COLDNet Profile – Crossarm Design

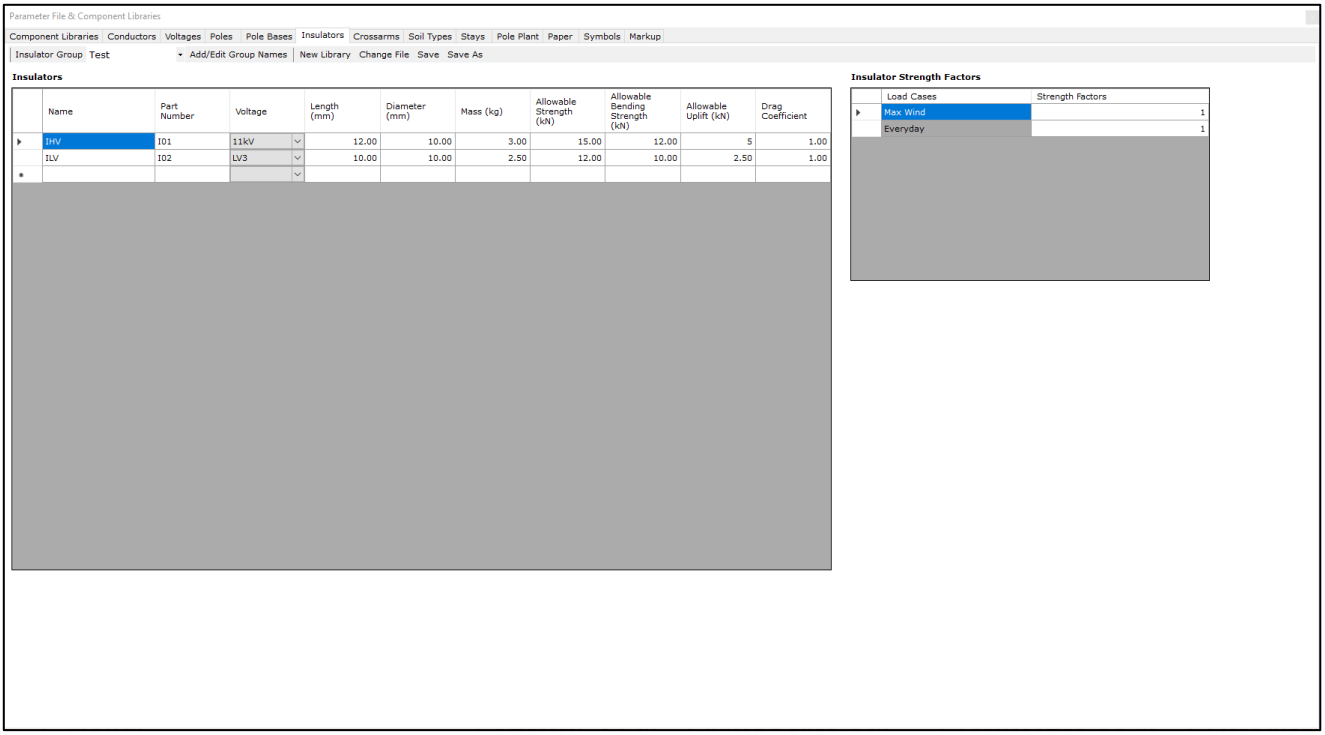
Crossarm Design is one of the new features incorporated into COLDNet Profile.

Calculations Include:

- Downline Bending of the Crossarm
- Vertical Bending of the Crossarm
- Kingbolt Shear
- Kingbolt Bending
- Insulator Loads
- Bending of Pin Insulators

A new Insulator Library has been added under **Design Parameters & Libraries** as shown below. This library operates the same as the other COLDNet Profile libraries. The required insulator variables include:

- Group
- Name
- Part Number
- Length
- Diameter
- Mass
- Allowable Strength
- Allowable Bending Strength
- Allowable Uplift
- Drag Coefficient
- Insulator Strength Factors

