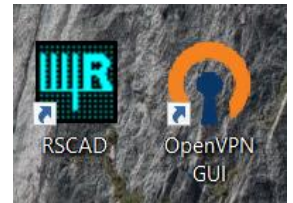


Black-Start RTDS Tutorial

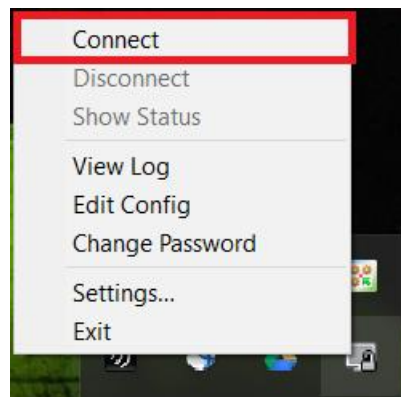
Opening Black-Start RTDS



- 1.** Installation of RSCAD and VPN client
 - a.** Speak with John Jacksha (JJ) to have both programs installed
- 2.** Connect to RTDS racks (Optional: only necessary for simulation of RTDS models)
 - a.** Double click “OpenVPNGUI” icon
 - i.** “OpenVPN GUI” icon will appear in Windows Start Toolbar

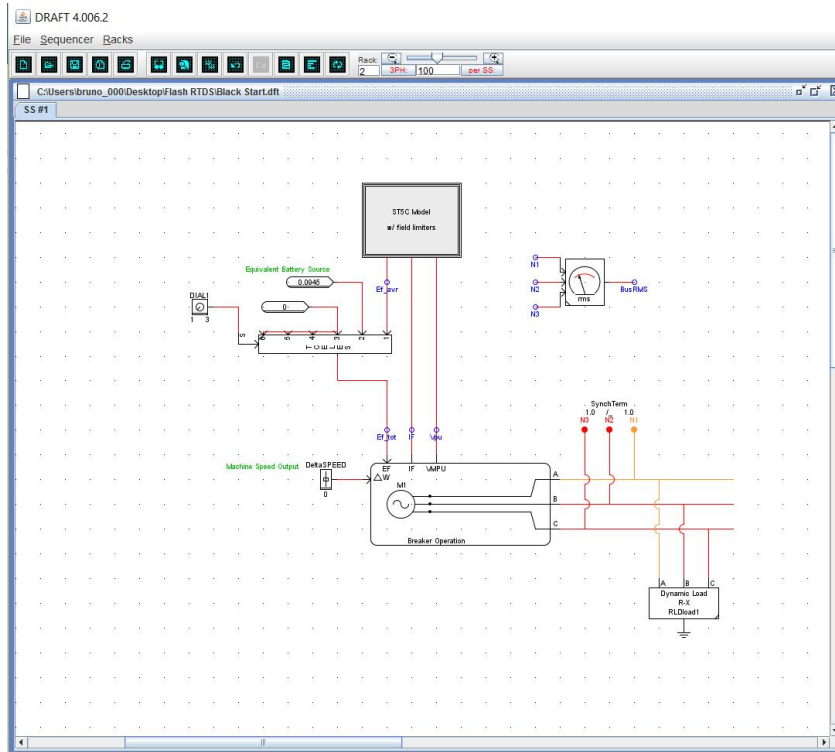
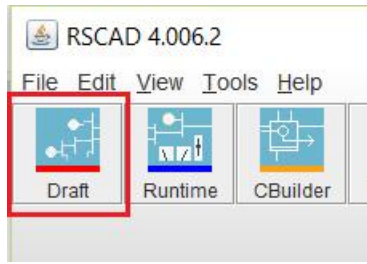


- b.** Right click this “OpenVPN GUI” icon and select “Connect”



- 3.** Opening RSCAD Black-Start model
 - a.** Double click “RSCAD” icon

- b. Select "Draft" in RSCAD window



RSCAD Black-Start DRAFT

- c. Select the "Open From Disk" option and find Black-Start file location
- d. Compile the black-start by selecting the option in the tool-bar of the "DRAFT"

