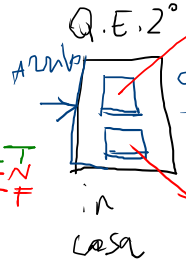
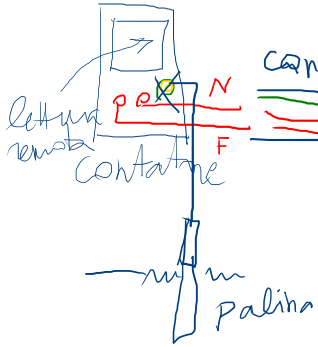


IMPIANTI ELETTRICI MONOFASE CIVILE

Q.E.1°



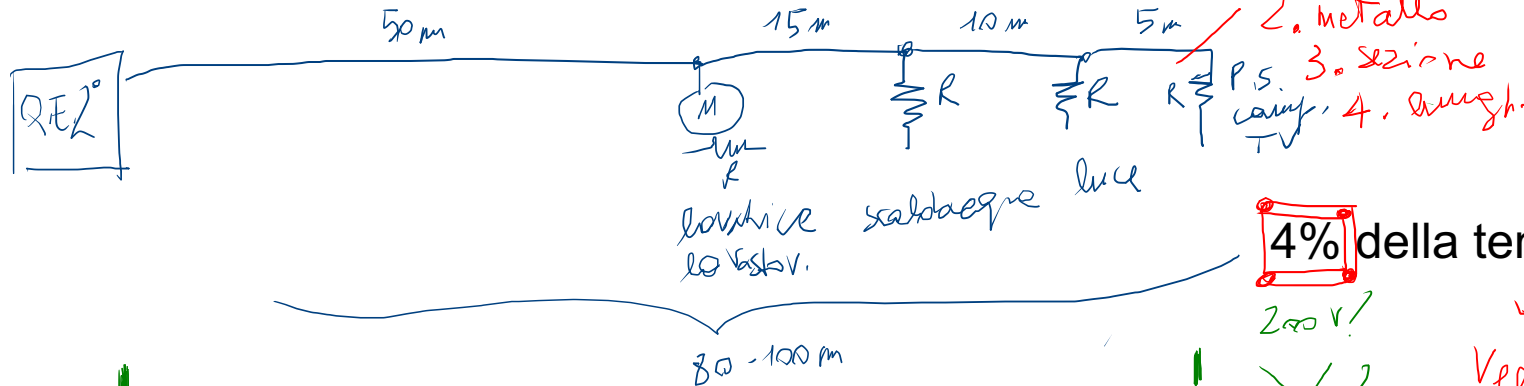
salva persona → salvavita
INT. DIFFERENZIALE

distribuz. domestica

salva impianto → intern. magnetotermico

cont. circuiti velocissimo
sovraccarico lento

Ve (V_N)
scelta < 1. tensione di esercizio 230V
2. corrente di impiego I_b
I_N nominale
6/10/16/20/25



lavatrice
10 V 50V.
saldatore
luce

80 - 100 m

1. Temp.
2. metallo
3. sezione
4. lunghezza

$$R_f = \rho_{CuT} \cdot \frac{l}{S}$$

(R₀)

