STATOR DESIGN OF INDUCTION MACHINE

**CODE:**

% Given values P = 70;

% Power (kW) V = 1100;

f = 50;

p = 10;

Bav = 0.4;

ac = 25000;

Eff = 0.88;

pf = 0.88;

kw = 0.96;

Sl = 500;

m = 3;

% Calculations

% Voltage (V)

% Frequency (Hz)

% Number of poles

% Average flux density (T)

% Area of conductor (mm^2)

% Efficiency

% Power factor

% Wattage constant

% Slot load

% Number of phases

% Stator power calculation S = P / (Eff \* pf);

% Constant coefficient

Co = 11 \* Bav \* ac \* kw \* 1e-3;

% Synchronous speed and rotational speed Ns = (120 \* f) / p;

n = Ns / 60;

% Length of stator core LD = (1.5 \* pi) / p;

% Stator diameter and length D = ((S / (Co \* n)) / LD)^(1/3); L = LD \* D;

% Peripheral velocity v = pi \* D \* n;

% Display results

disp('Stator Diameter (D) in m:'); disp(D);

disp('Stator Length (L) in m:'); disp(L);

disp('Peripheral Velocity (v) in m/s:'); disp(v);

% Flux per pole

F\_p = (pi \* D \* Bav \* L) / p;

% Pole torque

T\_p = V / (4.44 \* f \* F\_p \* kw);

% Slot dimensions Ss = m \* p \* 3; Yss = (pi \* D) / Ss; Z = 6 \* T\_p;

Zs = Z / Ss;

% Phase current and slot loading Iph = S \* 1000 / (3 \* V);

Slot\_Loading = Iph \* Zs;

% Display results

disp('Flux per pole (F\_p) in Wb:');

disp(F\_p);

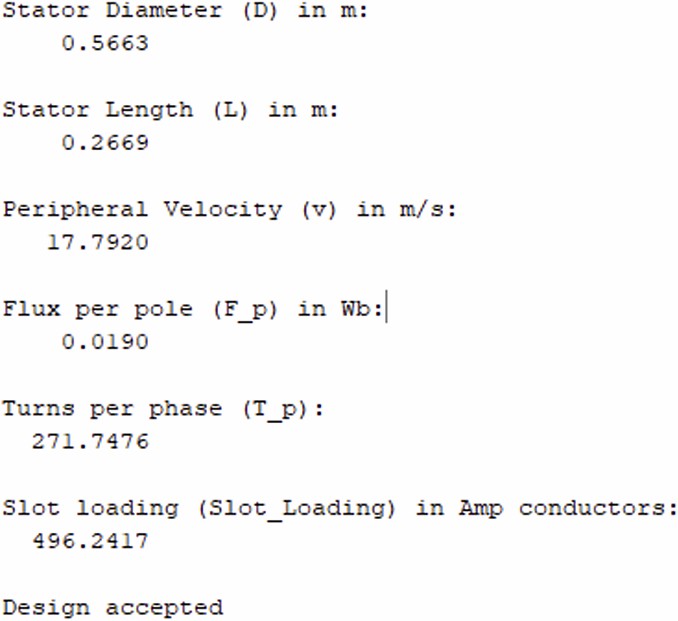
disp('Turns per phase (T\_p):'); disp(T\_p);

disp('Slot loading (Slot\_Loading) in Amp conductors:'); disp(Slot\_Loading);

if(Slot\_Loading<500) disp('Design accepted'); else

disp('Design rejected'); end

**OUTPUT:**

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