

ELETTROTECNICA CIRCUITALE

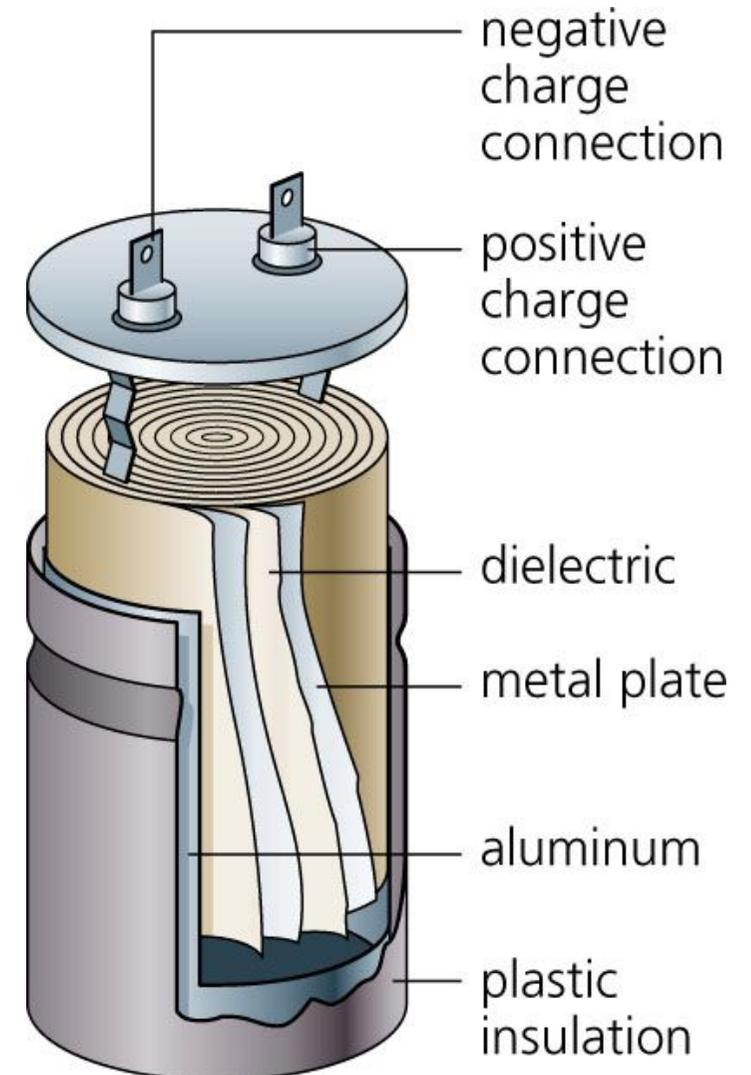
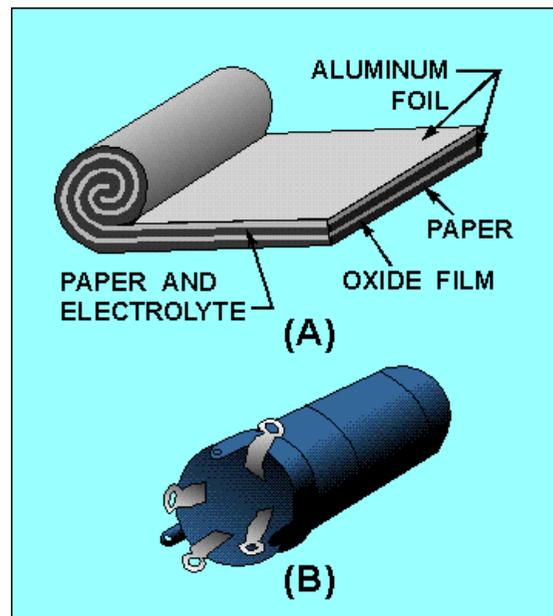
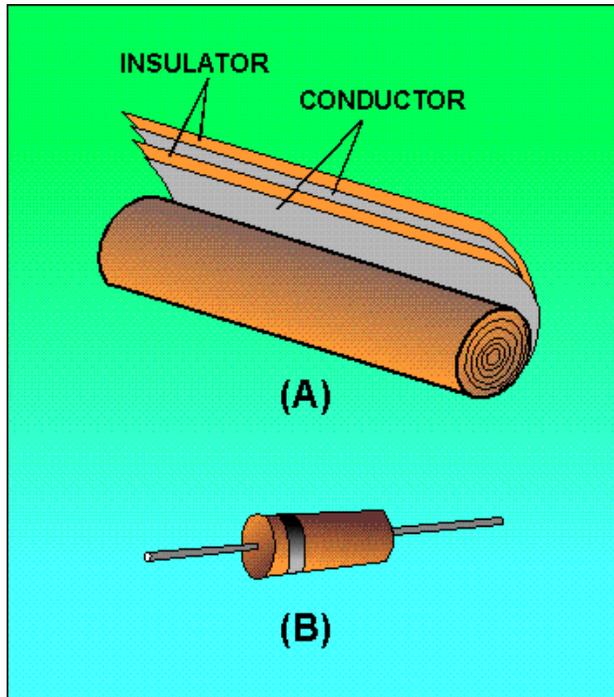
M. GUARNIERI

BIPOLI DINAMICI
DOPPI BIPOLI DINAMICI
cap. 12-13

CONDENSATORI DIELETRICI

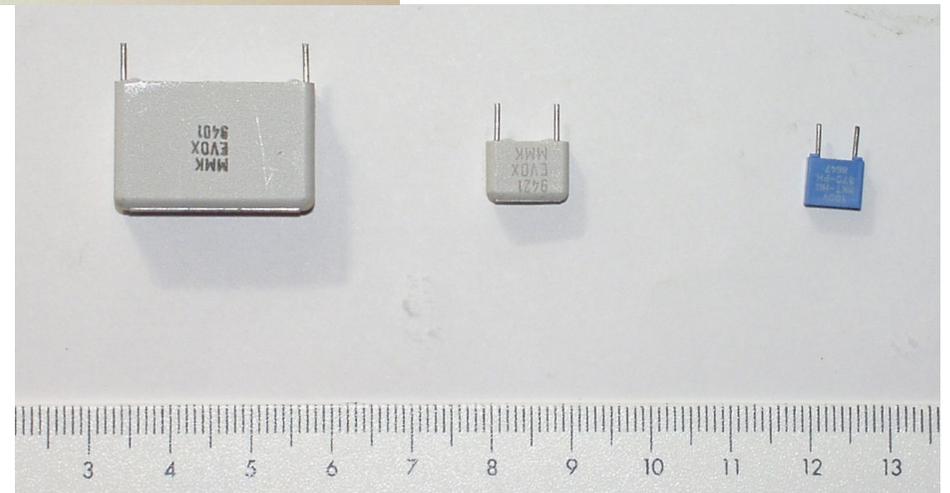
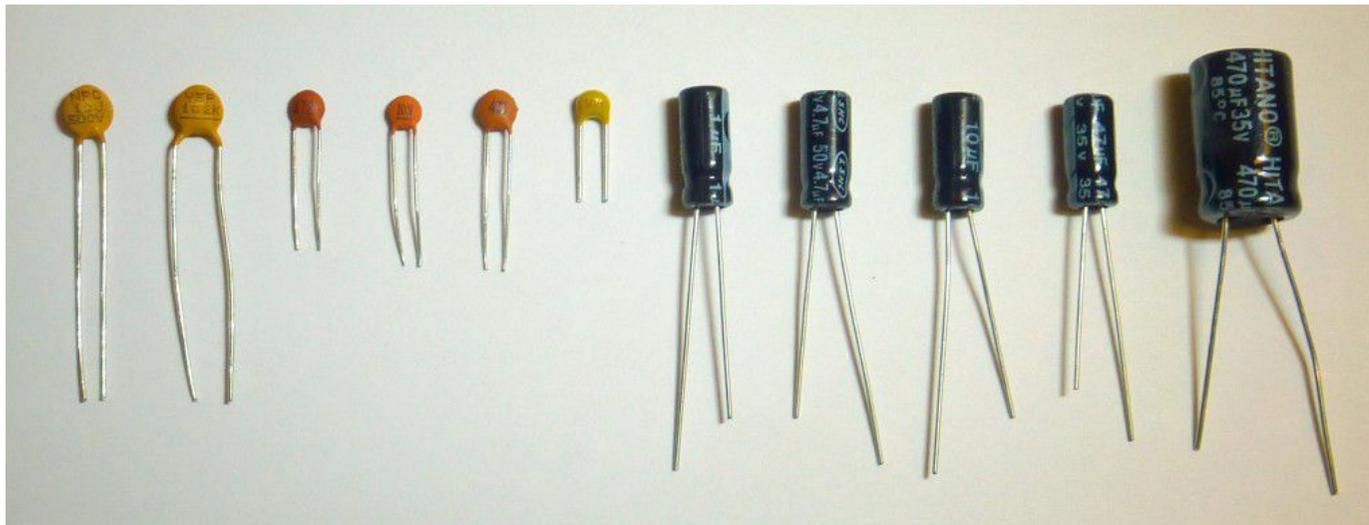


