

```
clear all

clc

%Dati motore asincrono

Pn=30e3;
Vn=380;
cosfin=0.85;
p=3;
f=50;
Rs=0.3
vcc=18/100;
pcc=15/100;
Io=18;
po=6/100;
%calcolo parametri
Po=po*Pn
Pcc=pcc*Pn
Pfe=Po-3*Rs*Io^2
In=(Pn+Pcc+Pfe)/(sqrt(3)*Vn*cosfin)
Ro=Vn^2/Pfe
cosfio=Pfe/(sqrt(3)*Vn*Io)
Qfe=Pfe*tan(acos(cosfio))
Xo=Vn^2/Qfe
Vcc=vcc*Vn
Rr=(Pcc-3*Rs*In^2)/(3*In^2)
cosfic=Pcc/(sqrt(3)*Vcc*In)
Qcc=Pcc*tan(acos(cosfic))
Xcc=Qcc/(3*In^2)

%dati generatore cc
Pndc=25e3;
Vndc=200;
ra=3/100;
Nn=1800;
Veccn=120;
Ieccn= 3;
omegandc=Nn*2*pi/60
%parametri
Indc=Pndc/Vndc

Ra=ra*Vndc/Indc
omndc=Nn*2*pi/(60)
%dati del carico
VL=180;
PL=15e3;
IL=PL/VL
EL=VL+Ra*IL
Pmecc=EL*IL
omega=2*pi*f
k=Vn^2*p/(Rr*omega)
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A=k*omega/p
B=-A
C=Pmecc
s1=(-B+sqrt(B^2-4*A*C))/(2*A)
s2=(-B-sqrt(B^2-4*A*C))/(2*A)
omegam=(omega/p)*(1-s2)
%formula completa
A=Rs^2*Pn+Xcc^2*Pmecc+3*(Vn/sqrt(3))^2*Rr
B=2*Rs*Rr*Pmecc-3*(Vn/sqrt(3))^2*Rr
C=Pmecc*Rr^2
s1v=(-B+sqrt(B^2-4*A*C))/(2*A)
s2v=(-B-sqrt(B^2-4*A*C))/(2*A)
omv=2*pi*50*(1-s2v)/p

%calcolo della Vecc del dc
kn=(Vndc+Ra*Indc)/(Veccn*omegandc)
Vecc=(VL+Ra*IL)/(kn*omegam)

%calcolo corrente macchina asincrona
Ir_m1=(Vn/(sqrt(3)))/(sqrt((Rs+Rr/s2)^2+(Xcc)^2))
Ptot=Pmecc+3*(Rs+Rr)*Ir_m1^2
Ptot_bis=3*(Rs+Rr/s2)*Ir_m1^2+Pfe
Qtot=3*Xcc*Ir_m1^2
Qtot_bis=3*Xcc*Ir_m1^2+Qfe
P_m1=Ptot+Pfe
Q_m1=Qtot+Qfe
I_m1=(sqrt(P_m1^2+Q_m1^2))/(sqrt(3)*Vn)
Recc=Veccn/Ieccn
rend_m1 = PL/(P_m1+Vecc^2/Recc)

Rs =
    0.3000

Po =
    1800

Pcc =
    4500

Pfe =
    1.5084e+03

In =

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64.3637

$R_o =$

95.7306

$\cos\phi_o =$

0.1273

$Q_{fe} =$

1.1751e+04

$X_o =$

12.2885

$V_{cc} =$

68.4000

$R_r =$

0.0621

$\cos\phi_{ic} =$

0.5901

$Q_{cc} =$

6.1559e+03

$X_{cc} =$

0.4953

$\omega_{gandc} =$

188.4956

$Indc =$

125

$Ra =$

0.0480

$omndc =$

188.4956

$IL =$

83.3333

$EL =$

184

$Pmecc =$

$1.5333e+04$

$omega =$

314.1593

$k =$

$2.2210e+04$

$A =$

$2.3259e+06$

$B =$

$-2.3259e+06$

$C =$

$1.5333e+04$

$s1 =$

0.9934

$s2 =$

0.0066

$\omega_{gam} =$

104.0248

$A =$

1.5427e+04

$B =$

-8.3938e+03

$C =$

59.1021

$s1v =$

0.5370

$s2v =$

0.0071

$\omega_{mv} =$

103.9726

$kn =$

0.0091

$V_{ecc} =$

194.2210

$I_{r_m1} =$

22.6937

$P_{tot} =$

1.5893e+04

$P_{tot_bis} =$

1.6425e+04

$Q_{tot} =$

765.2811

$Q_{tot_bis} =$

1.2516e+04

$P_{_m1} =$

1.7401e+04

$Q_{_m1} =$

1.2516e+04

$I_{_m1} =$

32.5669

$Recc =$

40

$rend_{_m1} =$

0.8177

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