

Assignment

Design a DC speed control system, and show demonstrations for the four quadrant operation.

DC motor dimensions:

Rated power $P=150$ kW, Rated Voltage $V=450$ V

Armature resistance $R_a=0.15$ Ω , Armature inductance $L_a=0.003$ H,

Moment of inertia $J=10$ kgm²

Emf constant $K_E=8.50$ V \cdot s/rad, Base speed =500rpm

(Memo) What is the relation between “watt” and “horsepower (Pferdestärke)”?

1PS \cong 0.736kW(Japan, France, Germany), 1HP \cong 0.746kW(UK, USA)
e.g., 150kW \cong 204PS