CONDENSATORI DIELETTRICI



CONDENSATORI

Condensatori dielettrici per tensioni di alcuni volt,
adatti ad applicazioni di segnale (pF– μ F)



CONDENSATORI

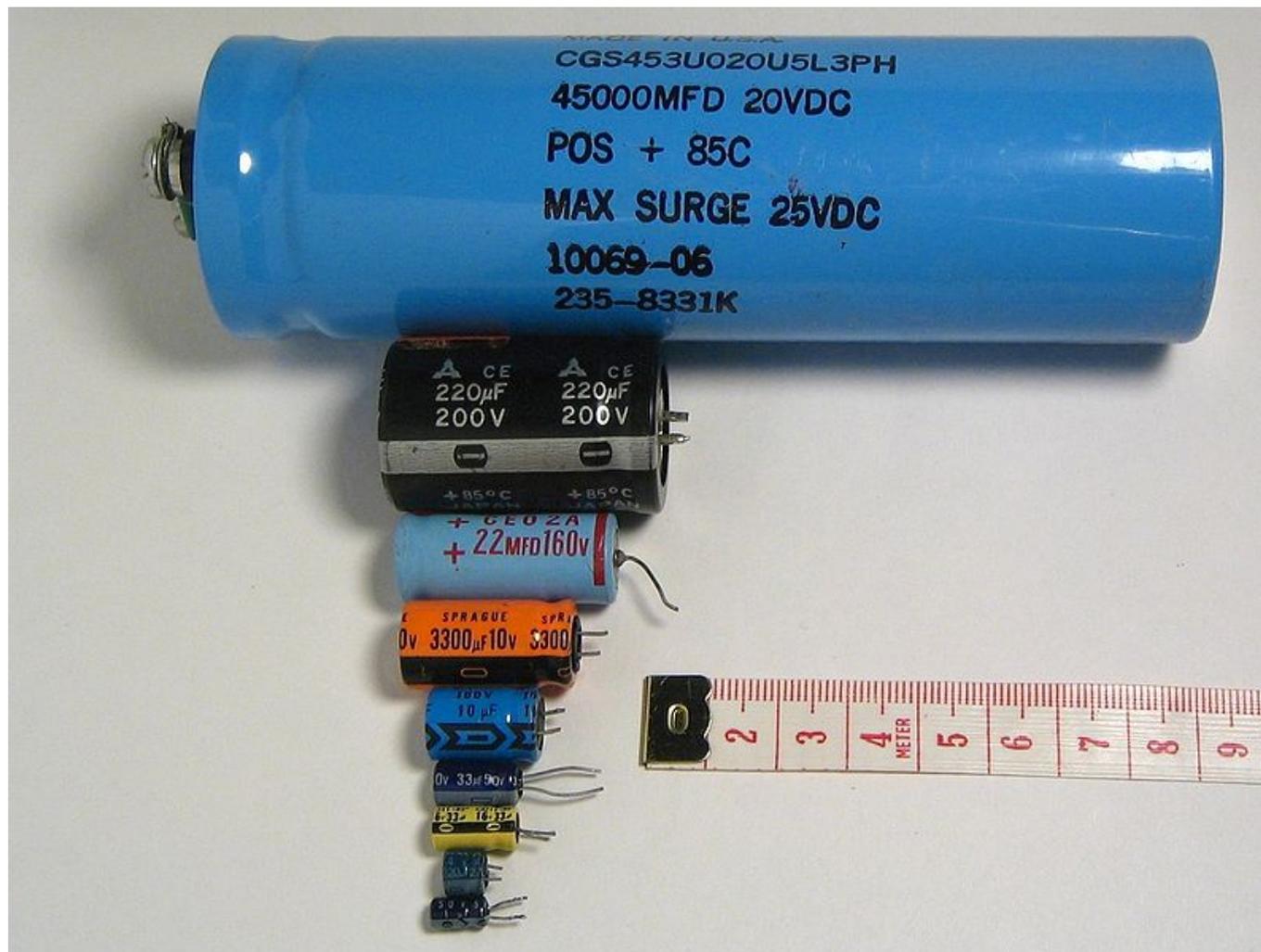
Condensatori dielettrici per condensatori per tensioni di centinaia e migliaia di volt, idonei ad applicazioni di potenza (pF– μ F)



CONDENSATORI

Condensatori elettrolitici 10^0 – 10^2 V.

Le capacità sono dell'ordine di 10^{-6} – 10^0 F



CONDENSATORI

Supercondensatori da 10^0 – 10^1 V.

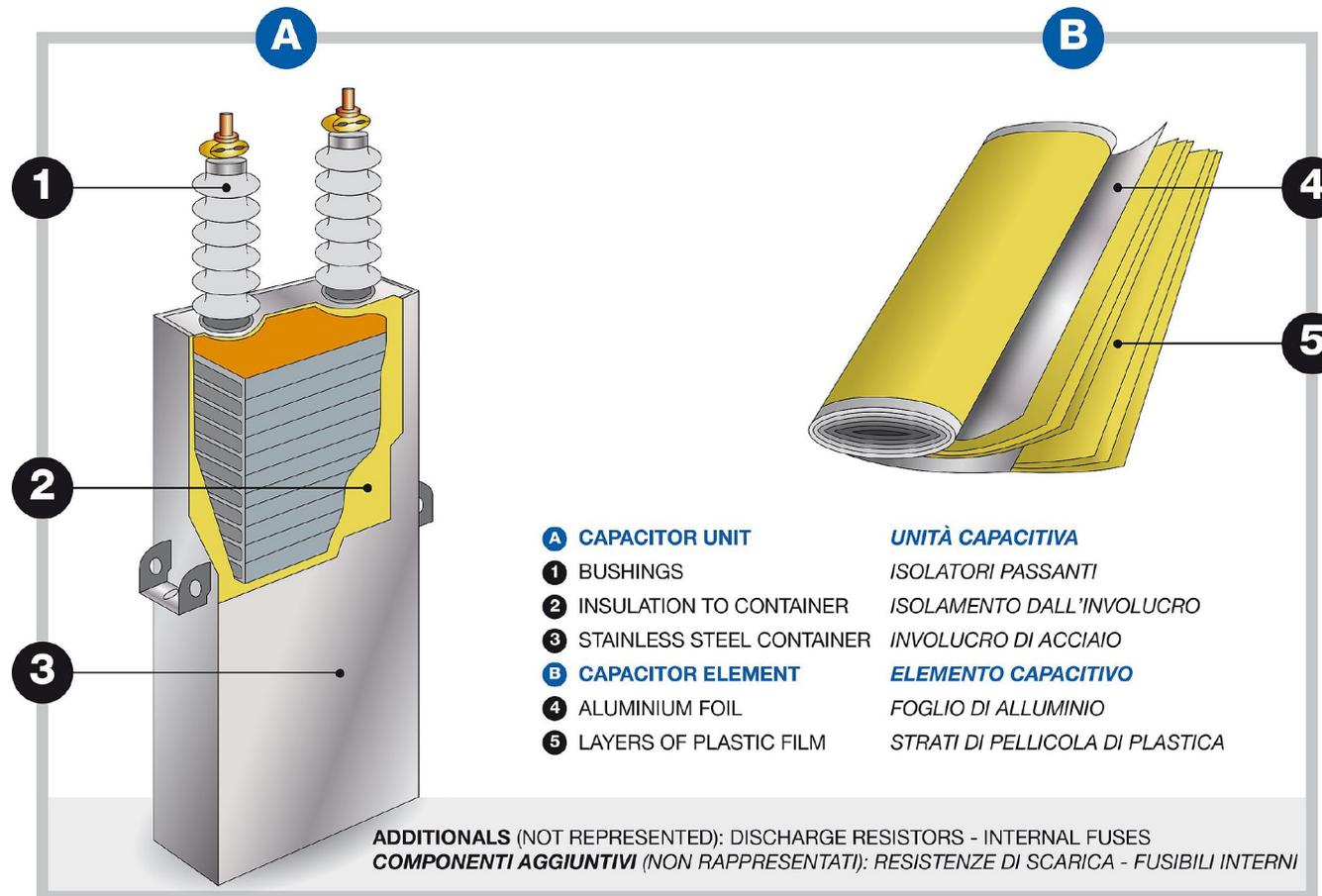
Le capacità sono dell'ordine di 10^2 – 10^3 F



