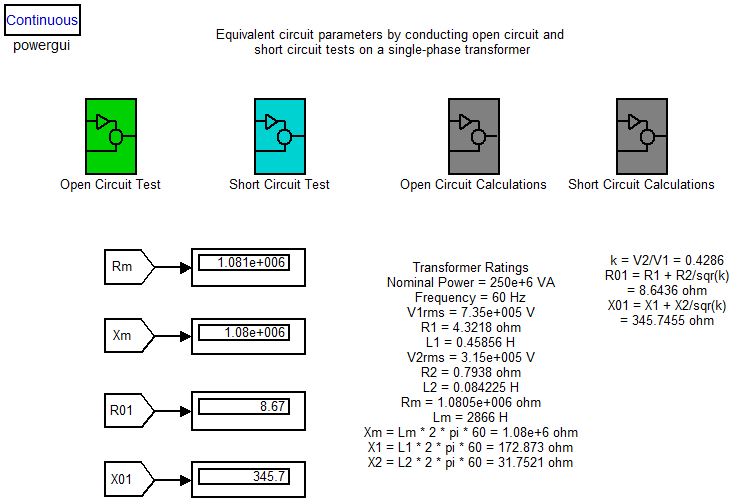
**Exercise – 2.2**

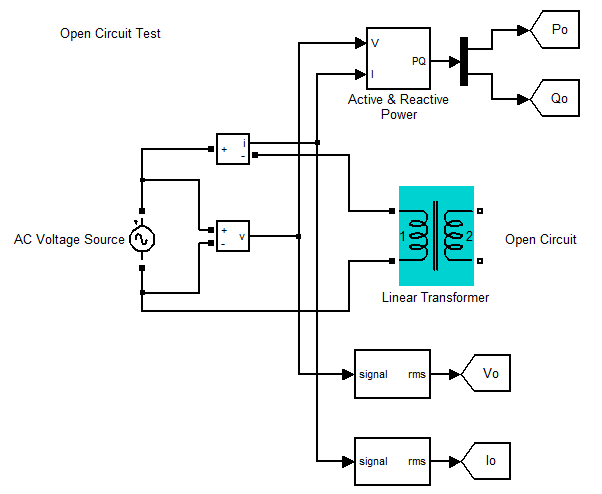
Use **MATLAB (Simulink)** to

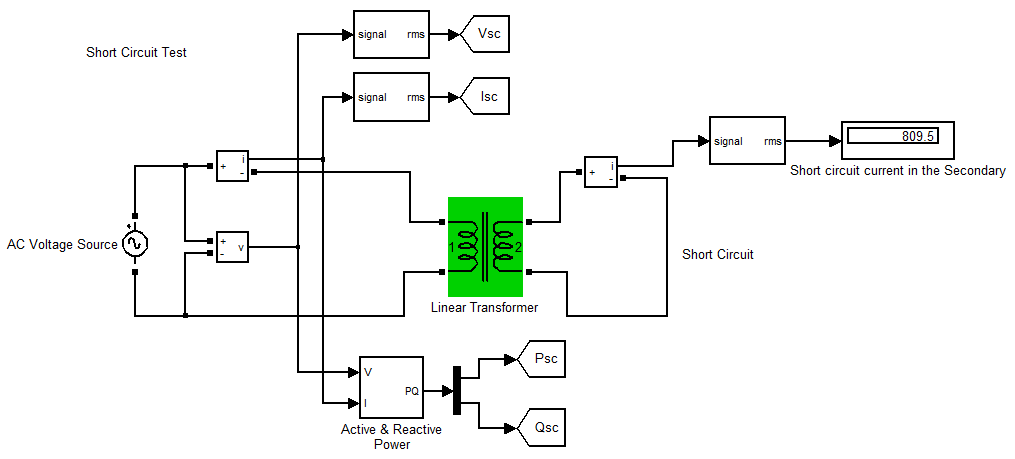
1. obtain the equivalent circuit parameters (referred to primary) by conducting the **open circuit** and **short circuit** tests on a given **single phase transformer**
2. calculate the **efficiency** and **voltage regulation** at 50% loading with 0.8 power factor lagging
3. **plot/display** the following for the above loading conditions:
   1. primary and secondary current
   2. real and reactive power at the primary and secondary terminals
   3. primary and secondary power factor
   4. efficiency

