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QUESTION 7: Adding a Centrifugal pump as a load to the EE and SE Motor:  
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7.a) Operating speed

Speed when operating pump for EE motor: 1416.75 rpm

Speed when operating pump for SE motor: 1405.50 rpm

7.b) Current drawn

Current drawn when operating pump for EE motor: 6.3926 A

Current drawn when operating pump for SE motor: 6.6546 A

7.c) Efficiency

Efficiency when operating pump for EE motor: 89.1560 %

Efficiency when operating pump for SE motor: 86.2766 %

7.d) Output power

Output power when operating pump for EE motor: 2925.0831 W

Output power when operating pump for SE motor: 3019.3662 W

7.e) Input power

Input Power drawn when operating pump for EE motor: 3280.8605 W

Input Power drawn when operating pump for SE motor: 3499.6335 W

7.f) Comparing input power

The difference in input power is: 218.7729 W

The EE motor has a lower slip value when running the load compared to the SE motor (reason lower slip cause higher efficiency). The higher slip means the slip dependent resistance is larger hence  $I_2$  for EE is lower than that in SE.  $I_2$  affects  $I_1$  hence a drop in  $I_2$  results in a corresponding drop in  $I_1$ . The input power is therefore lower in EE compared to SE. This is as observed in simulation.