CONDENSATORI

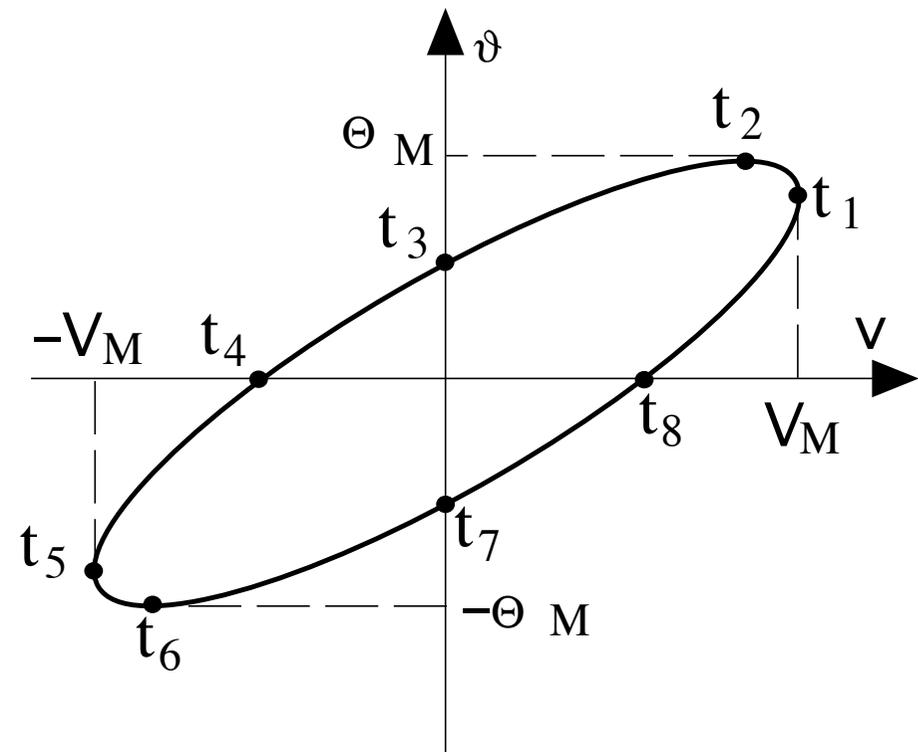
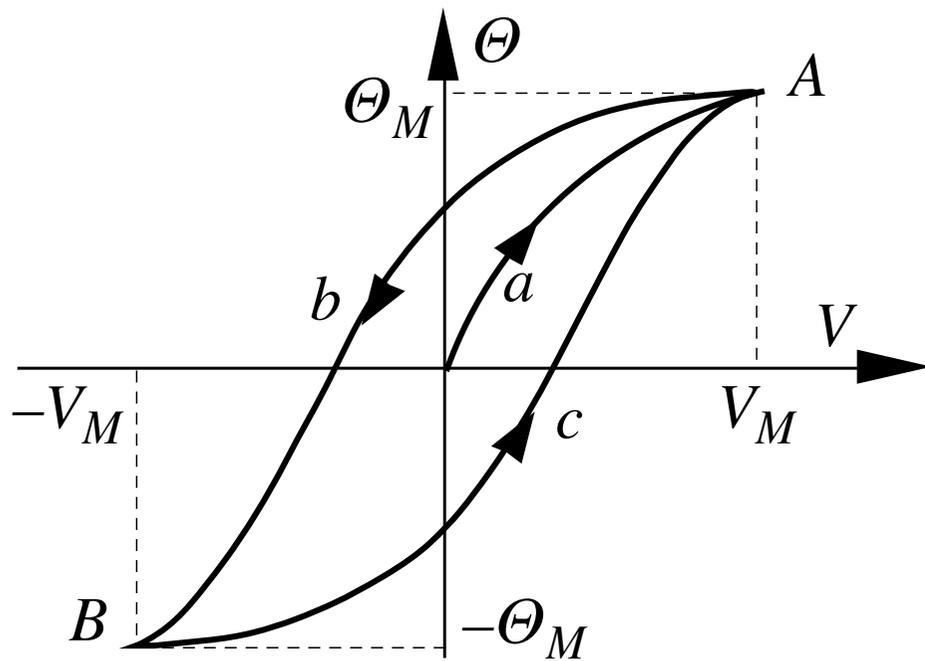
per AT da 10^3-10^5 V.