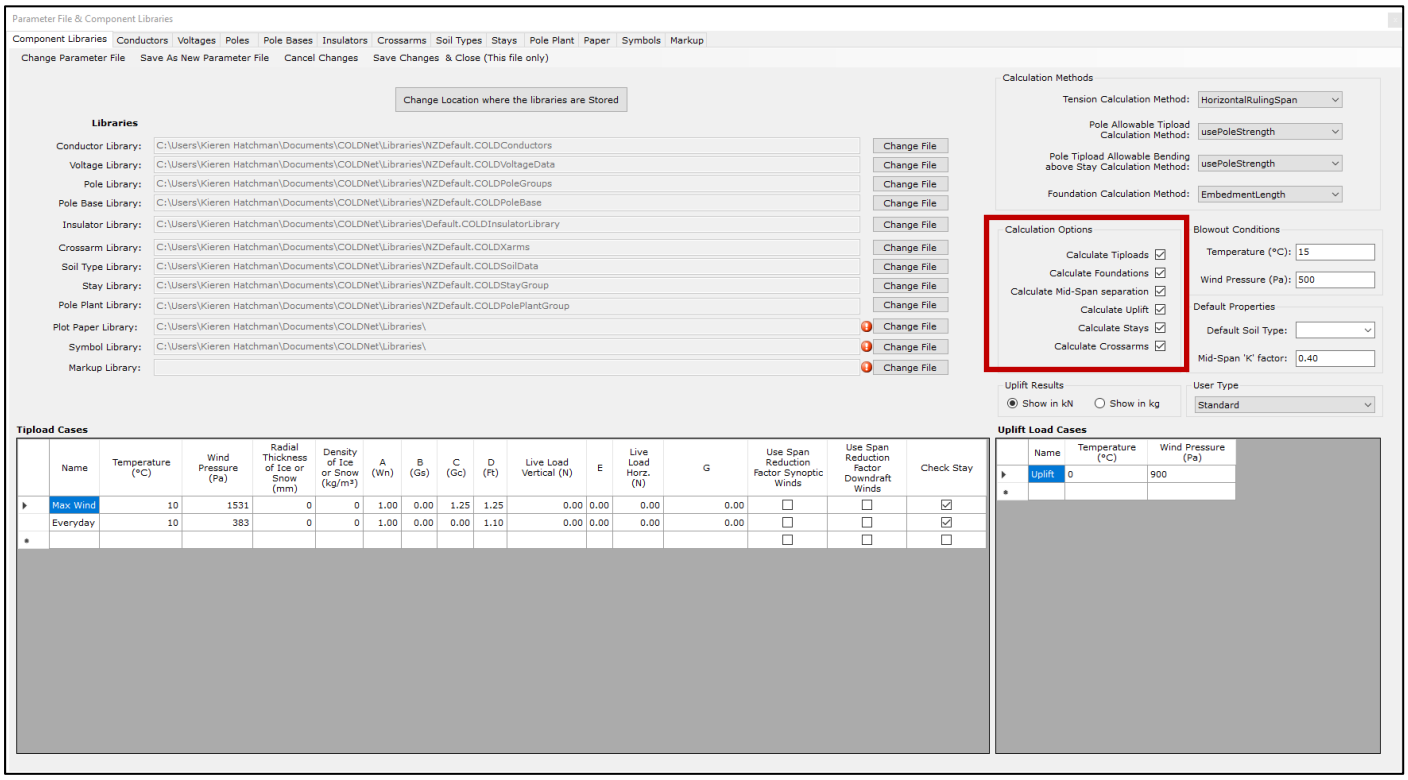


New Crossarm Variables

As well as a new Insulator Library, there is also a number of new variables that have been added to the Crossarm Library that are required for a full crossarm analysis including:

