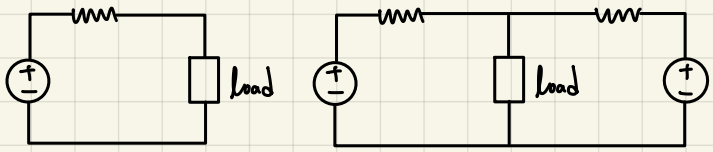
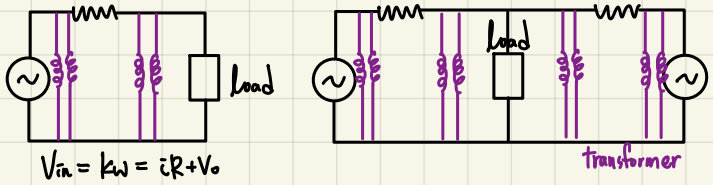
① DC　L short . C open . 升降壓需靠電力電子

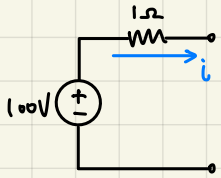


② AC　$L_S = jwL$. $\frac{1}{CS} = \frac{1}{jwC} = -j\frac{1}{wC}$

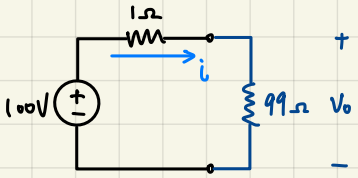


$V_{in} = k_w = iR + V_o$

DC空載　$i=0$. $V_o = V_i = 100V$



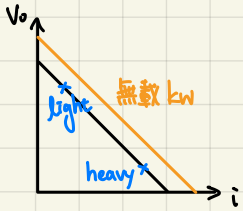
DC輕載



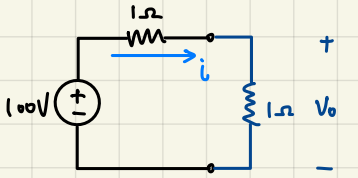
$100 = (1+99) \times i$

$i = 1A$

$V_o = 1 \times 99 = 99V$



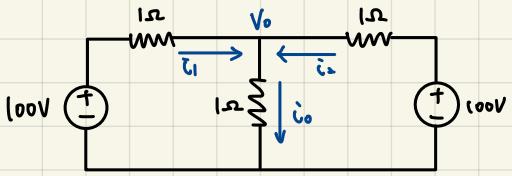
DC 重載



$100 = (1+1) \times i$

$i = 50$

$V_o = 50 \times 1 = 50V$

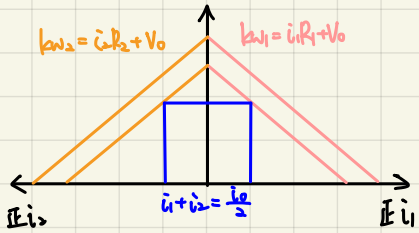


$\frac{100-V_o}{1\Omega} + \frac{100-V_o}{1\Omega} = \frac{V_o}{1\Omega}$

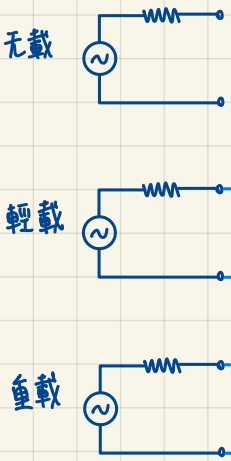
$200 = 3V_o$

$V_o = \frac{200}{3} = 66.7V$　比單 vsource 好 (50V)

① KVL　② KCL



AC 的升降压　　(DC 升降压需靠电力电子)



二台(含)以上 AC 発电机
必須 鎖相. 零誤差

* freq 相同零誤差
三相相序一樣
相角不能差太多

$_{(法)}V_{ab} = (\vec{v} \times \vec{B}) \cdot \vec{L}$
↓
速度不可任意改变 (AC発电机鎖相)

利用安培定律 $\oint H\,dL = Ni$

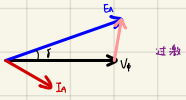
parallel AC (並網)

1. equal rms line voltage
2. same phase sequence
3. equal phase angles
4. freq. of new generator (oncoming generator) equals to freq. of running system

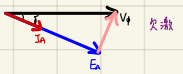
service factor：可容忍偶爾的过載

供应 Q (RC) $E_A \cos\delta > V_\phi$ 过激 (通利能量功)　　消耗 Q (RL) $E_A \cos\delta < V_\phi$ 欠激

