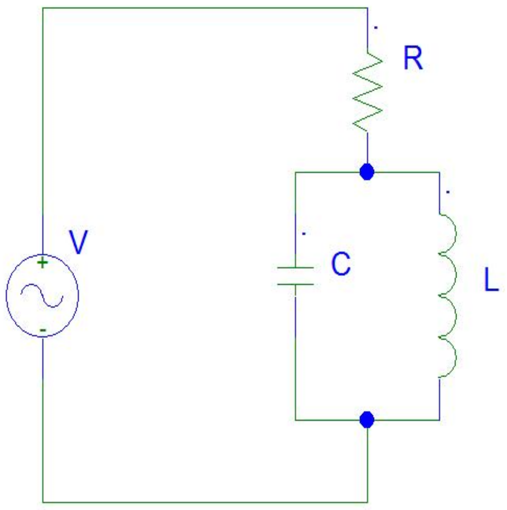


$\omega := 350000 \ \frac{rad}{s}$ $\quad V := 12 \ V\angle 30\ °$

$C := 12 \ nF$ $\quad R := 0.5 \ k\Omega$ $\quad L := 30 \ mH$

(1) Calcolare l'impedenza totale (Zs)
(2) Calcolare la I su Zs
(3) Calcolare la corrente su C
(4) Calcolare la corrente su L
(5) Verificare che $I_C + I_L$ = I

$X_C := -j \cdot \frac{1}{\omega \cdot C}$ $\quad X_L := j \cdot \omega \cdot L$ $\quad X_R := R$

$Z_p := \frac{X_C \cdot X_L}{X_C + X_L} = -243.619i \ \Omega$

In notazione polare

(1) $Z_s := Z_p + R = (500 - 243.619i) \ \Omega$ $\quad pol(Z_s) = [556.193 \ \Omega \ \ -25.977]$

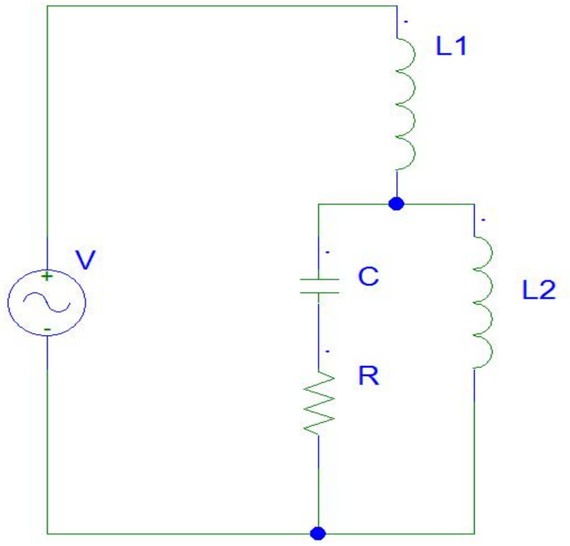
(2) $I := \frac{V}{Z_s} = (0.012 + 0.018i) \ A$ $\quad pol(I) = [0.022 \ A \ \ 55.977]$

(3) $I_C := \frac{X_L}{X_L + X_C} \cdot I = (0.012 + 0.018i) \ A$ $\quad pol(I_C) = [0.022 \ A \ \ 55.977]$

(4) $I_L := \frac{X_C}{X_L + X_C} \cdot I = \left(-2.801 \cdot 10^{-4} - 4.149i \cdot 10^{-4}\right) \ A$

$pol(I_L) = \left[\left(5.006 \cdot 10^{-4}\right) \ A \ \ -124.023\right]$

(5) $I_L + I_C = (0.012 + 0.018i) \ A$



$\omega := 6 \cdot 10^6 \ \frac{rad}{s}$ $\quad V := 20 \ V \angle 15 \ °$

$C := 1200 \ pF$ $\quad R := 0.3 \ k\Omega$

$L_1 := 0.1 \ mH$ $\quad L_2 := 5 \ mH$

(1) Calcolare l'impedenza totale (Z)
(2) Calcolare la I su L_1
(3) Calcolare la corrente su C
(4) Calcolare la corrente su L_2
(5) Verificare che $I_C + I_{L2}$ = I