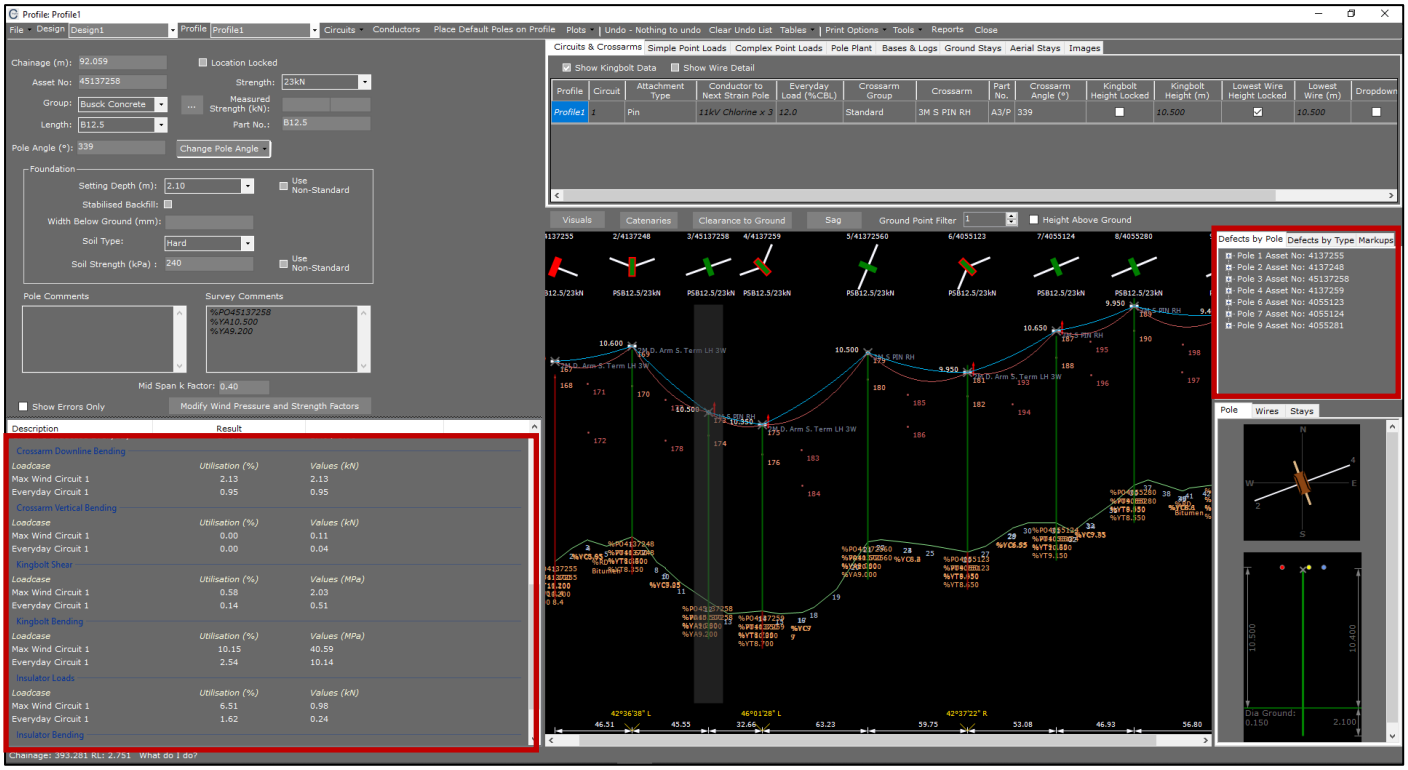
- Vertical Capacity
- Acrossline Capacity
- Downline Capacity
- Insulator Group (populated from the Insulator Library)
- Insulator (populated from the Insulator Group from the Insulator library)
- Allowable Bending Strength
- Kingbolt Description
- Kingbolt Diameter
- Kingbolt Length
- Kingbolt Offset
- Kingbolt Allowable Shear Strength
- Kingbolt Allowable Bending

The Crossarm Design will only be analysed if the user has selected **Calculate Crossarms** in the **Calculation Options** in the **Parameter File & Component Libraries** form.



COLDNet Profile – Crossarm Design

All the crossarm design results are displayed in the results grid and reports and any defects will be highlighted red and listed in the defect tree-view on both the main screen and profile screen.



Downline Bending of the Crossarm

Downline bending moments taken either side of the kingbolt of the crossarm (fixed location). The required variables to do the analysis include:

- Crossarm Length
- Crossarm Depth
- Crossarm Height
- Kingbolt Offset
- Crossarm Allowable Bending Strength
- Crossarm Insulator Group (if required)
- Crossarm Insulator (if required)

