What are the rules for voltage ratings?

From OpenDSSWiki

Question

I am confused with the rules for defining voltage ratings. Do I use Line-Neutral or Line-Line voltages?

Answer

As we have developed the OpenDSS circuit element models we have tried to be consistent with the following rules:

Phases = 1

For 1-phase devices, you would define the voltage rating as the 100% voltage, in kV, that will appear across each terminal of the device under normal conditions. This applies to Transformer, Load, Generator, Storage, Reactor, Capacitor and Vsource elements -- and any elements that might be added later. Line elements do not have a voltage rating, nor do several other classes of elements.

So if the two conductors of the Load terminal is connected between line and neutral, you would specify L-N kV. If between two phases of a bus, then use L-L kV.

Phases = 3 or more

Use L-L kV for voltage ratings.

Phases = 2

This is an unusual case because there are few true two phase systems that the OpenDSS will be called upon to analyze (it could do it, though). The usual case is that this is two phases of a 3-phase system. This is quite common where it is not economical to pull all three phase wires on the pole or to pull only two single-phase cables. The OpenDSS convention is to use L-L voltage in kV for this case because it looks like a 3-phase system with one phase missing.

To model a true two-phase system use single-phase Vsource elements displaced by 90 degrees. You can model T-Connected transformers as a bank of 1-phase units to transform from 2- to 3-phases.

--Rdugan 18:47, 29 September 2010 (UTC)

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