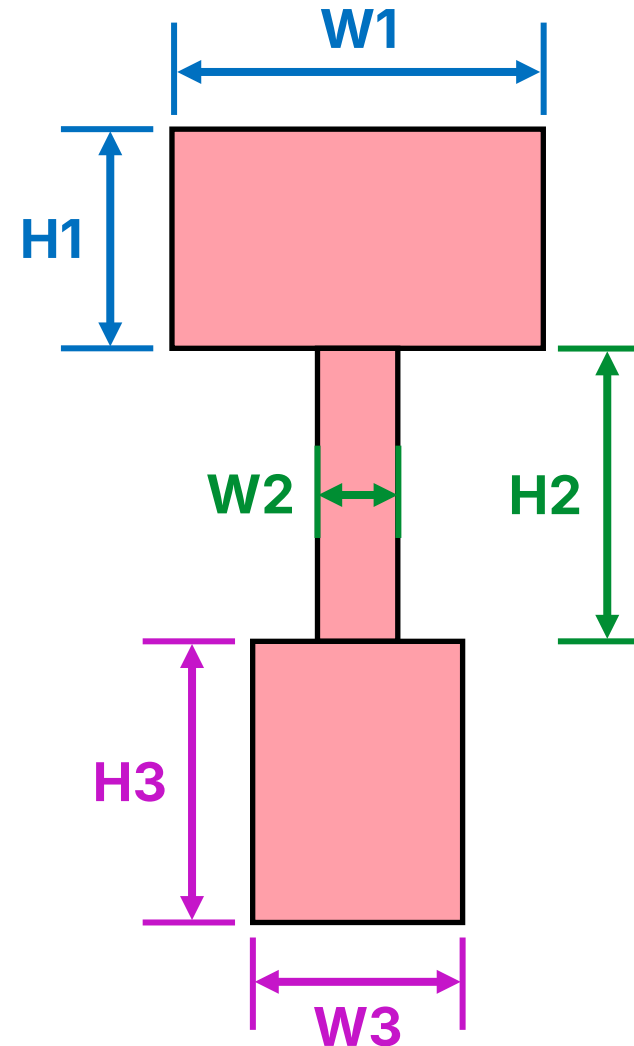
Save Save As Report Cancel

What are insulator energized zones?

Suspension Insulators

○ Components/Insulators/Suspension Properties...

- Top Rectangle Width: **W1**
- Top Rectangle Height: **H1**
- Bottom Rectangle Width: **W2**
- Bottom Rectangle Height: **H2**
- Vertical Rectangle Height: **W3**
- Vertical Rectangle Height: **H3**

