

Lab Session 2
(05 - 09 Feb 2024)

Objectives:

On Simulink, design a circuit with Y-connected 3-phase AC sources (220V, 50 Hz) and Y-connected 3-phase RLC branch and perform the following activities:

- (1) Connect the three AC sources (with difference in phase by 120° each) in Y-configuration.
- (2) Connect the current meter in phase A, measure and display the RMS value of current.
- (3) Connect the voltage meter across phase A, measure and display the RMS value of phase voltage.
- (4) Connect the power meter in phase-A and measure the real and reactive power. Connect the displays to read the powers.
- (5) Connect the voltage meter across phase A and phase B, measure and display the RMS value of line voltage.
- (6) Connect the three-phase V-I measurement tool to the three phase sources and three phase RLC branch. The RLC branch should be Y-connected.
- (7) Connect the three-phase voltage and current output to the three-phase power measurement tool. Display the three-phase real and reactive power.
- (8) Connect the three-phase voltage and current to the two port scope to observe the time-varying three-phase voltages and currents.
- (9) Run the simulator and analyze the current, voltages and powers displayed. Verify the readings displayed as phase voltage and line voltage.
- (10) Record and report the same as observations for at least three different choices of the parameters in the RLC branch.
- (11) Now observe the time varying three-phase current, voltage and power in the scope. Correlate the observed waveform on the scope with the values displayed on the corresponding displays. Record and report the same as observation.
- (12) List out the correlations between the phase values and the line values.
- (13) Verify that the total power in a three-phase power system is constant with respect to time.