**Simulink Circuit**:

1. **Equivalent circuit parameters**

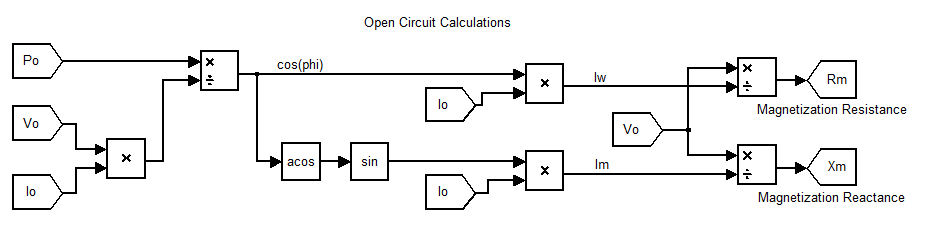
|  |  |
| --- | --- |
| **Open circuit test** | **Short circuit test** |
| Apply rated voltage at primary and open circuit the secondary | Apply voltage at primary such that rated short circuit current flows through the secondary  Rated current at sec = 793.65 ampere ( VA / Vsec ) |

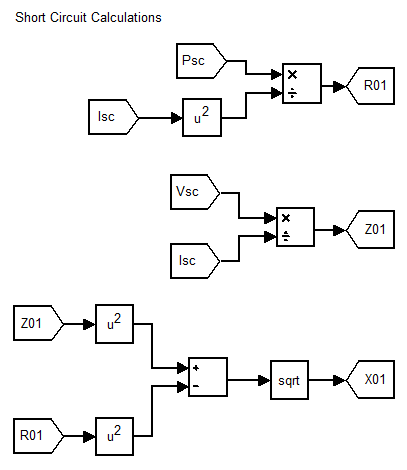




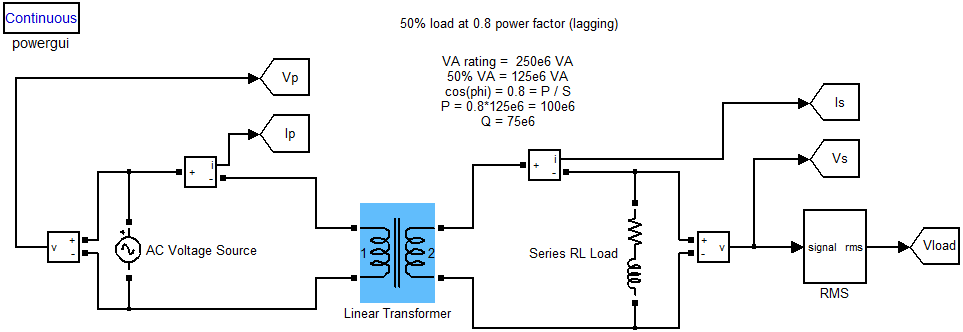
**Formulae:**

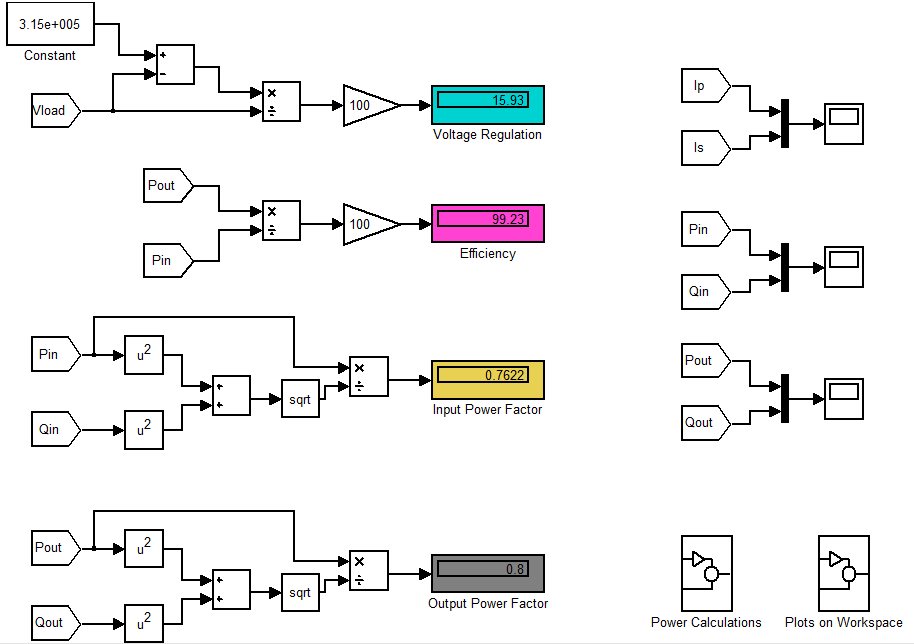