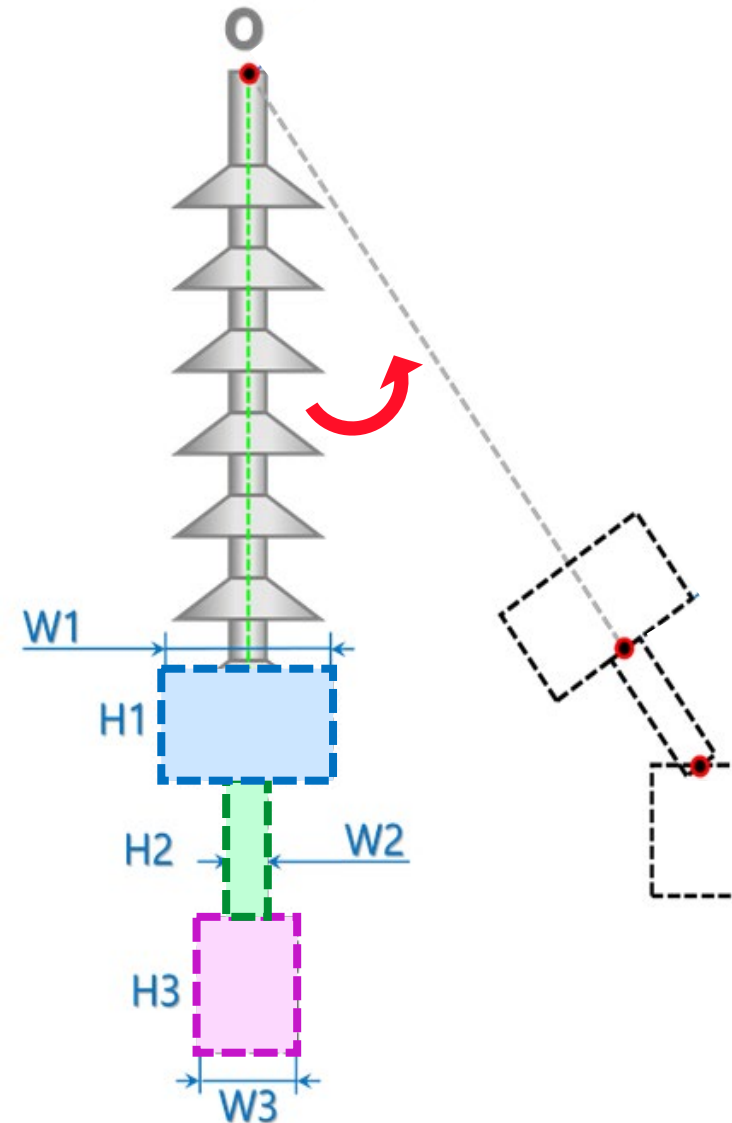


What are insulator energized zones?

Suspension Insulators

- *Components/Insulators/Suspension Properties...*
 - Top Rectangle Width: **W1**
 - Top Rectangle Height: **H1**
 - Bottom Rectangle Width: **W2**
 - Bottom Rectangle Height: **H2**
 - Vertical Rectangle Height: **W3**
 - Vertical Rectangle Height: **H3**
- Energized rectangles
 - 2D
 - Only used in PLS-POLE and TOWER

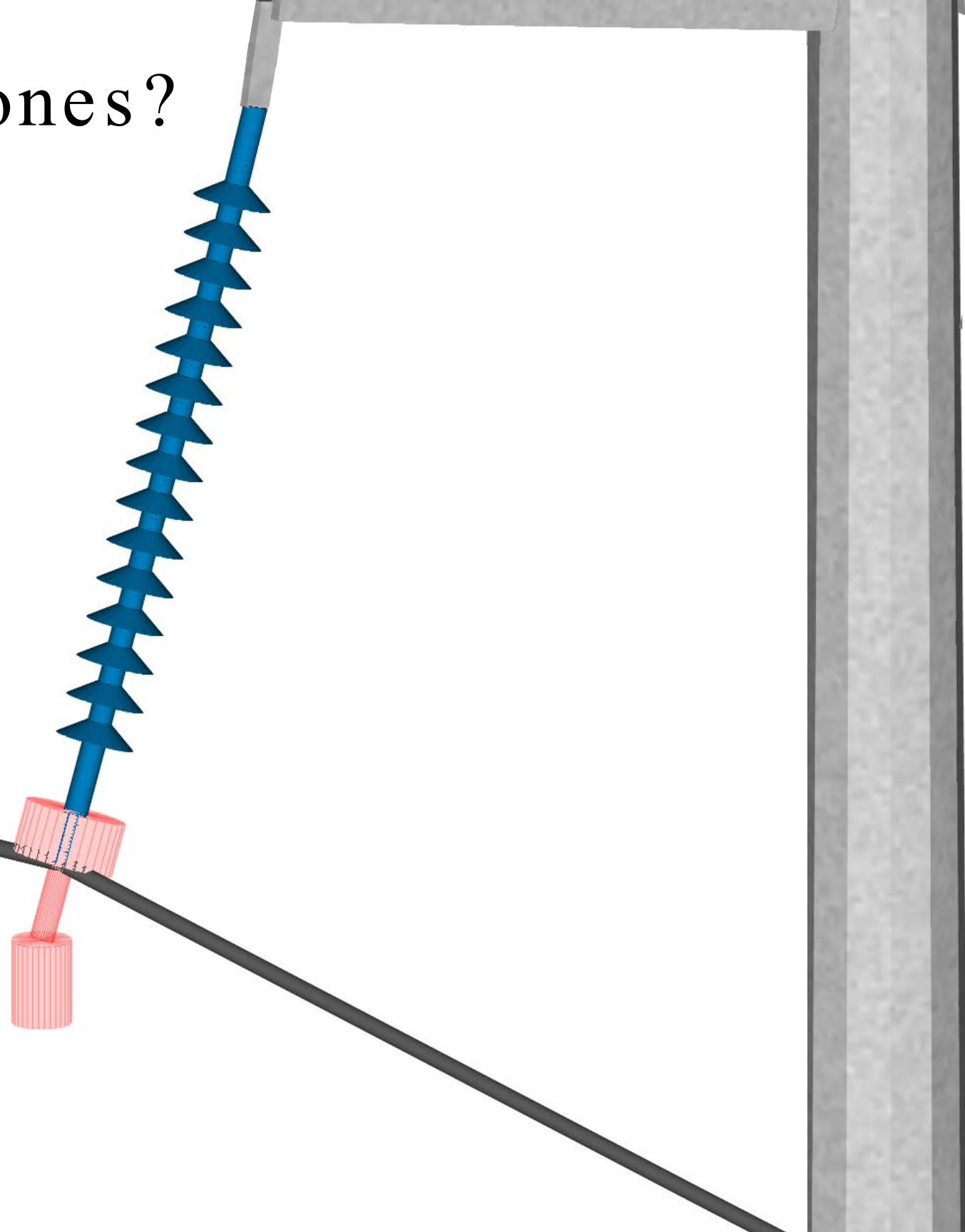
Until now...



