Exercice 6 : Apprendre à modéliser et à résoudre un problème.

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| --- | --- | --- | --- |
| P1max=18 000W | P2max=9 000W | P3=3kW | P4=15kW |
| U1=360V | U2=260V | U3=230V | U4=230V |
| R1=0.6Ω | R2=0.8Ω |  |  |

On sait que :

i1≤i1max.

i2≤i2max.

i3==13A

i4==65A

Donc :

i1+i2=i3+i4 = 13+65=78A

i1+i2=78

PJ=0.6i1²+0.8i2²

PJ=R1i1²+R2i2²

PJ=0.6i1²+0.8(78-i1)²

PJ=0.6i1²+0.8(78²-2\*78i1+i1²)

PJ=1.4i1²-125.12i1+4892.20

f(x)=ax²+bx+c

f’(x)=2ax+b

f’(x)=2ax+b=0

x=

PJ=2.8i1²-125.12

2\*1.4i1²-125.12=0

i1min = = 44.7A

i2min = 78-44.7=33.3A