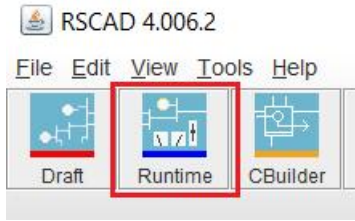


- e. Access RTDS Tutorial Manual
 - i. Default location: C:\RSCAD\DOC\TUTORIAL

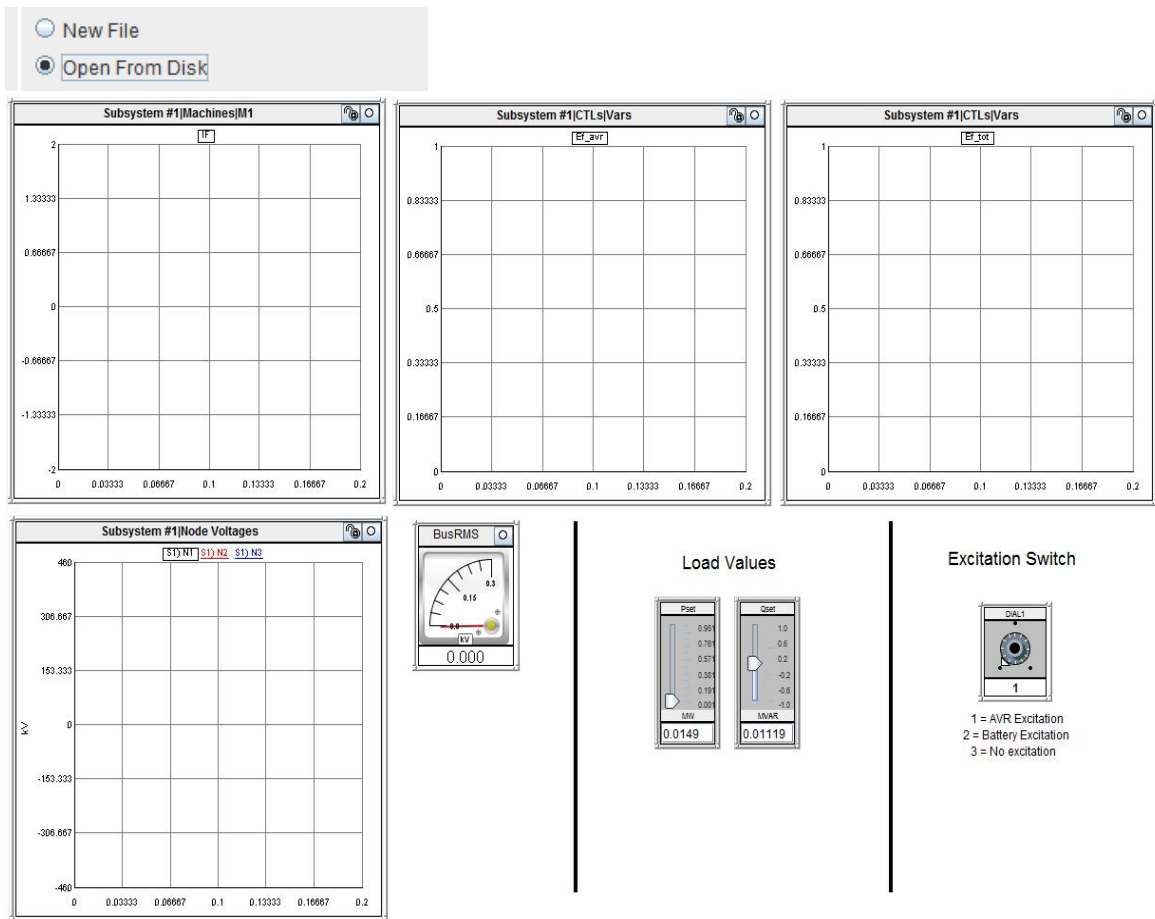


Simulation of Black-Start

1. Select "Runtime" in the RSCAD window

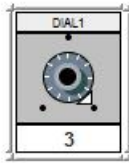


2. Select "Open From Disk" and find "BlackStart.sib" in "Flash RTDS" folder



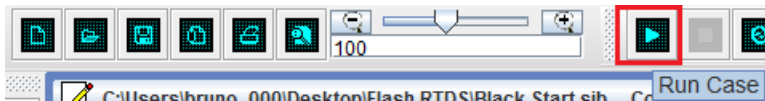
RSCAD Black-Start RUNTIME

3. Verify that the black-start in “No excitation” mode by selecting option 3 of the dial
Excitation Switch



- 1 = AVR Excitation
- 2 = Battery Excitation
- 3 = No excitation

4. Select “Run Case” icon in RUNTIME toolbar



- a. (Optional) Select the “Update Plots” icon to make sure plots are all at zero



5. Switch to “Battery Excitation” mode using the dial (option 2)
6. Switch to “AVR Excitation” option on dial (option 3) to complete Black-Start Process