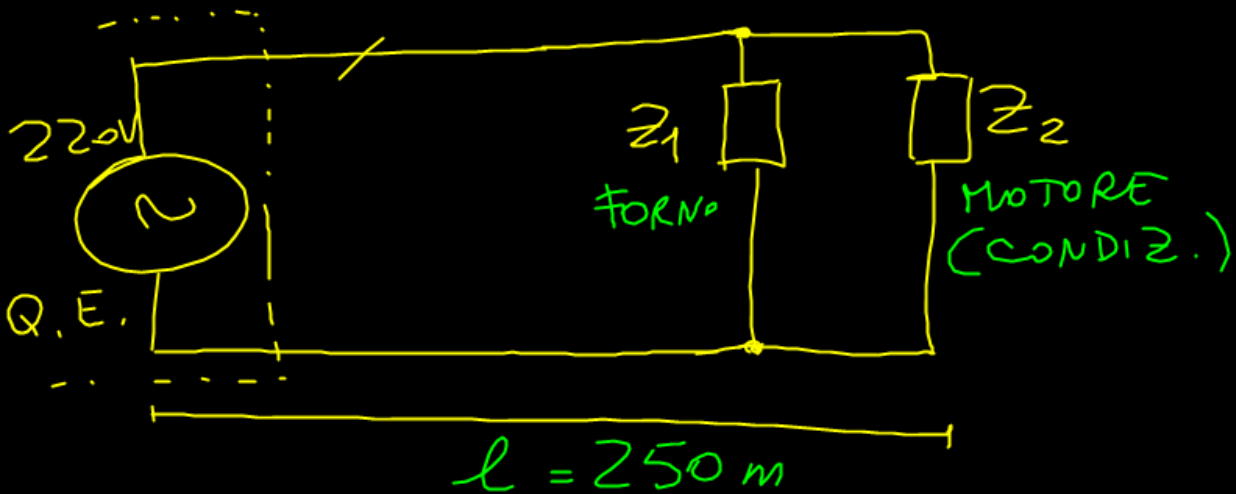


# CALCOLO DI IMPIANTI ELETTRICI CIVILI

1/1



- ipotizzo il carico  
concentrato a fine linea

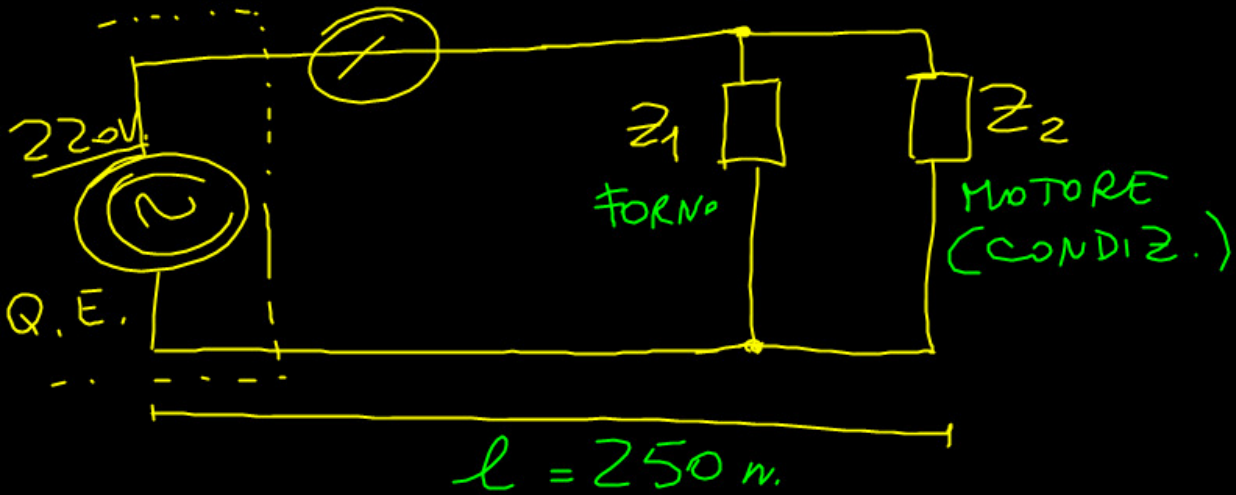
→ DIMENSIONARE CONDUTTORI E PROTEZIONI

$$\begin{aligned} Z_1 &\Rightarrow P = 1 \text{ kW} \\ \eta &= 0,99 \\ \cos \phi &= 0,98 \\ &\text{quasi completam.} \\ &\text{resistivo (ohmico)} \end{aligned}$$

$$\begin{aligned} Z_2 &\Rightarrow P_n = 2 \text{ kW} \\ \eta &= 0,8 \\ \cos \phi &= 0,87 \\ &\text{ohmico-induttivo} \end{aligned}$$