$$\rho_{Cu20^\circ} = 0,0186 \frac{\Omega \cdot mm^2}{m}$$

4% della tensione di esercizio

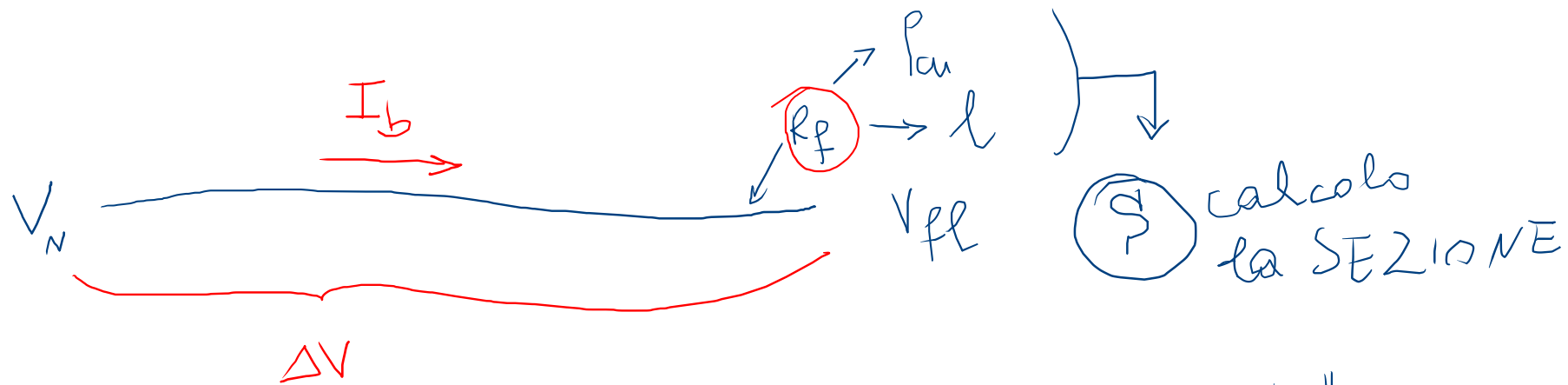
200V?
180V?

$$V_{fl} = V_N - \frac{4 \cdot V_N}{100} = 230 - \frac{4 \cdot 230}{100} = 230 - 9,2 = 220,8V$$

230V

V_N

ΔV Caduta di tensione sul conduttore



$$\Delta V = R_f \cdot I_b \Rightarrow \text{seguire i conduttori}$$

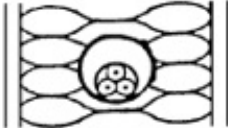
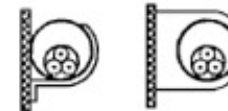
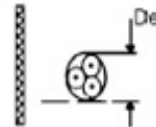
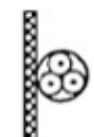
*
9,2V
max
ammessa
(cond. peggiori)

dipende
da i carichi
utilizzatori

$$R_f = \frac{\Delta V}{I_b}$$

$$R_f = \rho_{cu} \cdot \frac{l}{S} \Rightarrow S = \frac{R_f}{\rho \cdot l} = \frac{\Delta V}{I_b \cdot \rho \cdot l}$$

sezione
che rispetta
le norme

Metodologia tipica di installazione	Altri tipi di posa Rif. Appendice A (4)	Tipo di isolamento	Numero cond. caricati	Portata (A)																	
				(1)	Sezione (mm ²)																
				X	<u>1,5</u>	<u>2,5</u>	<u>4</u>	<u>6</u>	<u>10</u>	<u>16</u>	<u>25</u>	<u>35</u>	<u>50</u>	<u>70</u>	<u>95</u>	<u>120</u>	<u>150</u>	<u>185</u>	<u>240</u>	<u>300</u>	
 Cavo in tubo incassato in parete isolante	2-51-73-74	PVC (2)	2 3	-	14 13	18,5 17,5	25 23	32 29	43 39	57 52	75 68	92 83	110 99	139 125	167 150	192 172	219 196	248 223	291 261	334 298	
		EPR (3)	2 3	-	18,5 16,5	25 22	33 30	42 38	57 51	76 68	99 89	121 109	145 130	183 164	220 197	253 227	290 259	329 295	386 346	442 396	
 Cavo in tubo in aria	3A-4A-21-22A-5A-21A-25-33A-31-34A-43-32	PVC (2)	2 3	13,5 12	16,5 15	23 20	30 27	38 34	52 46	69 62	90 80	111 99	133 118	168 149	201 179	232 206	258 225	294 255	344 297	394 339	
		EPR (3)	2 3	17 15	22 19,5	30 26	40 35	51 44	69 60	91 80	119 105	146 128	175 154	221 194	265 233	305 268	334 300	384 340	459 398	532 455	
 Cavo in aria libera, distanziato dalla parete/soffitto o su passerella	13-14-15-16-17	PVC (2)	2 3	15 13,6	22 18,5	30 25	40 34	51 43	70 60	94 80	119 101	148 126	180 153	232 196	282 238	328 276	379 319	434 364	514 430	593 497	
		EPR (3)	2 3	19 17	26 23	36 32	49 42	63 54	86 75	115 100	149 127	185 158	225 192	289 246	352 298	410 346	473 399	542 456	641 538	741 621	
 Cavo in aria libera, fissato alla parete/soffitto	11-11A-52-53	PVC (2)	2 3	15 13,5	19,5 17,5	27 24	36 32	46 41	63 57	85 76	112 96	138 119	168 144	213 184	258 223	299 259	344 299	392 341	461 403	530 464	
		EPR (3)	2 3	19 17	24 22	33 30	45 40	58 52	80 71	107 96	138 119	171 147	209 179	269 229	328 278	382 322	441 371	506 424	599 500	693 576	

