

ET332a  
Separately Excited Machine Power

A separately excited dc generator is rated at 75 kW and 600 V at 1800 rpm. The total rotational losses of the machine operating at rated output are 5.75% of the machine rating. The armature circuit resistance is 0.172 ohms. The total voltage drop due to the brushes is 0.5 V. Find:

- a.) The mechanical power that the prime mover must develop for the generator to deliver rated electrical power.
- b.) The machine efficiency for this level of loading.