# CALCOLO DI IMPIANTI ELETTRICI CIVILI

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$$Z_1 \Rightarrow P = 1 \text{ kW}$$

$$\eta = 0,99$$

$$\cos \varphi = 0,98$$

$$P_{a1} = \frac{P_n \cdot 1000}{\eta} = \frac{1000}{0,99} = 1010 \text{ W}$$

$$Z_2 \Rightarrow P_n = 2 \text{ kW}$$

$$\eta = 0,8$$

$$\cos \varphi = 0,87$$

$$P_1 = V \cdot I_1 \cdot \cos \varphi_1$$

potenza attiva

$$I_1 = \frac{P_1}{V \cdot \cos \varphi_1} = \frac{P_{a1}}{V \cdot \cos \varphi_1} = \frac{1010}{220 \cdot 0,98} = 4,7 \text{ A}$$

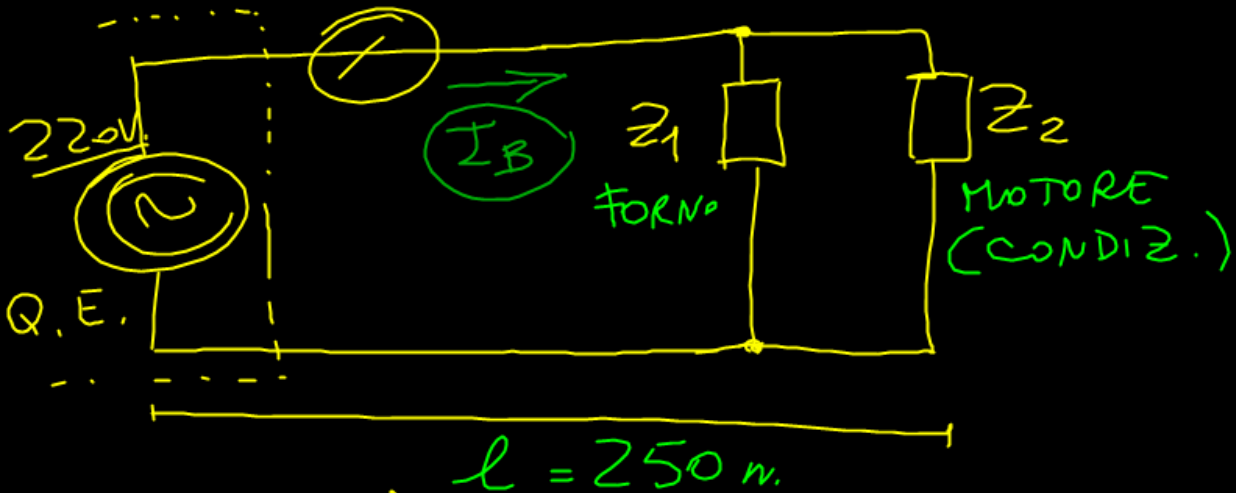
$$Q_1 = V \cdot I_1 \cdot \sin \varphi_1 = 220 \cdot 4,7 \cdot 0,19 \approx 197 \text{ VAR}$$