What are insulator energized zones?

NEW: Suspension energized cylinders

- Energized cylinders with flat end caps
 - 3D
 - Only used by PLS-CADD



What are insulator energized zones?

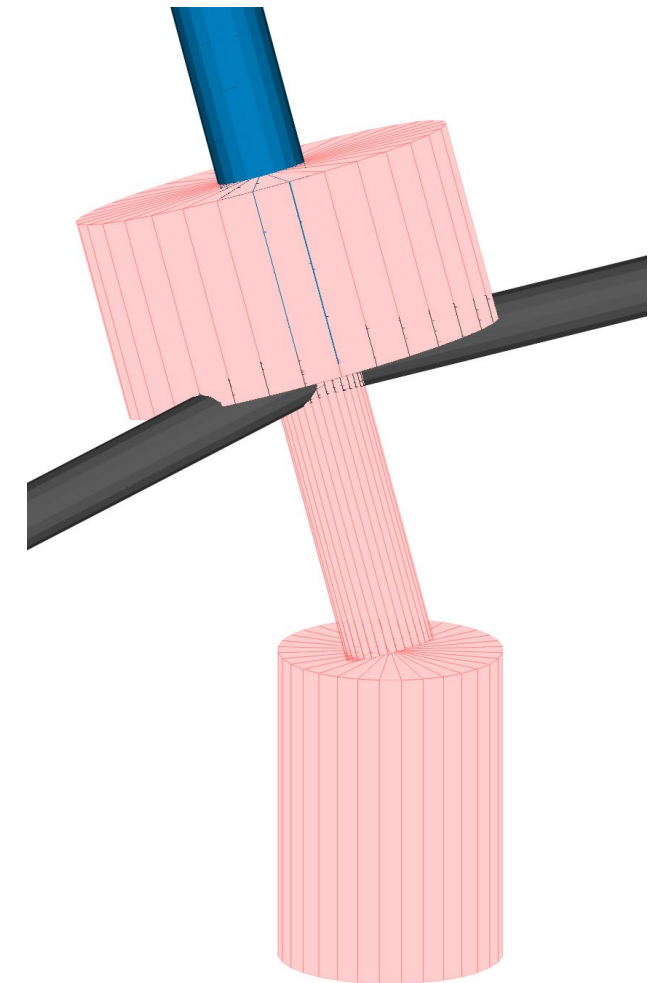
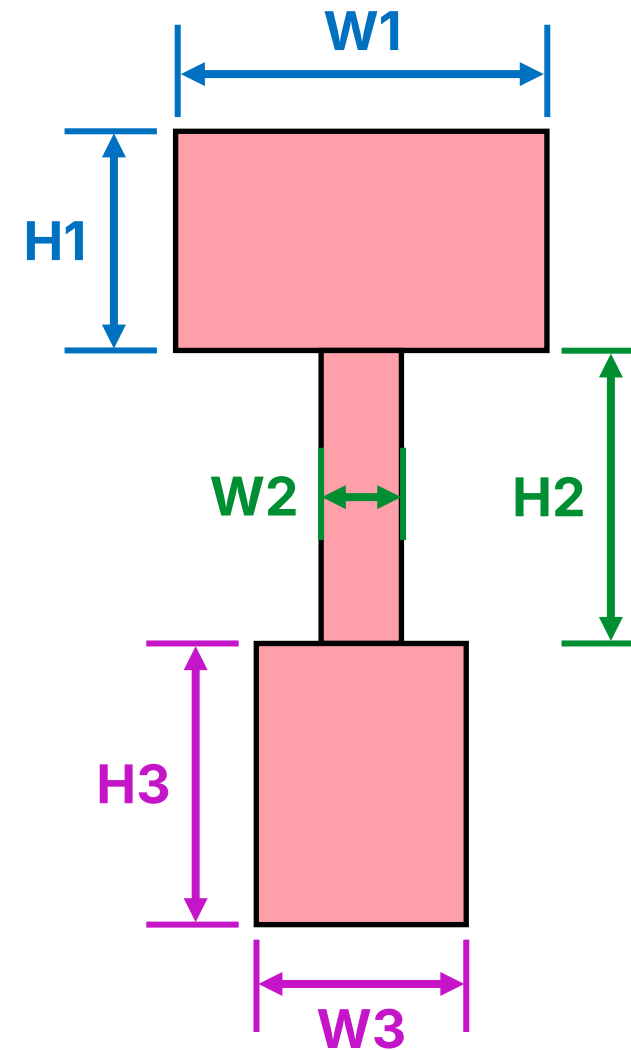
NEW: Suspension energized cylinders