**Open Circuit Test**

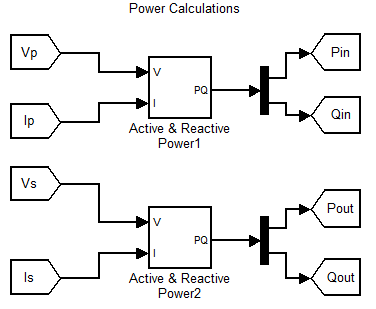


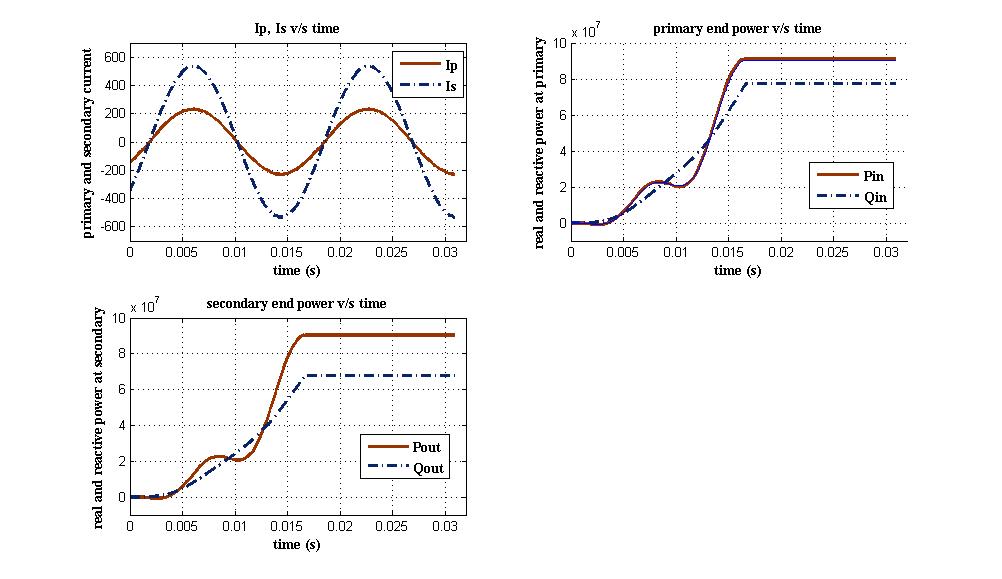


**Short Circuit Test**

1. **efficiency and voltage regulation**





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1. **plots for the above loading conditions**

**Results:**

Hence the equivalent circuit parameters of a single phase transformer obtained from the open circuit and short circuit tests are verified and the waveforms for specified load conditions are plotted using MATLAB (Simulink).