

Low Voltage On IEEE Test Feeder?

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Question

When I am doing Power flow for IEEE 34 bus test case, I am finding the voltage for Bus 890 is about 0.92 PU. As we know it is better to be the voltage limit withing 0.95 to 1.05 PU, therefore, Is the voltage alright for that bus?

Does it make any impact on the system?

Answer

Several of the IEEE Test Feeder cases have voltages below 95%. This is part of what makes them challenging to solve and an interesting benchmark. Note that to get the OpenDSS to match the test feeder results for voltages less than 95% you have to set the VMINPU property of the loads to a lower value than the minimum voltage expected.

Of course, low voltages can have an adverse impact on the circuit. But it is not uncommon to have voltages that low or lower at certain times.

From the OpenDSS version of the 34-bus test feeder you will find a section after the Load object definitions (New Load.... statements) that has script that looks like this:

```
Load.s848.vminpu=.85 <BR>
Load.s830a.vminpu=.85 <BR>
Load.s830b.vminpu=.85 <BR>
Load.s830c.vminpu=.85 <BR>
Load.s890.vminpu=.85 <BR>
...
```

This overrides the default VMINPU property of the load and sets it to 85% of the voltage specified with the kV property. This allows the voltage at the bus to droop to 85% before the load model switches to a constant Z model.

A constant Z model will have better convergence characteristics at low voltages.

Override scripts like this can be generated easily using the

```
Show elements <classname>
```

command. This will give a list of both the active and inactive elements in the present circuit in the specified class. For example,

Show elements Load

Then edit the script to get what you want.

--Rdugan 13:40, 22 April 2011 (UTC)

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title=Low_Voltage_On_IEEE_Test_Feeder%3F&oldid=533"

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- This page was last modified on 22 April 2011, at 05:40.
 - This page has been accessed 431 times.