- Dimensions defined in PLS-POLE/TOWER

- *Components/Insulators/Suspension Properties...*

Top Rect Width (ft)	0.85
Top Rect Height (ft)	0.45
Bot. Rect Width (ft)	0.2
Bot. Rect Height (ft)	0.65
Vert. Rect Width (ft)	0.5
Vert. Rect Height (ft)	0.7

- Rectangle width = cylinder diameter
- No separate inputs in PLS-CADD



Display options

Display options

Drafting Window Help

- Plan & Profile Sheet Configuration >
- Structure and Section Labeling >
- Text Position, Orientation and Background...
- Text Size, Line Width, Style, Color and Layer...
- Line Width Multiplier...
- Profile View Aspect Ratio...
- Display Options >**
- Load PPS (View Settings File)...
- Save PPS (View Settings File)...
- Drafting Diff...
- Attachments (Raster and Vector) >
- Structure Text Position >
- Span Length Text Position >
- Lines and Annotation >
- Inset Views >

Black & White

- Show Structure Compass
- Show Cable Attachment Points
- Show Stringing Direction
- Show Alignment Direction
- Show Set and Phase Labels in 3D Views
- Show Circuit and Phase Labels in 3D Views
- Show Structure and Section Check Bitmaps
- Show Embedded Portions of Structures
- Show Other Fictitious Members
- Show Insulator Counter Weights
- Show Insulator Energized Zones
- Show P&P Sheet Rectangles
- Show Line Indicator on PIs
- Show Foundation Footprint
- Ghost Nonselected Lines

Display options

Sections Lines Drafting Window Help

Add...
Add Graphical...
Modify
Remove...
Swap Attachments
Copy
Graphical Sag Alt-4
Autosag All...
Ruling Span Calculator...
Sag Span To Known Sag...
Display Graphical Sag Fit Points
Slip and Clip...
Table...
Display Options...
SAPS Label Options...
Automatic Stringing...
Sag-Tension...
Check...
Clearances >
Stringing Chart >
Offset Clipping Report... >
Cable Files >
Concentrated Loads >
Electric >
Thermal Calculations (IEEE, CIGRE and TNSP) >

Line Display Options

Line Name and Display Information
Name Original Line
11 Structures, 8 Sections, Cost=0, Created 9:41:36 AM 6/2/2026

Line Type
 Solid Dash Dot

Section and Structure Display Options
Section **Structure** Alignment

Structure and Insulator Colors
 Render structures, insulators and wire in 3D views (will increase redraw time)
(Requires structures saved in PLS-POLE or TOWER version 5.40 or later for full effect)

Draw structures (unrendered) and insulators using the following colors
Structures Insulators **Insulator Energized Zones**

Structure Symbols

	Structure Element	Plan View	Profile View	3-D View	Sheet-Plan View	Sheet-Profile View	Sheet-Inset Views
1	Structure Center	Default	None	None	Default	None	Default
2	Pole Base	None	None	None	None	None	None
3	Tower Legs	None	None	None	None	None	None
4	Guy Anchor	None	None	None	None	None	None
5	M1/M2 Structure	None	None	None	None	None	None

Show Structure Geometry
 Plan View Profile View 3-D View Sheet-Plan View Sheet-Profile View

