



TUTORIAL 3

HIPOTHESES FOR MECHANICAL CALCULATIONS OF CONDUCTORS.

DLTCAD performs change of state calculations for conductors based on the TL required environmental conditions. According to these conditions, a simulation of the behavior of conductor catenaries will be accomplished.

In the **Project Data** tab click **Weather Conditions** and the following window will open:

Note: The data presented in this window might not show up to be the same. For this tutorial this is OK.

Phase Conductors		Circuit1	Circuit2
Temperature(°C)		16	0
Wind Speed(Km/h)		95	0
Ice Thickness(mm)		0	0
Maximun Strength (%R)		60.00	60.00

Other Conductors	
Common Data	
Temperature (°C)	16
Wind Speed(Km/h)	95
Ice Thickness(mm)	0
Maximun Strength (%RBS)	
Guard Cable	60.00
Neutral Cable	0
Second Conductor	0

Buttons: Addr, Delete, Name: Viento Maximo, Use Conductor Safety Factor (checkbox), Generate automatic, Accept, Cancel, Save as Default

The software works with two groups of different hypothesis:

Circuit 1 corresponds to phase conductors for a first triple.

Circuit 2 corresponds to phase conductors for a second triple.

Other conductors correspond to: guard cables, neutral cable, and second conductor.

Edit the data found in the above window. Enter data for a Hypothesis on Maximum Wind:

All the data from the Weather Conditions window is editable, including the Hypothesis Name. The software can work with up to ten hypothesis per project. To add or delete hypotheses click on the buttons **Add** or **Delete**. One list of available hypothesis could be the following:

Hypothesis	Name in Spanish	Name in English
I	Cond Inicial	Initial Conditions
II	Temp Min S/Hielo	Min Temp w/o Ice
III	Viento Maximo	Maximum Weather
IV	Viento Mediano + Hielo	Median Wind + Ice
V	Maxima Temperatura	Maximum Temperature
VI	Hypothesis VI	Weather Cond VI
VII	Hypothesis VII	Weather Cond VII
VIII	Hypothesis VIII	Weather Cond VIII
IX	Hypothesis IX	Weather Cond IX
X	Hypothesis X	Weather Cond X

In the **Weather Conditions** window, DLTCAD offers the automatic generation of a combination of 4 or 5 Hypotheses. They are based on the environmental requirements for a particular TL. For the case of hypothesis V for maximum temperature (maximum sag), the software calculates the maximum temperature of conduction according to IEEE 738, by using the data already entered in the **Project Data** tab > **General Setting** > **Design** subtab. To use this option on the **Weather Condition** window, click on the button labeled **Generate Automatic**.

Notice that the **Weather Condition** window offers two options for calculations:

- Option 1: Click on box labeled **Use Conductor Safety Factor**.
- Option 2: Use Maximum Strength (%RBS). RBS means Rated Braking Strength.

For this tutorial use Option 1, of the Pulldown Menu: HYPOTHESIS IV (Maximum Temperature)

The screenshot shows the 'WEATHER CONDITIONS' dialog box. It contains the following data and controls:

Section	Parameter	Value
Phase Conductors	Temperature(°C)	100
	Wind Speed(Km/h)	0
	Ice Thickness(mm)	0
	Safety coefficient	1.67
Other Conductors - Common Data	Temperature (°C)	36
	Wind Speed(Km/h)	0
	Ice Thickness(mm)	0
	Safety coefficient	1.67
Other Conductors - Safety coefficient	Guard Cable	1.67
	Neutral Cable	1.67
	Second Conductor	1.67
Name	Addr	HYPOTHESIS IV
	Delete	
Name	Name	Maxima Temperatura
Use Conductor Safety Factor	Use Conductor Safety Factor	<input checked="" type="checkbox"/>
Buttons	Save as Default	Save as Default
Buttons	Generate automatic	Generate automatic
Buttons	Accept	Accept
Buttons	Cancel	Cancel

Click on **Save as Default**, then **Accept** to close the window.

Proceed to work on Tutorial 4.