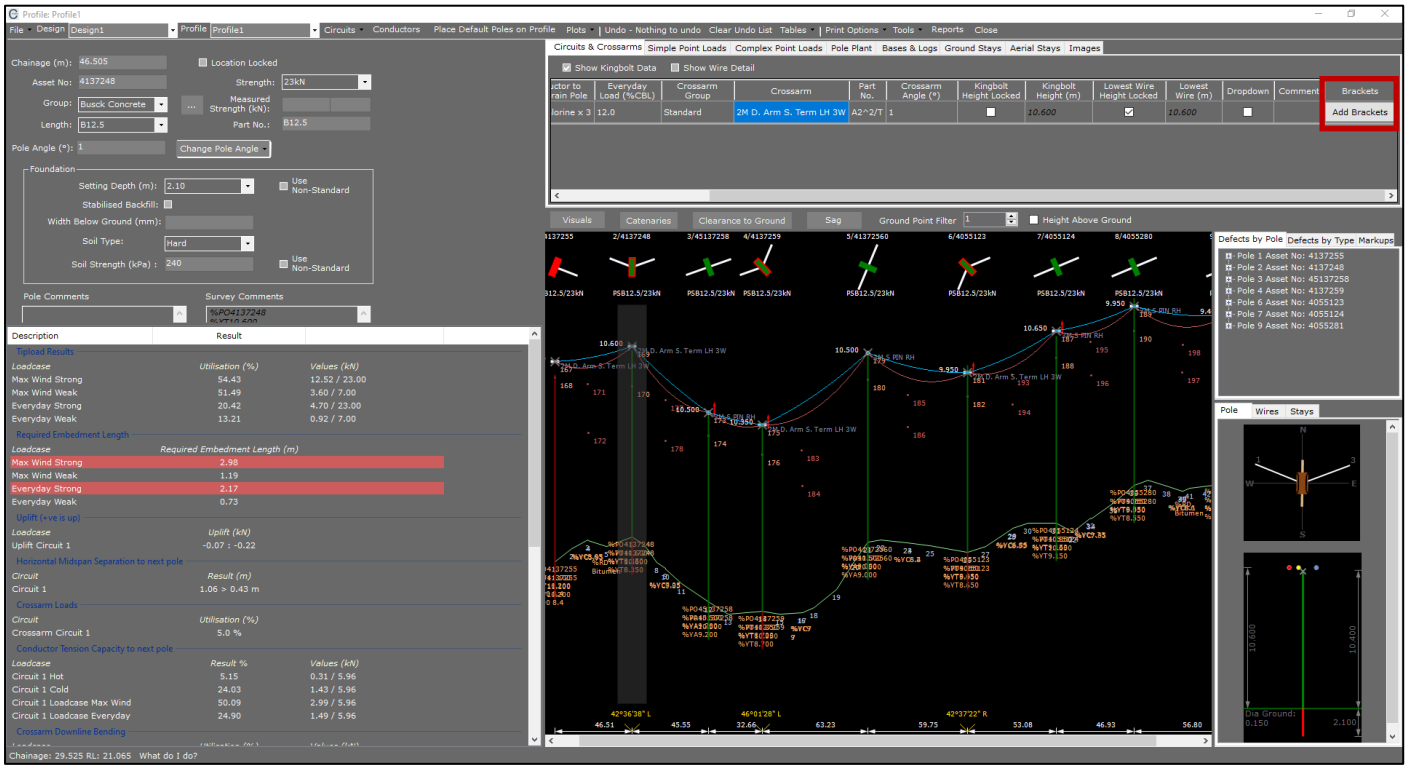
Vertical Bending of the Crossarm

Vertical bending moments taken either side of the kingbolt of the crossarm (fixed location) if there are no brackets on the configuration. If brackets are added to the crossarm, the horizontal bracket offset will be used to take vertical bending moments about (as this will be the new fixed location). If two brackets are used it is assumed they are symmetrical either side of the crossarm. If only one bracket is used, bending moments will be taken about the horizontal bracket offset of that side of the crossarm and bending moments will be taken about the kingbolt for the other side. The required variables to do the analysis include:

