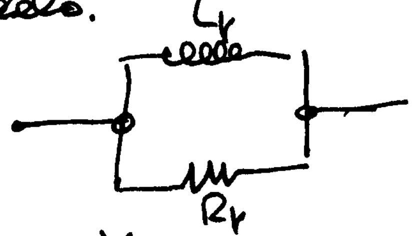
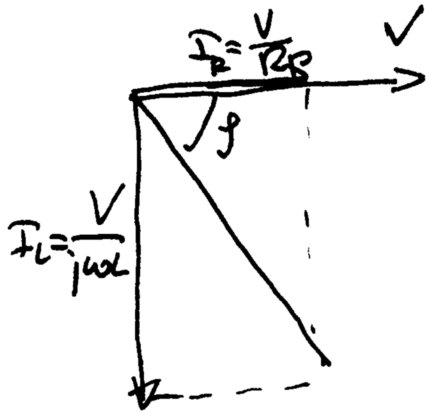
Può essere comodo rappresentare le perdite con una resistenza R_p parallelo.

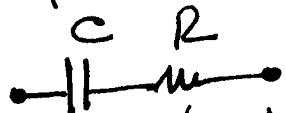


$$\frac{1}{R_p}+\frac{1}{j\omega L_p}=\frac{1}{R+j\omega L}=Y \Rightarrow \qquad \frac{1}{\omega L_p}=\frac{\omega L}{R^2+\omega^2L^2} \qquad \frac{1}{R_p}=\frac{R}{R^2+\omega^2L^2}$$

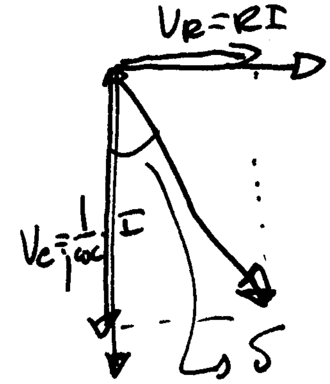


$$Q=\operatorname{tg}\varphi=\frac{V/\omega L_p}{V/R_p}=\frac{R_p}{\omega L}$$

- Capacità:



↳ perdite di corrente in dielettrico

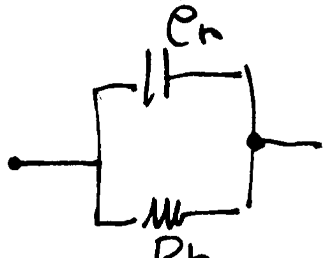


$$\operatorname{tg}\delta=\frac{RI}{\frac{I}{\omega C}}=\omega RC$$

$\operatorname{tg}\delta$ = angolo di perdite aumenta con le perdite

stessa cosa come per L con C

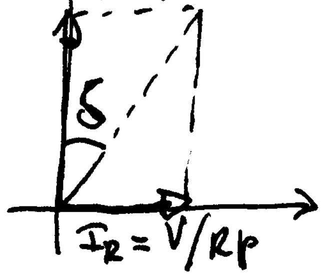
- circuito parallelo



$$\frac{1}{R_p}+j\omega C_p=\frac{1}{R-j\frac{1}{\omega C}}$$

$$\frac{1}{R_p}=\frac{R}{R^2+\frac{1}{\omega^2C^2}}$$

$$\omega C_p=\frac{1/\omega C}{R^2+\frac{1}{\omega^2C^2}}$$



$$\operatorname{tg}\delta=\frac{V/R_p}{V\omega C_p}=\frac{1}{\omega C_pR_p}$$