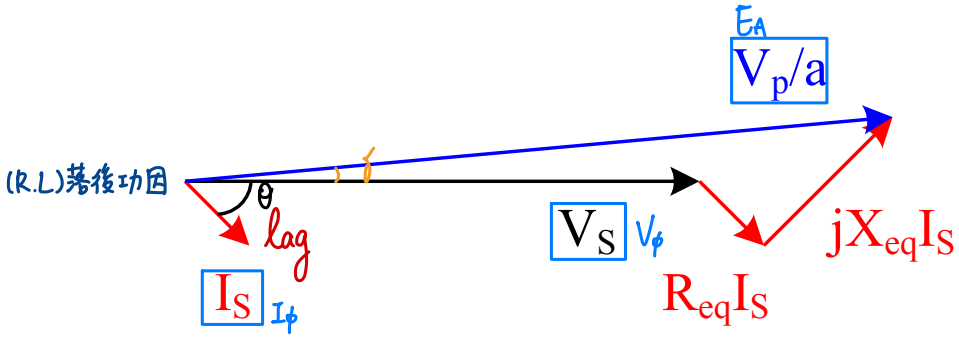
供应 P (発电机)

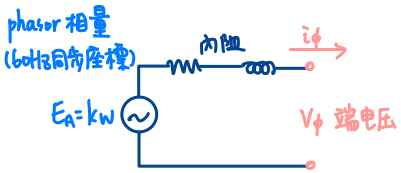


消耗 P (馬達)

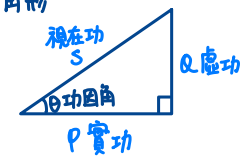


The Transformer Phasor Diagram

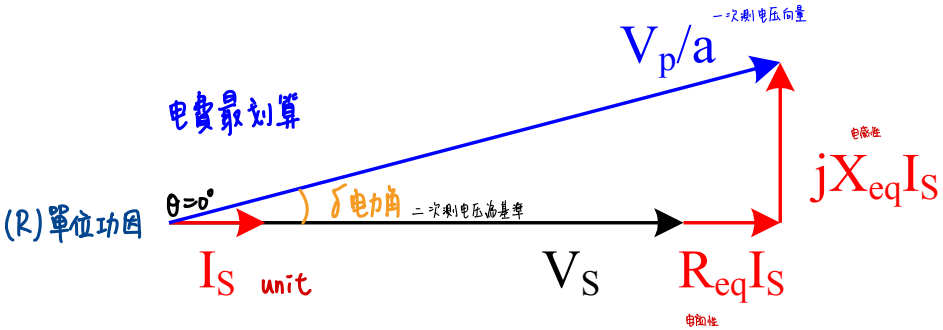




電力三角形



cosθ 功因 . $S = P + jQ$



$P_{3\phi} = 3V_\phi I_\phi \cos\theta$

$= \sqrt{3} V_{LL} I_{LL} \cos\theta$

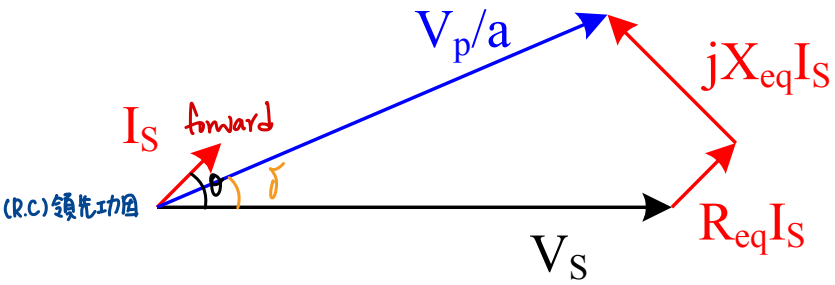
Y接 $V_{LL} = \sqrt{3} V_\phi$. 電角領先 30°, $I_{LL} = I_\phi$

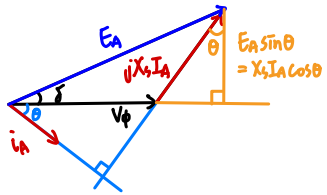
Δ接 $V_{LL} = V_\phi$, $I_{LL} = \sqrt{3} I_\phi$. 電角落後 30°

對發電機而言： $E_A \sin\delta = I_A X_S \cos\theta$

$TW = P = 3V_\phi I_A \cos\theta$

$= \dfrac{3V_\phi E_A \sin\delta}{X_S}$





⇒ δ = 0°. $P_{out} = 0$

δ = 90°. $P_{out} \Rightarrow$ MAX (崩潰点)