Le capacità sono dell'ordine di $10^{-3}-10^{-2}$ F

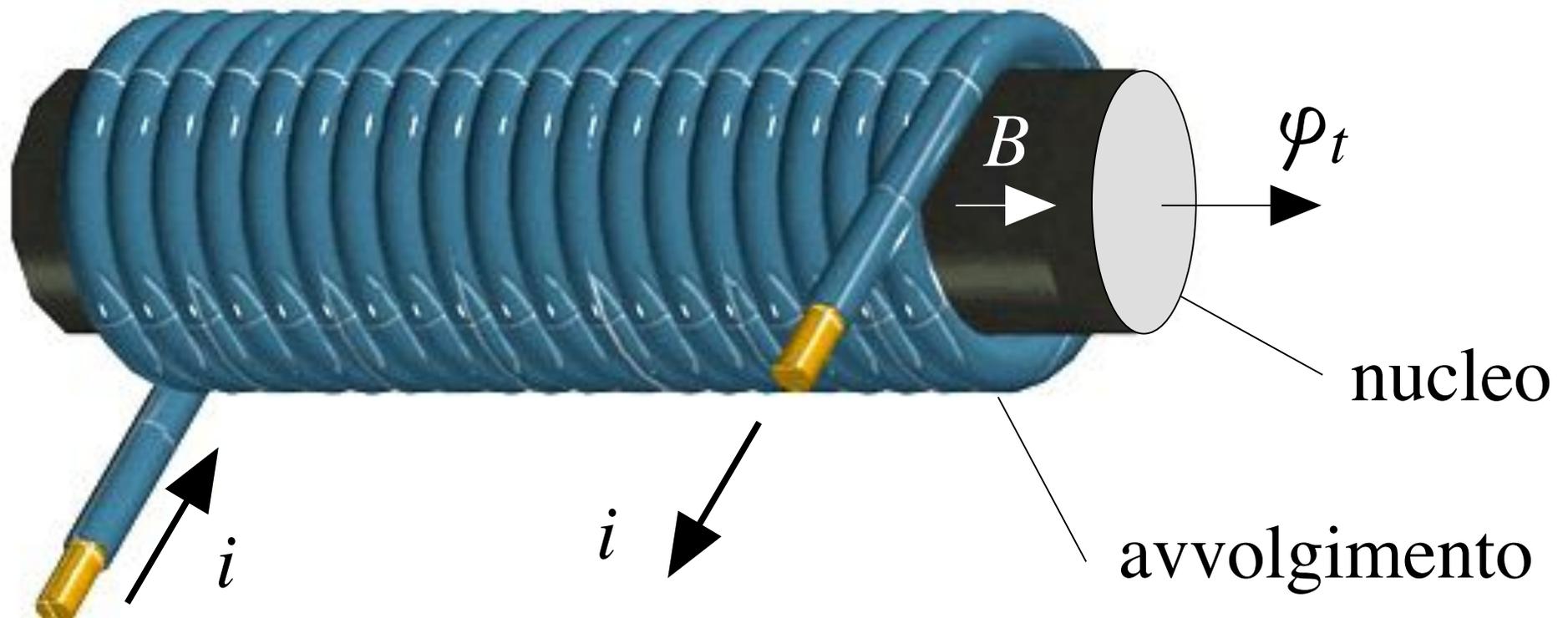


CONDENSATORI

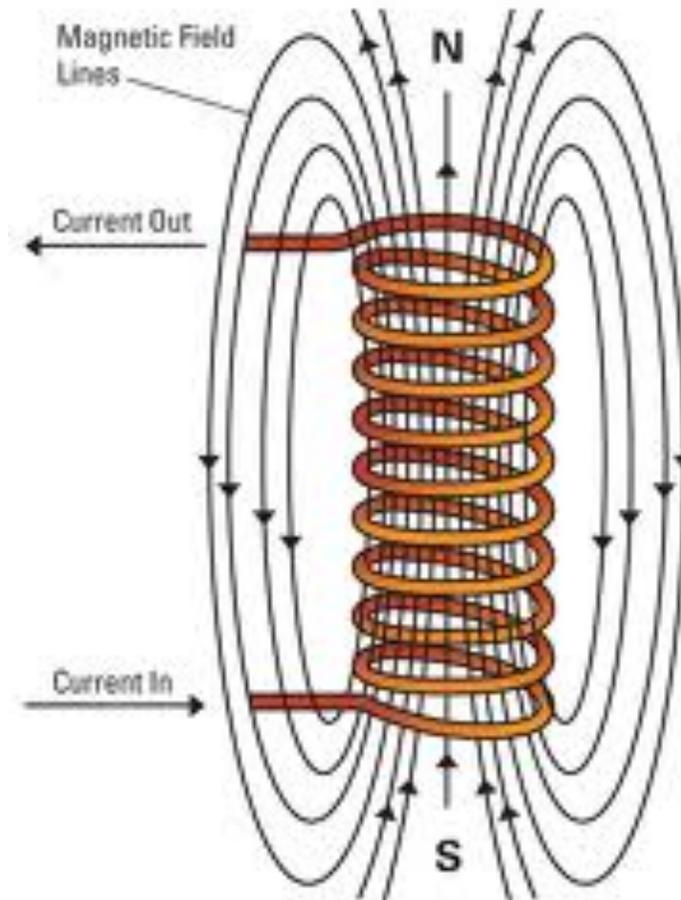
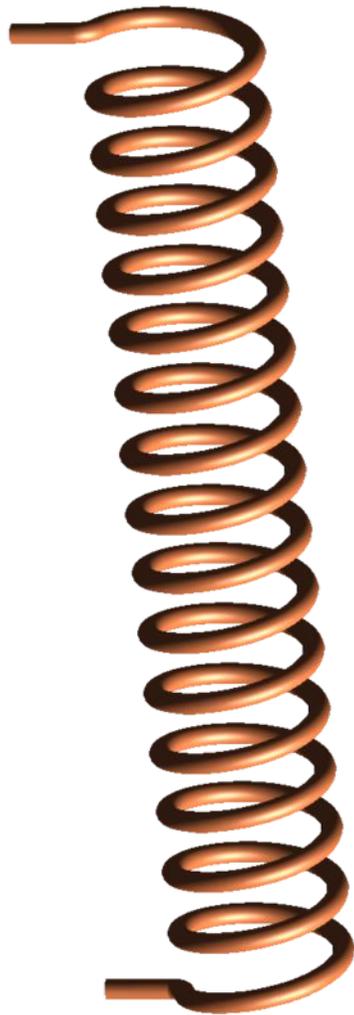
COMPORTAMENTI ISTERETICI E DISSIPATIVI



AVVOLGIMENTI INDUTTORI



AVVOLGIMENTI INDUTTORI



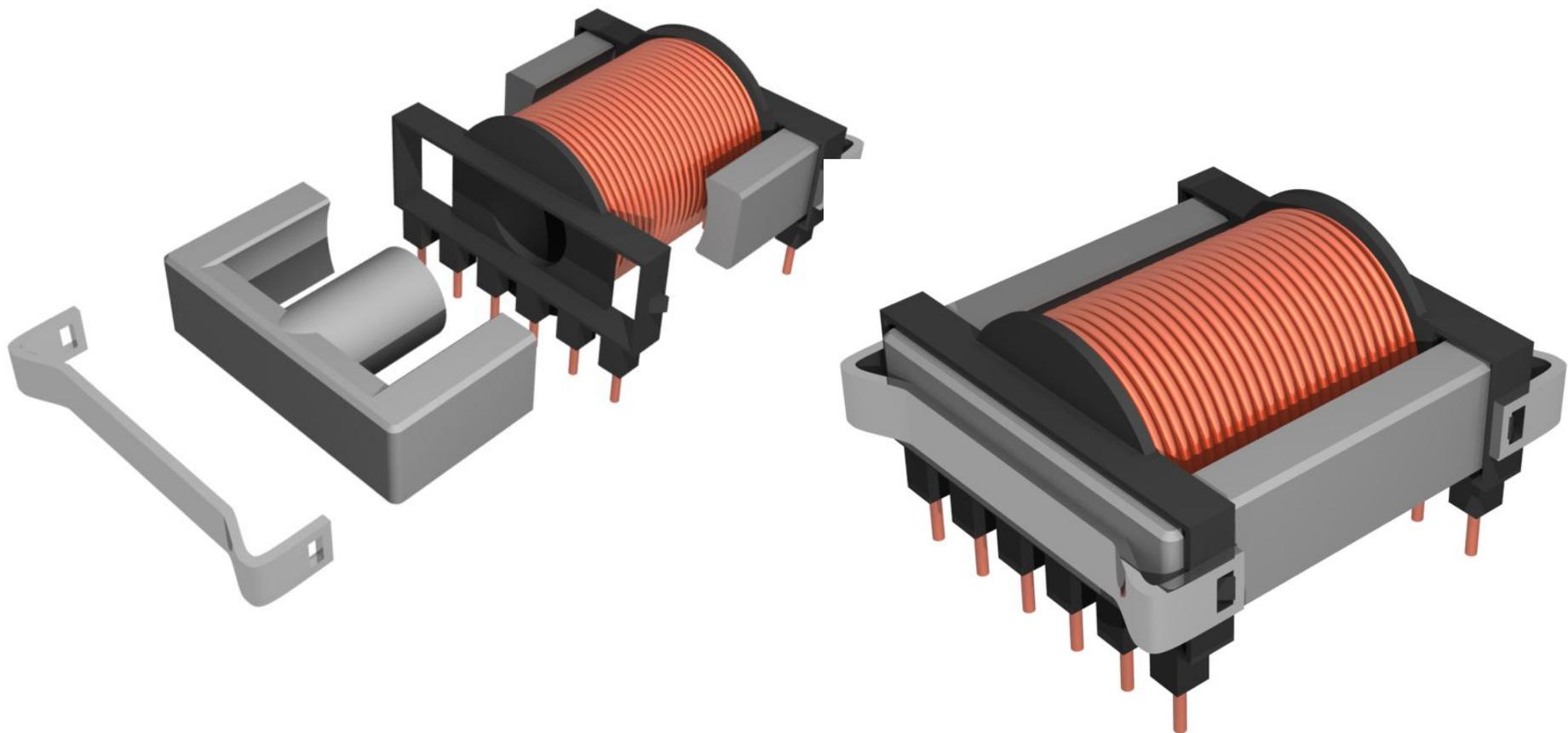
INDUTTORI

Avvolgimenti induttori solenoidale e toroidale per correnti di 10^0 – 10^1 A ed induttanze di frazioni di mH



INDUTTORI

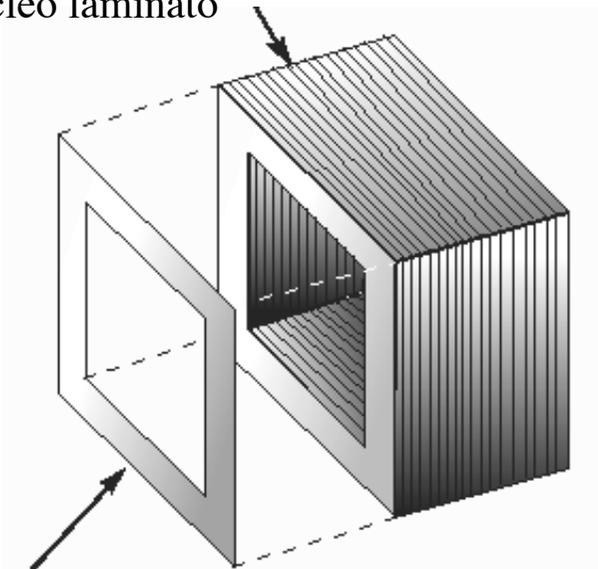
Avvolgimenti induttori solenoidali con nucleo a mantello