$X_C := -j \cdot \frac{1}{\omega \cdot C}$

$X_{L1} := j \cdot \omega \cdot L_1$ $\quad X_{L2} := j \cdot \omega \cdot L_2$

In notazione polare

$Z_s := R + X_C = (300 - 138.889i) \ \Omega$ $\quad pol(Z_s) = [330.591 \ \Omega \ \ -24.842]$

$Z_p := \frac{Z_s \cdot X_{L2}}{Z_s + X_{L2}} = (302.767 - 136.493i) \ \Omega$

(1) $Z := Z_p + X_{L1} = (302.767 + 463.507i) \ \Omega$ $\quad pol(Z) = [553.63 \ \Omega \ \ 56.847]$

(2) $I := \frac{V}{Z} = (0.027 - 0.024i) \ A$ $\quad pol(I) = [0.036 \ A \ \ -41.847]$

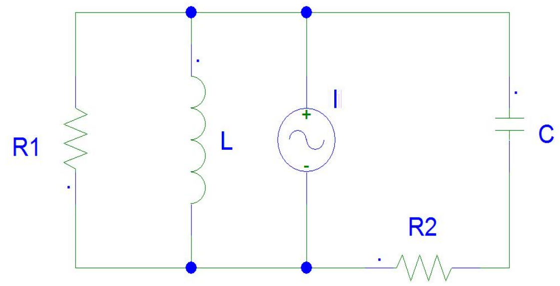
(3) $I_{L2} := \frac{Z_s}{Z_s + X_{L2}} \cdot I = \left(-3.657 \cdot 10^{-4} - 1.619i \cdot 10^{-4}\right) \ A$

$pol(I_{L2}) = \left[\left(3.999 \cdot 10^{-4}\right) \ A \ \ -156.114\right]$

(4) $I_C := \frac{X_{L2}}{Z_s + X_{L2}} \cdot I = (0.027 - 0.024i) \ A$

$pol(I_C) = [0.036 \ A \ \ -41.271]$

(5) $I_{L2} + I_C = (0.027 - 0.024i) \ A$



Con generatore di corrente

$\omega := 500 \cdot 10^3 \ \frac{rad}{s}$ $\quad I := 2\ m\ A \angle 25\ °$

$C := 4.7\ nF$ $\quad L := 2\ mH$

$R_1 := 0.2\ k\Omega$ $\quad R_2 := 0.1\ k\Omega$

(1) Calcolare l'impedenza totale (Z)
(2) Calcolare la V_I sul generatore I
(3) Calcolare la corrente su C
(4) Calcolare la corrente sul parallelo $R_1\ //\ L$
(5) Verificare che $I_C + I_{LR1} = \mathrm{I}$
(6) Verificare che $V_C + V_{R2} = V_I$

$X_C := -j \cdot \frac{1}{\omega \cdot C}$ $\qquad X_L := j \cdot \omega \cdot L$

$Z_p := \frac{R_1 \cdot X_L}{R_1 + X_L} = (192.308 + 38.462i)\ \Omega$ $\qquad pol(Z_p) = [196.116\ \Omega\ \ 11.31]$

$Z_s := R_2 + X_C = (100 - 425.532i)\ \Omega$ $\qquad pol(Z_s) = [437.124\ \Omega\ \ -76.775]$

(1) $Z := \frac{Z_p \cdot Z_s}{Z_p + Z_s} = (172.535 - 38.329i)\ \Omega$ $\qquad pol(Z) = [176.741\ \Omega\ \ -12.525]$

(2) $V_I := Z \cdot I = (345.136 + 76.358i)\ m \cdot V$ $\qquad |V_I| = 353.482\ m \cdot V$ $\quad \measuredangle(V_I) = 12.475\ °$

(3) $I_C := \frac{V_I}{Z_s} = (0.011 + 0.809i)\ m \cdot A$ $\qquad pol(I_C) = [0.809\ m \cdot A\ \ 89.251]$

(4) $I_{LR1} := \frac{V_I}{Z_p} = (1.802 + 0.037i)\ m \cdot A$ $\qquad pol(I_{LR1}) = [1.802\ m \cdot A\ \ 1.165]$

(5) $I_C + I_{LR1} = (1.813 + 0.845i)\ m \cdot A$ $\qquad pol(I_C + I_{LR1}) = [2\ m \cdot A\ \ 25]$

(6) $V_C + V_{R2} =$ $\qquad X_C \cdot I_C + R_2 \cdot I_C = (345.136 + 76.358i)\ m \cdot V$