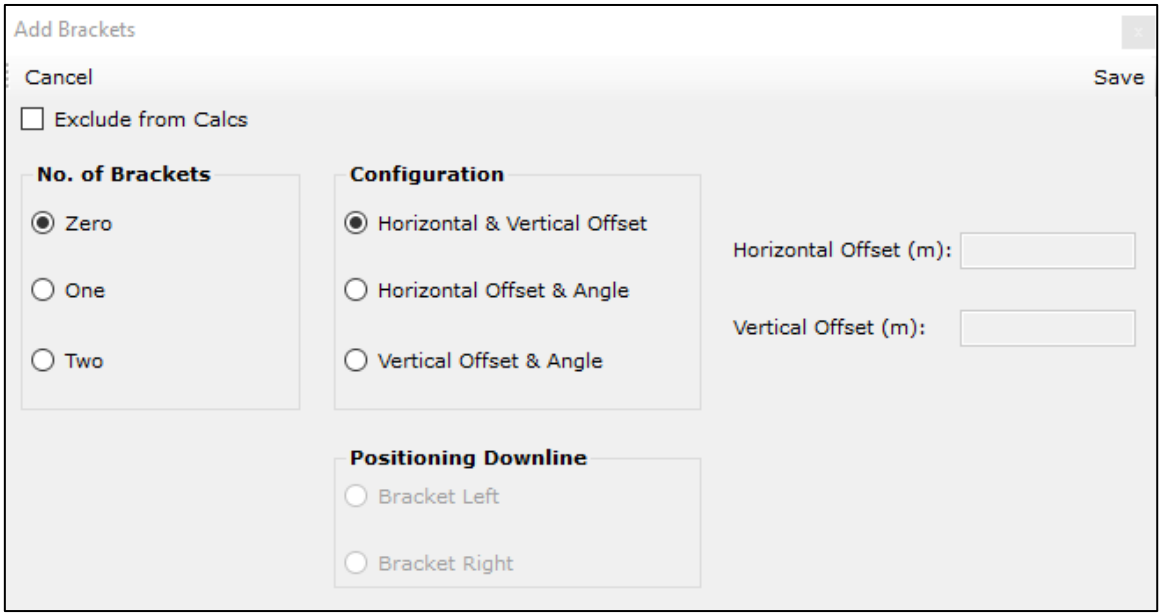
- Crossarm Length
- Crossarm Depth
- Crossarm Height

- Kingbolt Offset
- Crossarm Allowable Bending Strength
- Crossarm Insulator Group (if required)
- Crossarm Insulator (if required)
- Brackets (if required)

Crossarm brackets can be added at the profile design level in the **Circuits & Crossarms** Tab by selecting the **Add Brackets** button shown below.



The following window will open



From here select the **No. of Brackets** and **Configuration** in which you would like to enter in the positioning of the crossarm. If only one bracket is selected you will need to select the **Positioning Downline**. Enter the require configuration data to position the bracket correctly on the crossarm. Select **Exclude from Calcs** if you do not wish for the brackets to be included in the relevant calculations (if this is selected it will run the calculations as if no brackets are present). Select "**Zero"** to remove brackets. When finalised select **Save**.

Kingbolt Shear

Shear load induced on the crossarm kingbolt. If brackets have been added to the crossarm and not excluded from the calculations, then this analysis will not be performed as it is assumed the bracket and supporting bolts will be taking the brunt of the crossarm loads. The required variables to do the analysis include:

- Crossarm Length
- Crossarm Depth
- Crossarm Height
- Crossarm Insulator Group (if required)
- Crossarm Insulator (if required)
- Kingbolt Description
- Kingbolt Diameter
- Kingbolt Allowable Shear Strength

Kingbolt Bending

Bending load induced on the crossarm kingbolt. The bending moment is taken about the length from the top of the kingbolt to the location where the crossarm attaches to the pole. If brackets have been added to the crossarm and not excluded from the calculations, then this analysis will not be performed as it is assumed the bracket and supporting bolts will be taking the brunt of the crossarm loads. The required variables to do the analysis include:

- Crossarm Length
- Crossarm Depth
- Crossarm Height
- Crossarm Insulator Group (if required)
- Crossarm Insulator (if required)
- Kingbolt Description
- Kingbolt Diameter
- Kingbolt Length
- Kingbolt Allowable Shear Strength
- Kingbolt Allowable Bending

Insulator Loads

Combined loads induced on the individual insulators on the crossarm. The worst insulator on each of the crossarms will be displayed. An Insulator Library must be loaded and selected on the crossarm in the Crossarm Library. The required variables to do the analysis include:

- Insulator Group
- Insulator Name
- Insulator Length
- Insulator Diameter
- Insulator Allowable Strength
- Insulator Drag Coefficient

- Insulator Strength Factors
- Crossarm Insulator Group
- Crossarm Insulator

Insulator Bending

Bending loads induced on the individual pin insulators on the crossarm. The worst insulator on each of the pin crossarms will be displayed. This calculation will not be done for strain attachments. An Insulator Library must be loaded and selected on the crossarm in the Crossarm Library. The required variables to do the analysis include:

- Insulator Group
- Insulator Name
- Insulator Length
- Insulator Diameter
- Insulator Length
- Insulator Allowable Bending Strength
- Insulator Drag Coefficient
- Insulator Strength Factors
- Crossarm Insulator Group
- Crossarm Insulator