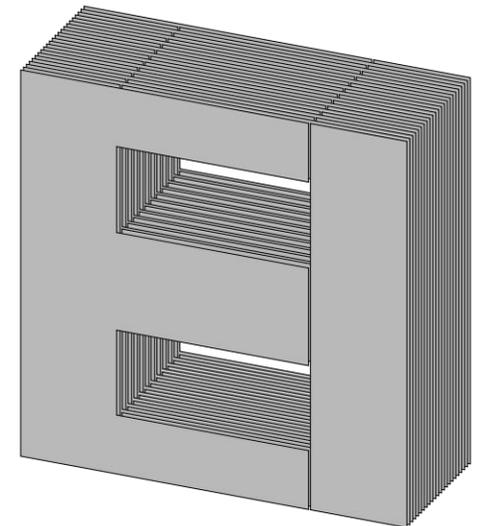
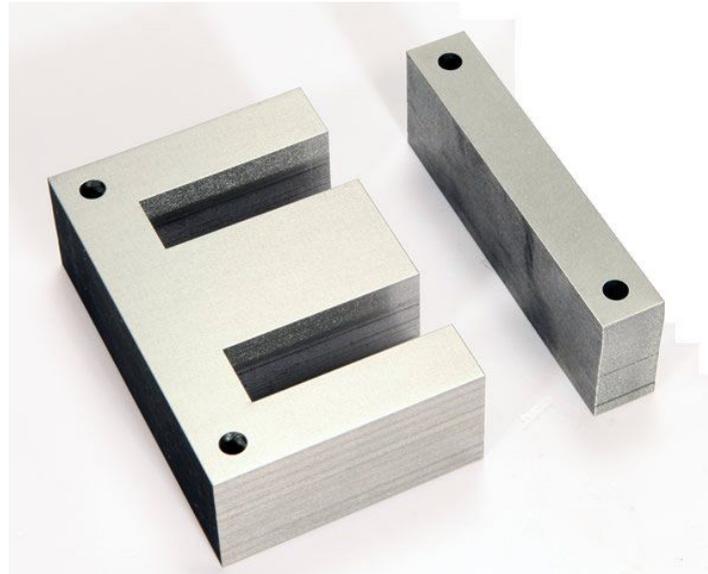
INDUTTORI

Nuclei magnetici

nucleo laminato

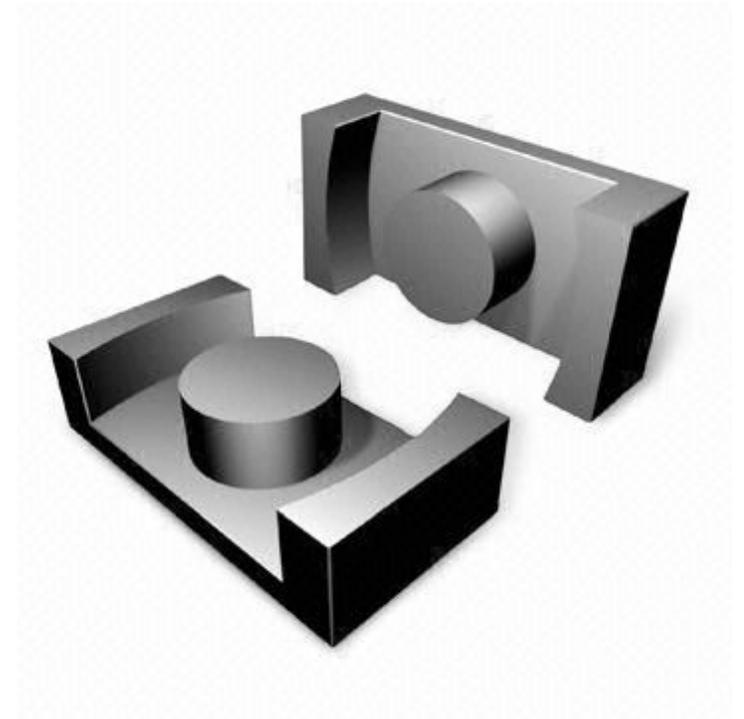
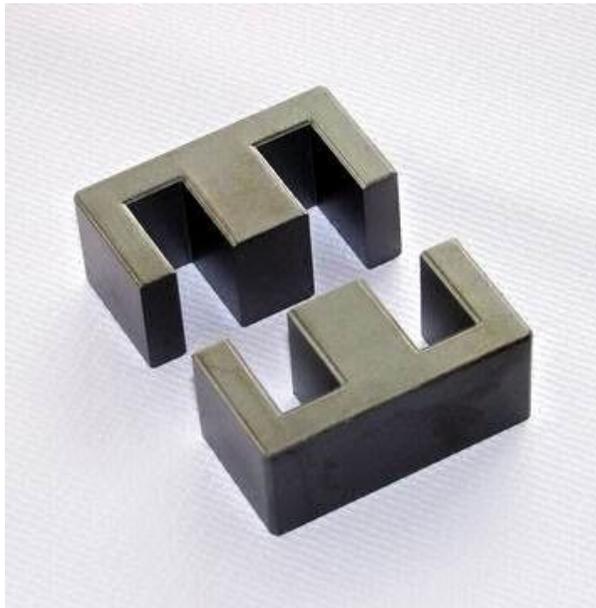
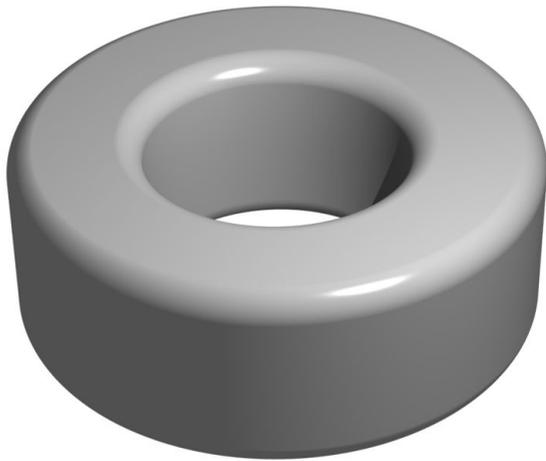