Structure clearances

Structure clearances

○ Lines/Reports/Structure Clearances

- Must check "Include suspension insulator energized zones in check"
- "Drop graphical markers" will toggle on **Drafting/Display Options/Show Insulator Energized Zones** temporarily

Structure Clearance

Options | Advanced | Structures

This function will calculate minimum distances between wires and method 4 structures for the currently displayed weather case:
Moderate Wind (SWING 2) - Max Sag FE

Enter the minimum required clearance for each voltage below:

	Voltage (kv)	Bundle Diameter (in)	Required Clearance (ft)
1	0	0.000	7.000
2	69	0.000	0.000
3	230	0.000	0.000

Weather Cases To Check

Currently Displayed Condition
 From Criteria/Structure Clearances
 Both

Clear markers before starting
 Only check clearances between wires and guys (including cables)
 Include suspension insulator energized zones in check

Guy Strain Insulator Clearance Reduction Factor: 1.00

Output Options

Report violations only
 Report on all

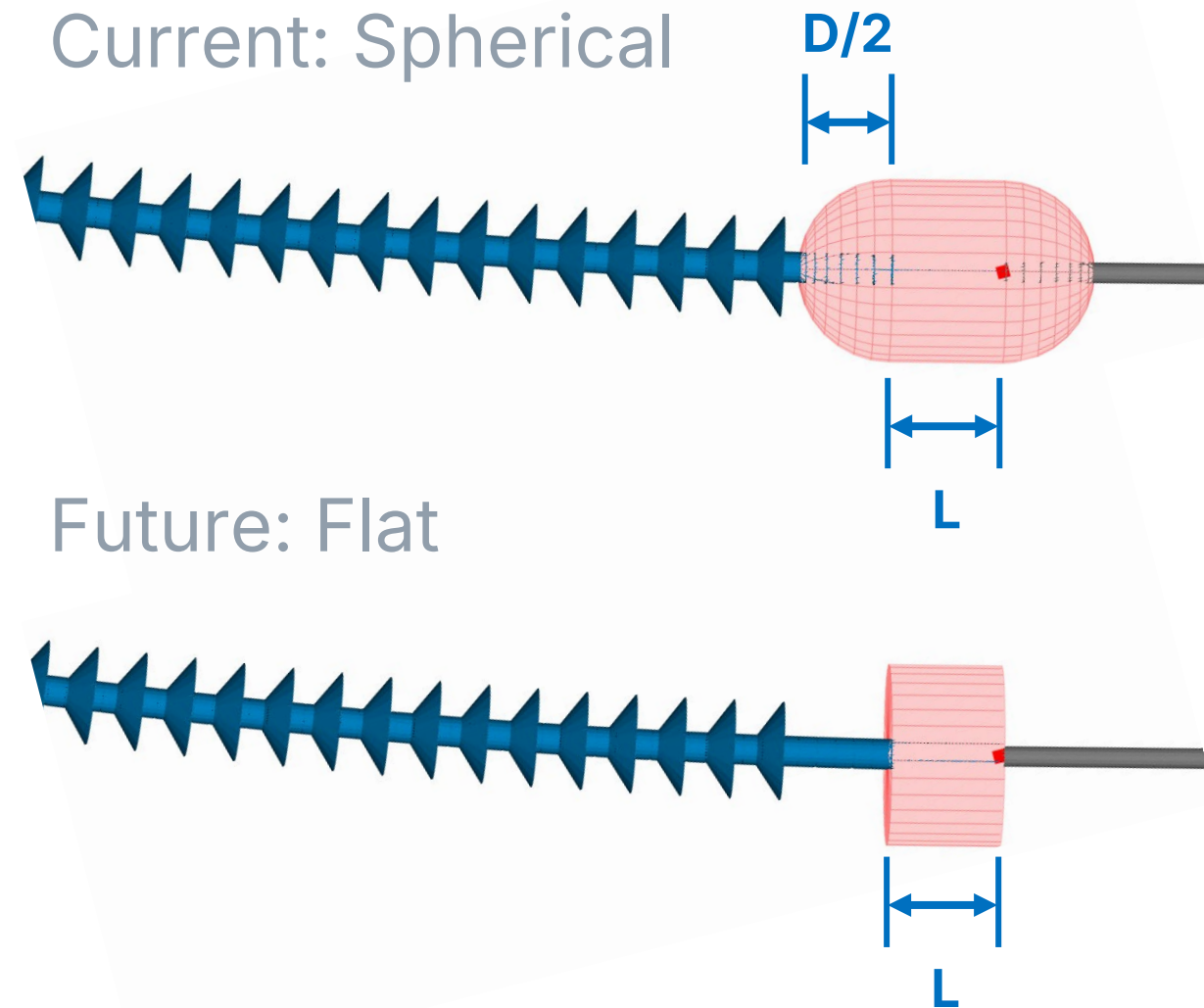
Create text report
 Drop graphical markers