pot. reattiva

$\uparrow I_1$        $\uparrow \sin(\varphi_1)$

# CALCOLO DI IMPIANTI ELETTRICI CIVILI

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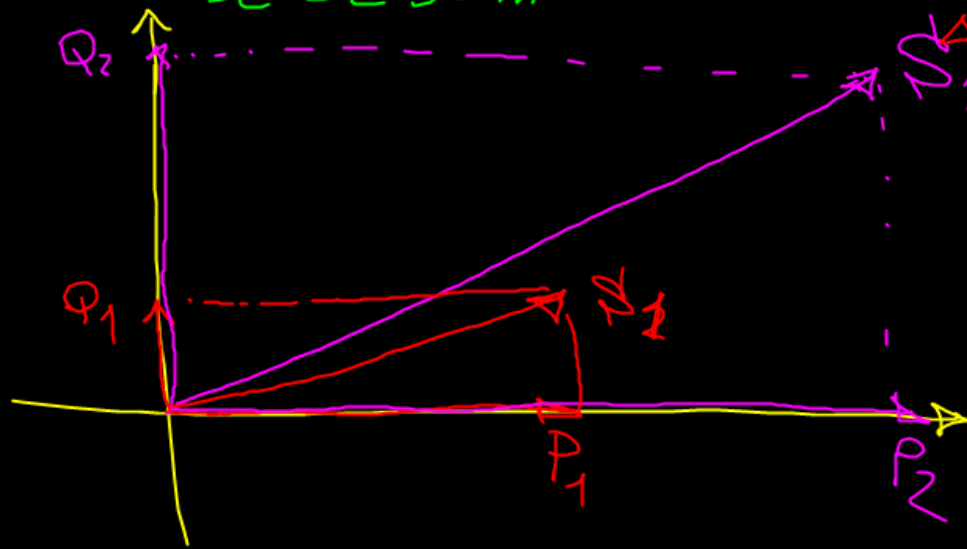


$$S_{TOT} = \sqrt{(P_1 + P_2)^2 + (Q_1 + Q_2)^2} =$$

$$= \sqrt{(1010 + 2500)^2 + (197 + 1430)^2} =$$

*potenza  
apparente*

$$= 3869 \text{ VA}$$



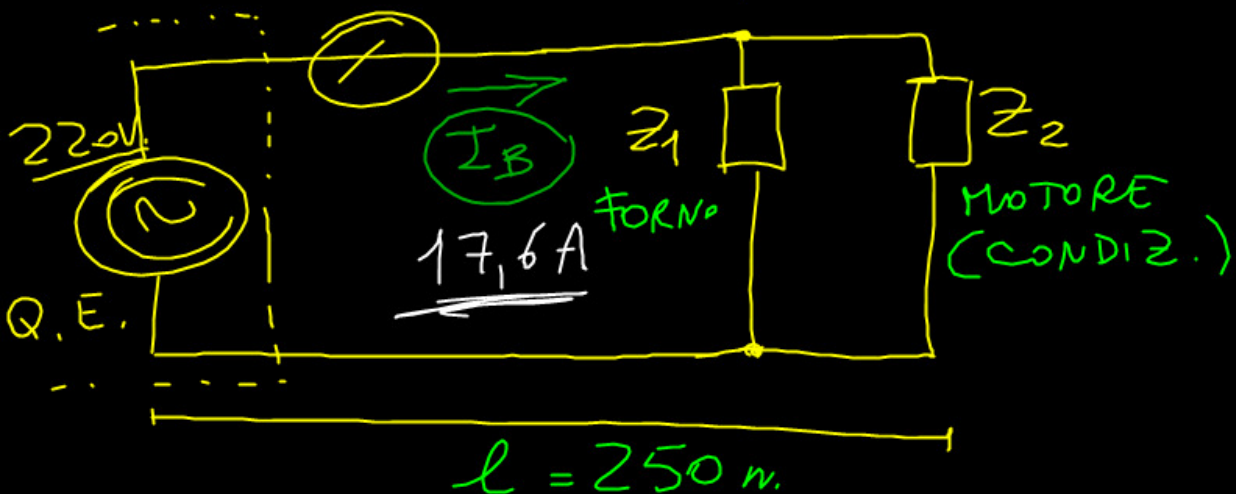
$$S = V \cdot I$$

$$I_B = \frac{S_{TOT}}{V} = \frac{3869}{220} =$$

$$= 17,6 \text{ A}$$

# CALCOLO DI IMPIANTI ELETTRICI CIVILI

1/1



$$R_{fil} = \rho_{70} \cdot \frac{L_{TOT}}{S} =$$

$$= 0.0212 \cdot \frac{500}{2.5 \cdot 10^{-2}} =$$

$$= 4.24 \Omega$$

$$\Delta V = R_{fil} \cdot I_B =$$

$$= 4.24 \cdot 17.6 =$$

$$= 74.4 V$$

$$\Delta V_{MAX} = V \cdot 4\% = 8.8 V$$

$$S \rightarrow 4 mm^2 \rightarrow I_2 = 32 A$$

$$\Rightarrow S \Rightarrow 20 mm^2 \rightarrow 210 A$$

$\rightarrow 250 A$  per il M/T