lamierino



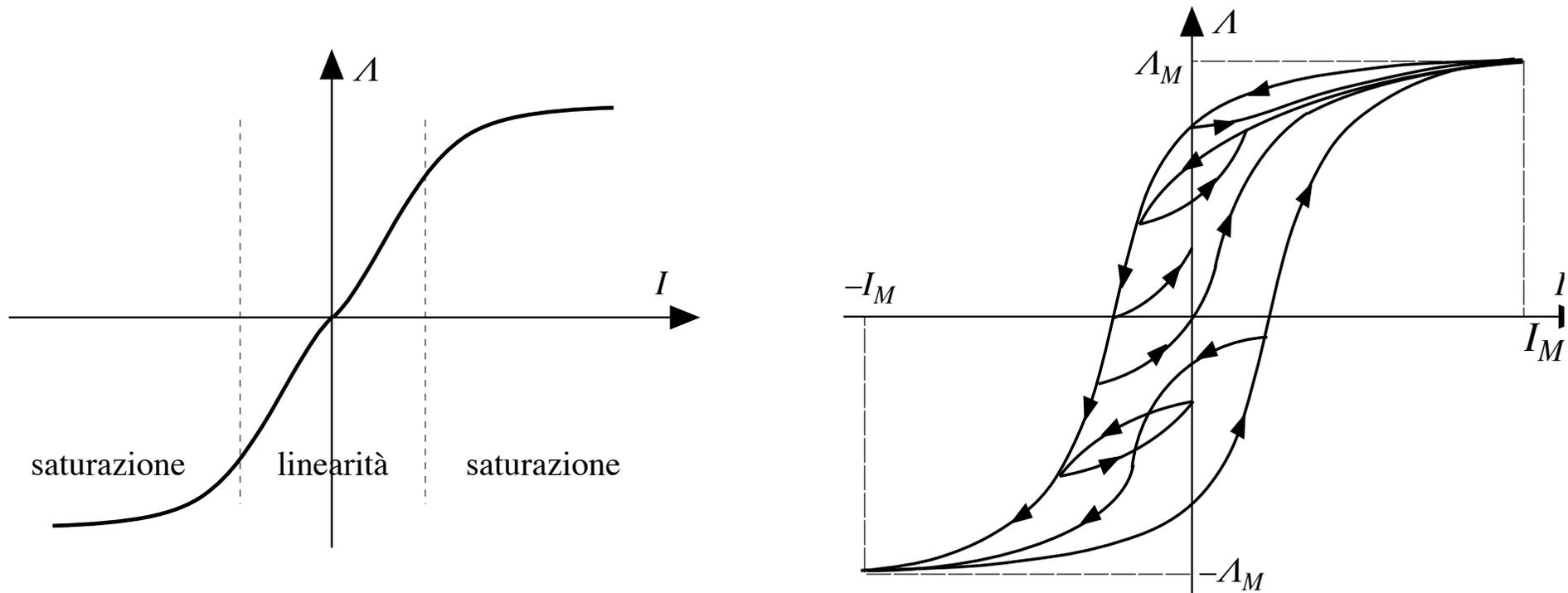
INDUTTORI

Nuclei magnetici



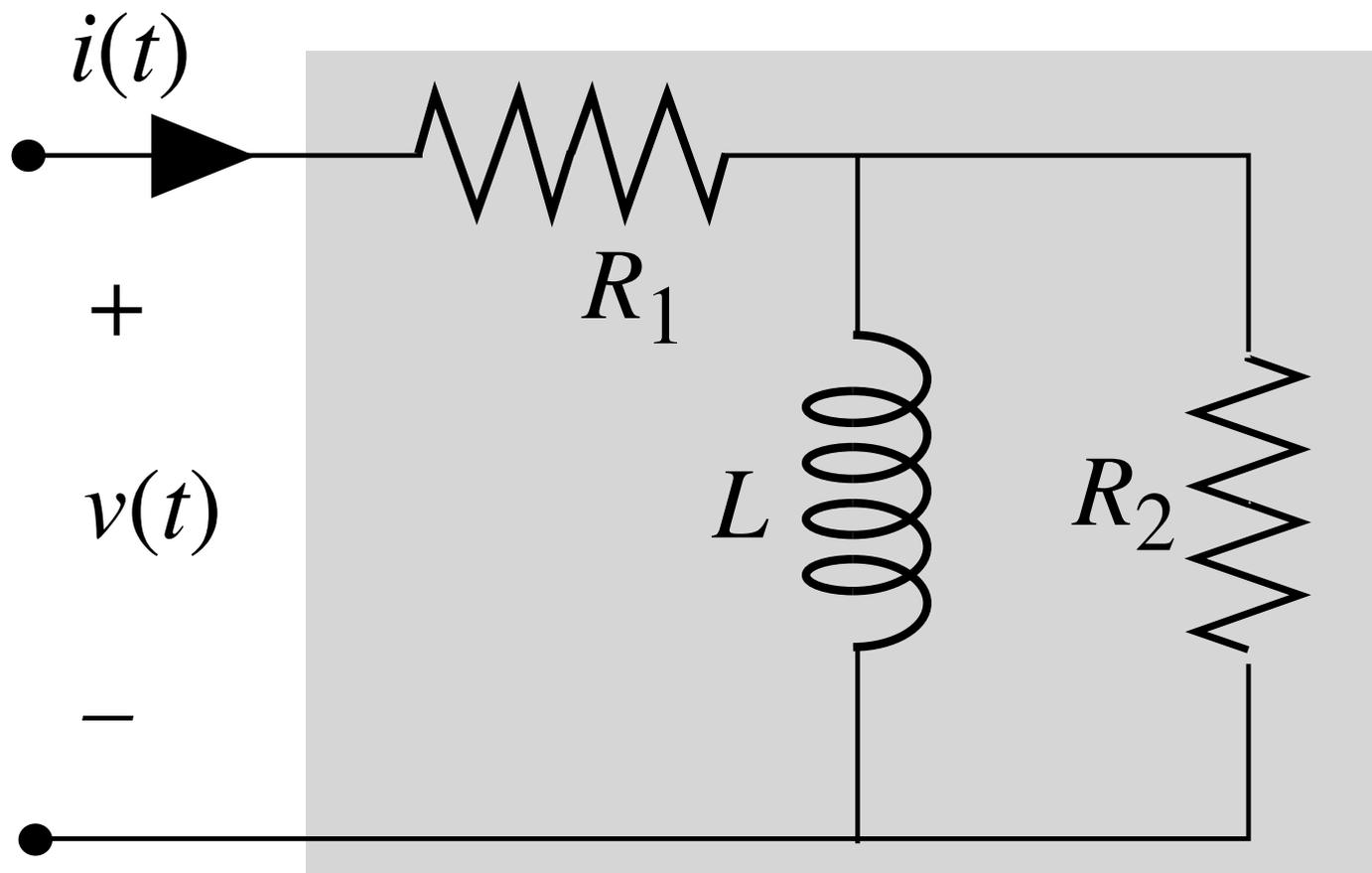
INDUTTORI

Nuclei magnetici



INDUTTORI

Isteresi del nucleo