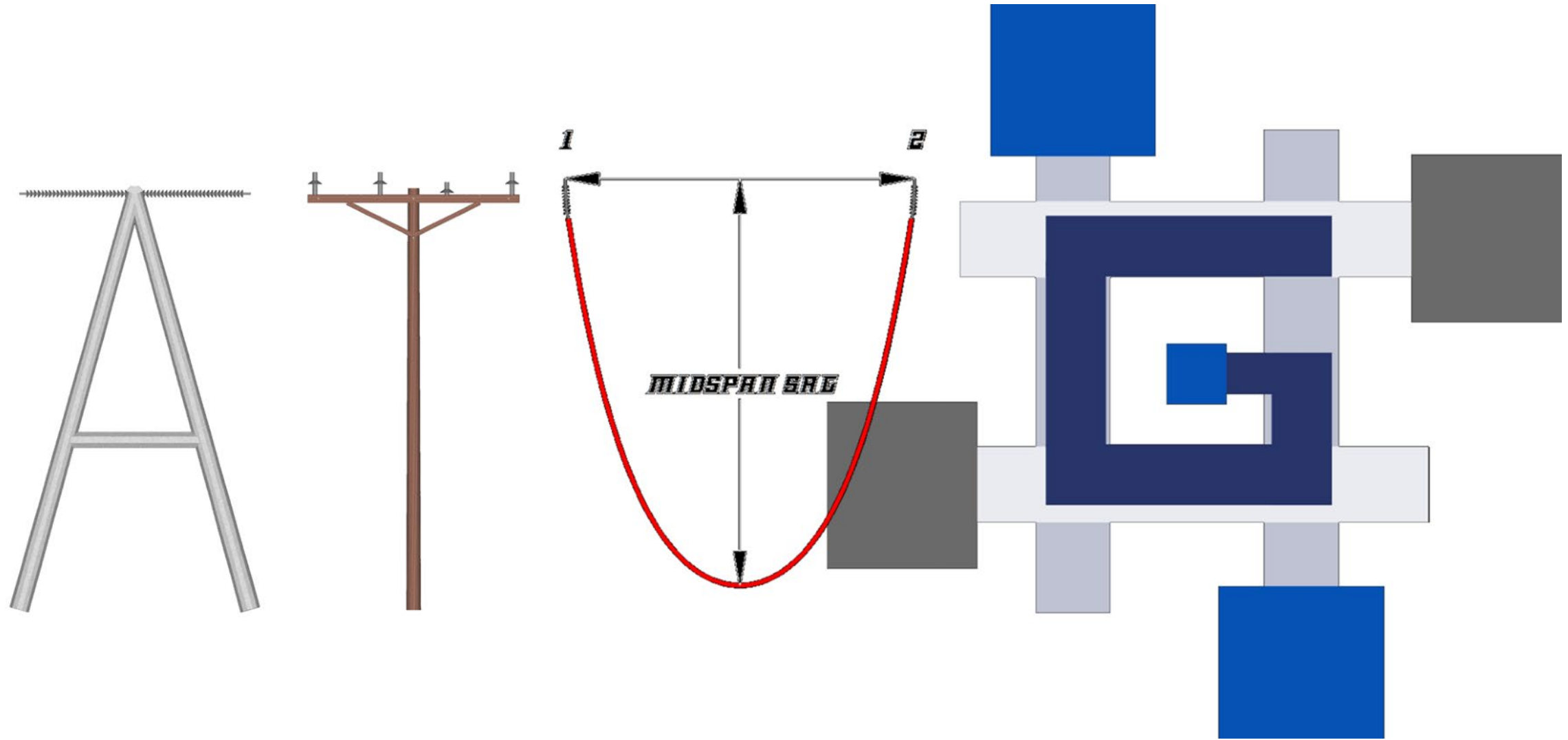
OK Cancel

Future proposals

Future proposals

- Flat end cap option for strain insulator energized zones
- Extend energized zones to other insulator types
 - Lambda insulators
 - Double suspension insulators
 - 2-part insulators





support@powerlinesystems.com