$$S = \pi \cdot R^2$$

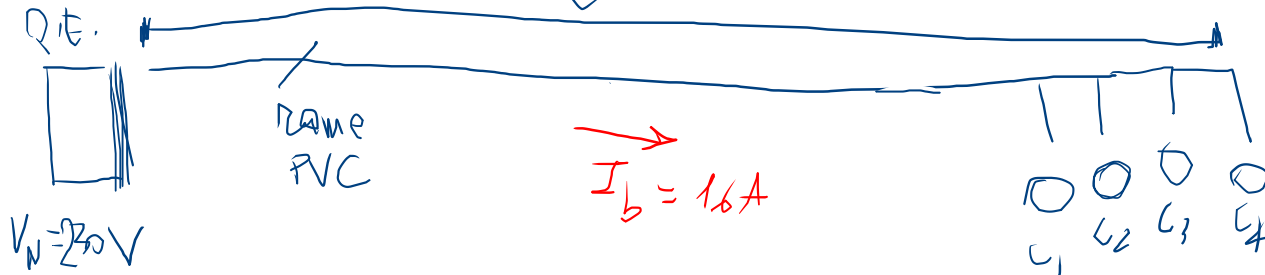
$$R = \sqrt{\frac{S}{\pi}} =$$

$$= \sqrt{\frac{30}{3,14}} =$$

$$\approx 10 \text{ mm} = 1 \text{ cm}$$

$$\Rightarrow D = 2 \text{ cm}$$

Esempio



$$\left. \begin{array}{l} C_1 = 1 \text{ kW} \\ C_2 = 500 \text{ W} \\ C_3 = 2000 \text{ W} \\ C_4 = 100 \text{ W} \end{array} \right\} I_b$$

POTENZA

$$P_T = 1000 + 500 + 2000 + 100 = 3600 \text{ W}$$

$$I_b = \frac{P_T}{V_N} = \frac{3600}{230} \approx 16 \text{ A}$$

$P_T = V_N \cdot I_b$

Concentra
il cavo
a fine linea

$$\left. \begin{array}{l} \Delta V_{\max} \\ 9,2 \text{ V} \end{array} \right\}$$

$$\Delta V = R_f \cdot I_b$$

$$R_f = \frac{\Delta V}{I_b} = \frac{9,2}{16} = 0,57 \Omega$$

$$R_f = \rho_{\text{rame}} \cdot \frac{l}{S}$$

$$\Rightarrow S = \frac{\rho_{\text{rame}} \cdot l}{R_f} = \frac{0,0186 \cdot 100}{0,57} = 3,26 \text{ mm}^2$$

scelgo il
cavo di 4 mm²