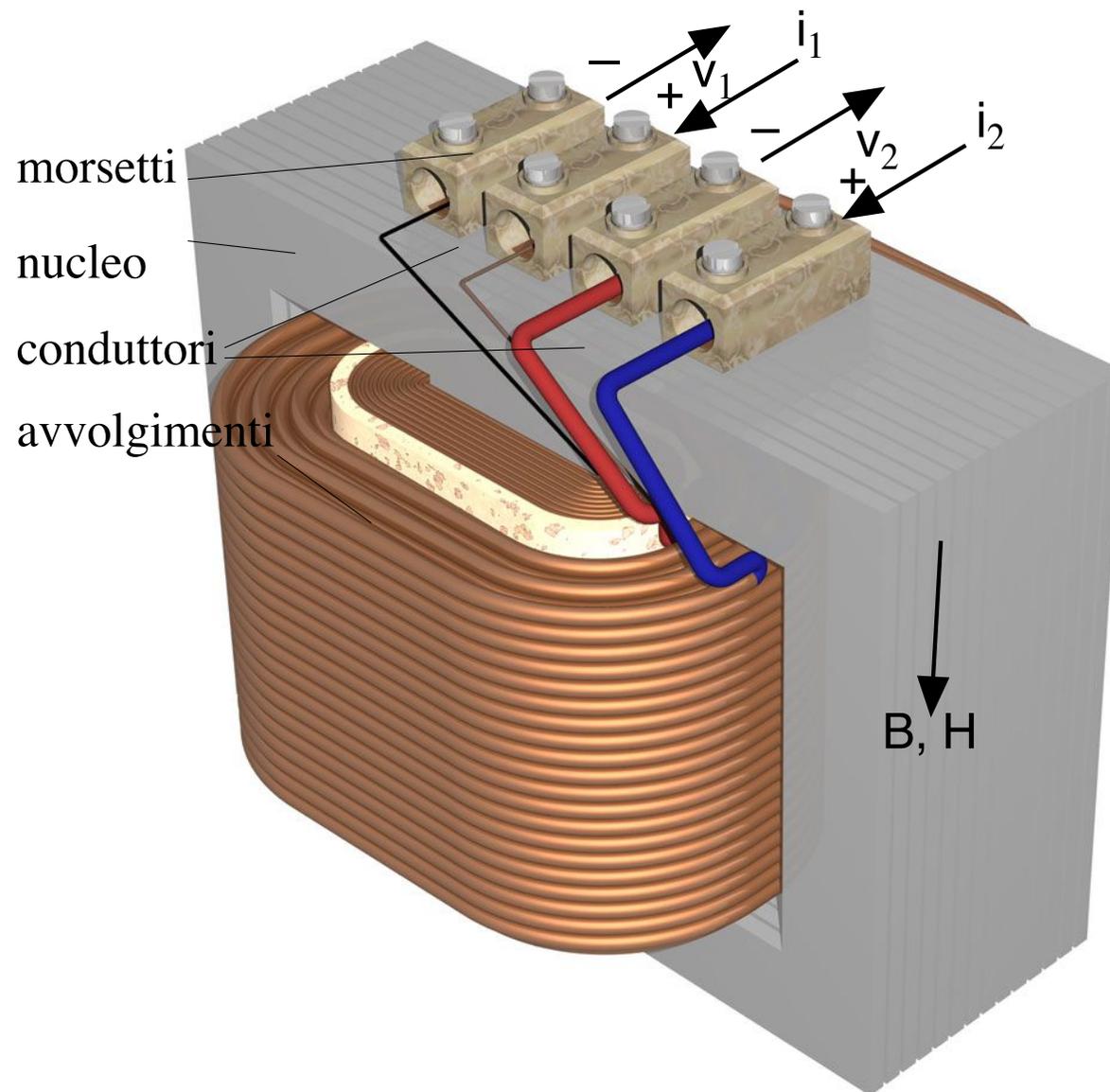


TRASFORMATORE A INDUZIONE

mutuo induttore costruito in modo da approssimare il trasformatore ideale

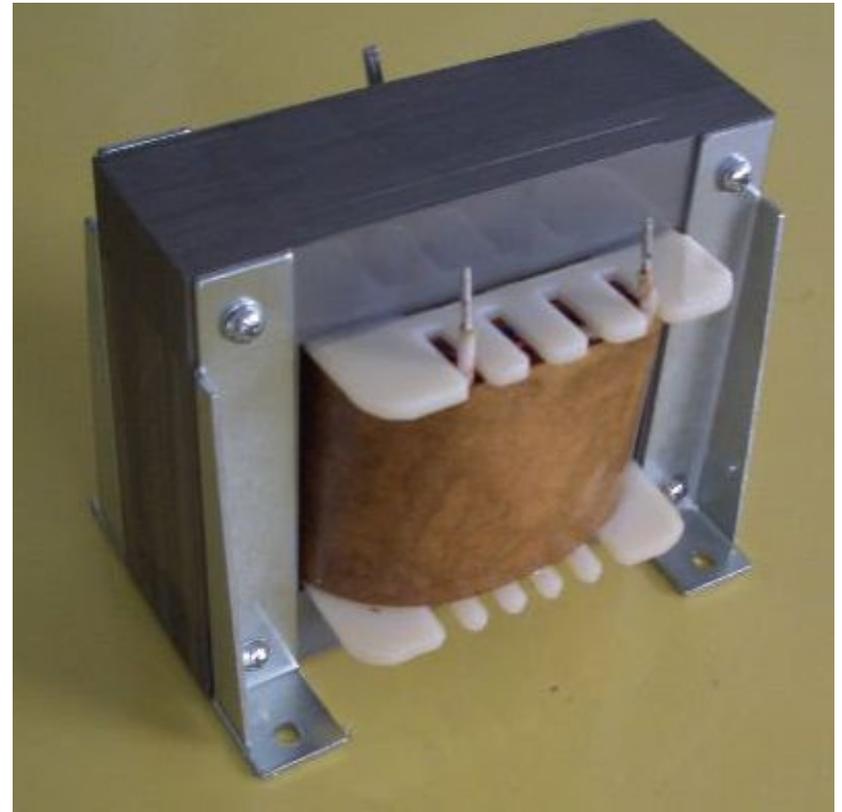
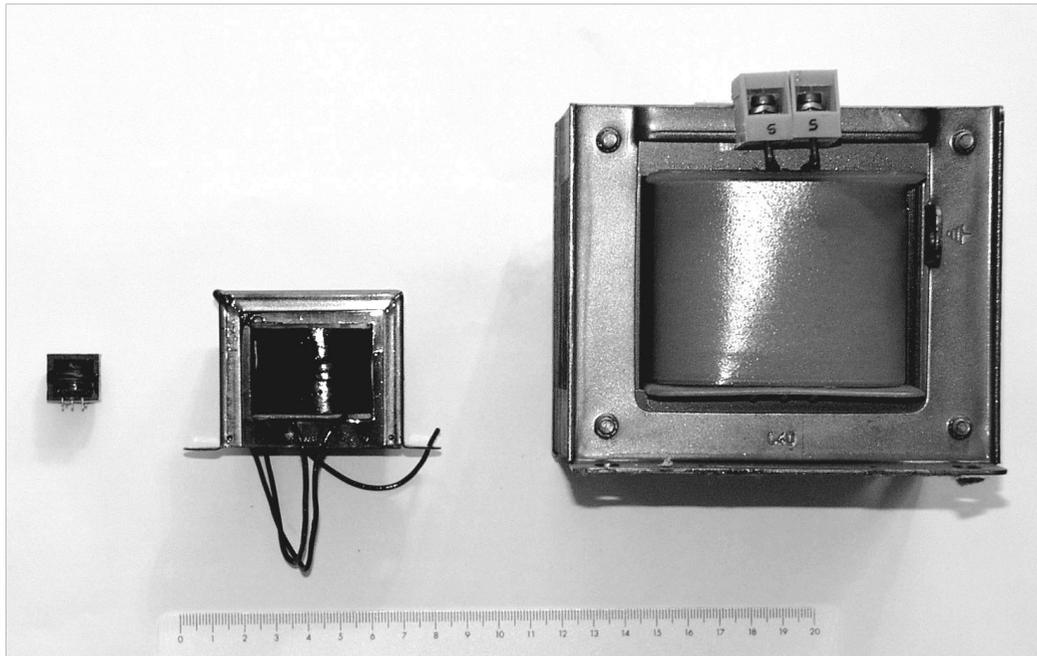


TRASFORMATORE A INDUZIONE



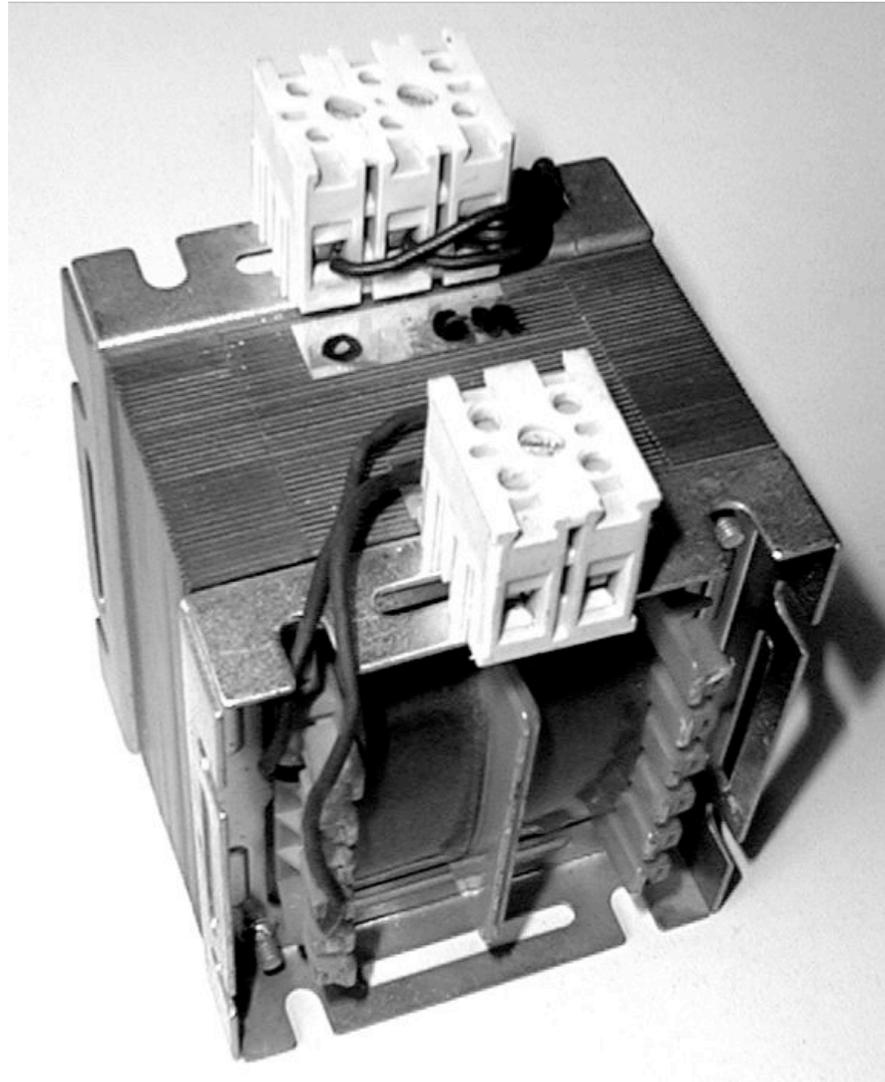
TRASFORMATORE A INDUZIONE

piccola potenza: 10^0 – 10^2 W



TRASFORMATORE A INDUZIONE

medio-piccola potenza: 10^3 W



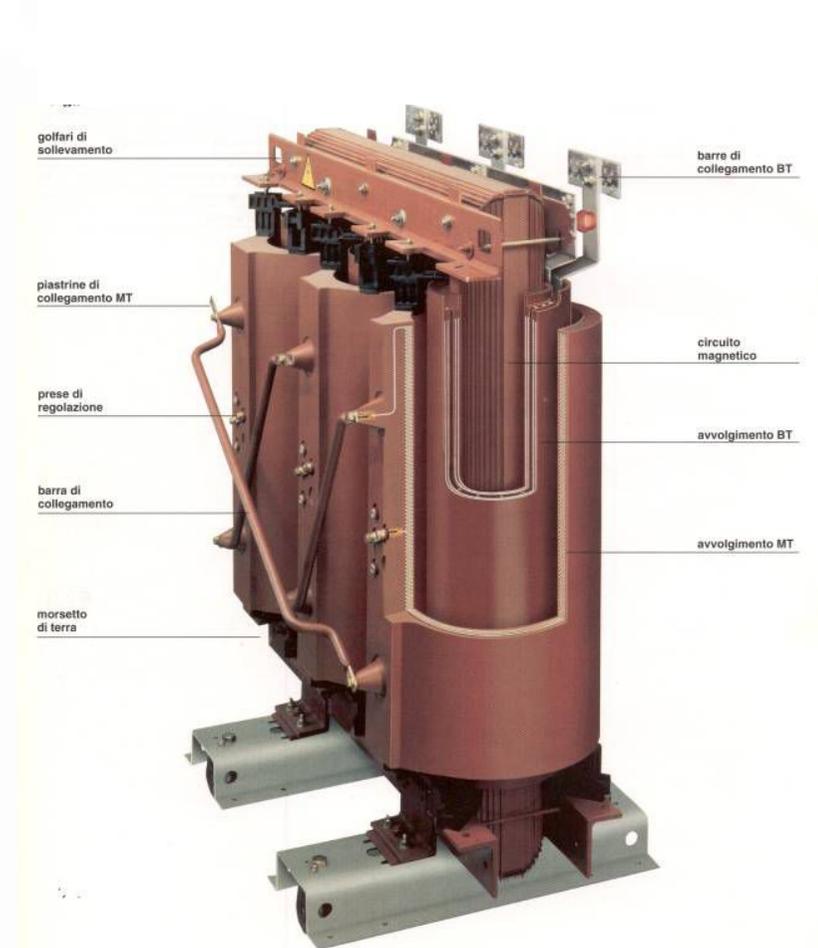
MUTUI INDUTTORI

trifase: 10^3 W



MUTUI INDUTTORI

trifase: 10^4 W



MUTUI INDUTTORI

trifase: 10^5 W



MUTUI INDUTTORI

trifase: 10^6 W



MUTUI INDUTTORI

trifase: 10^6 W



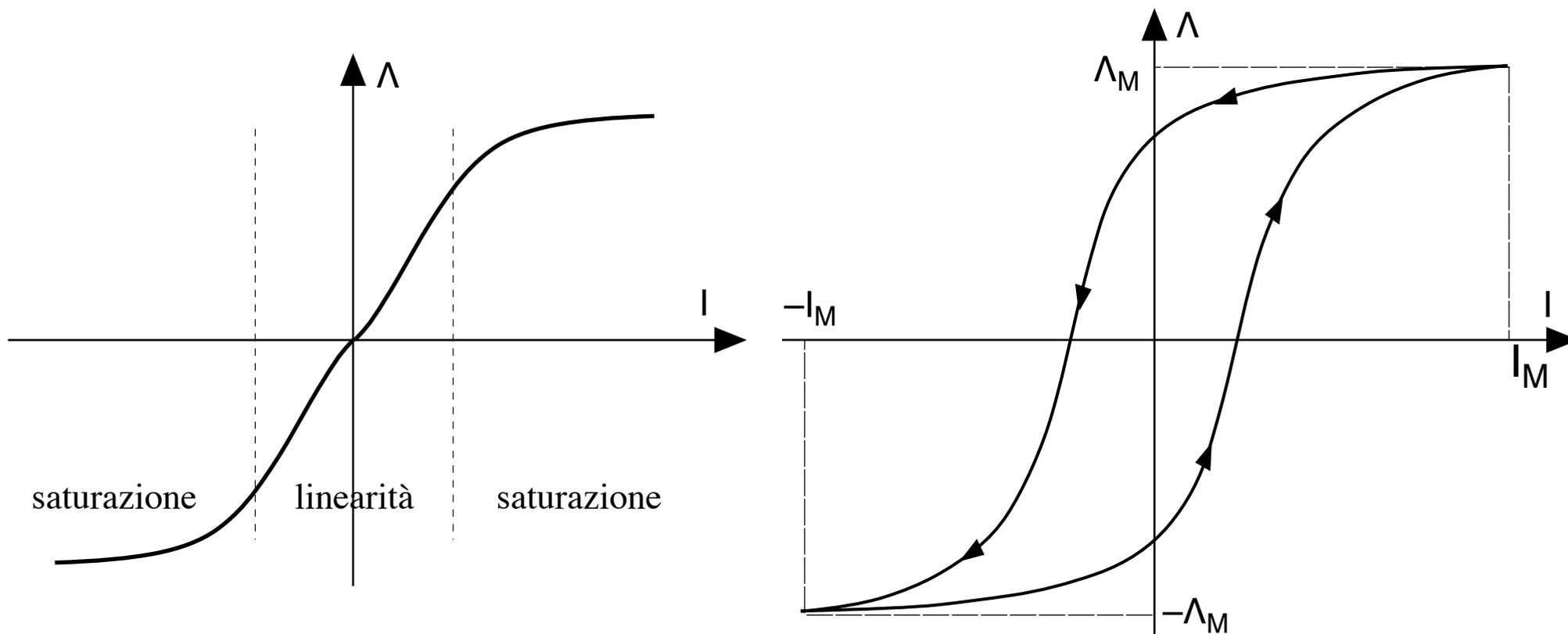
MUTUI INDUTTORI

trifase: 10^6 W



TRASFORMATORE A INDUZIONE

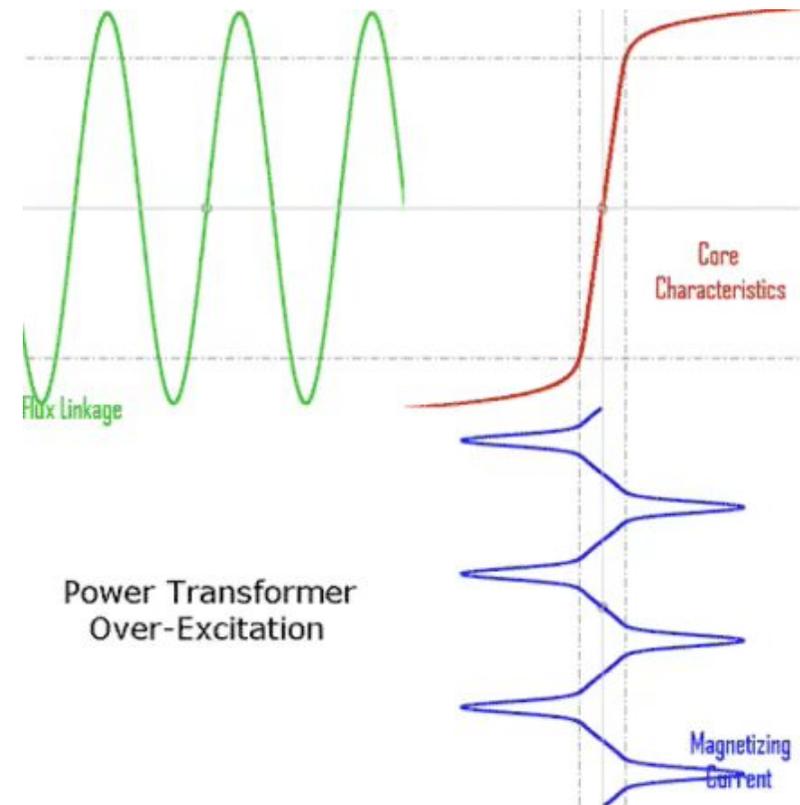
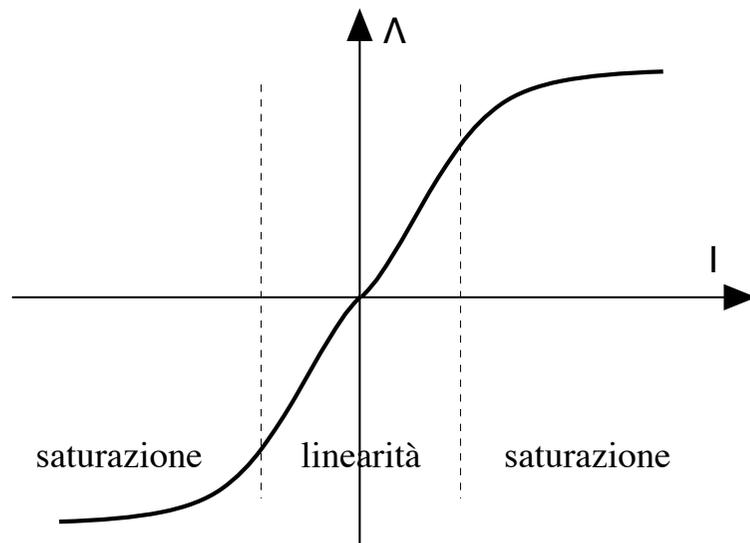
non linearità ed isteresi



$$p_{ist} = \eta f B_M^{1,6-2}$$

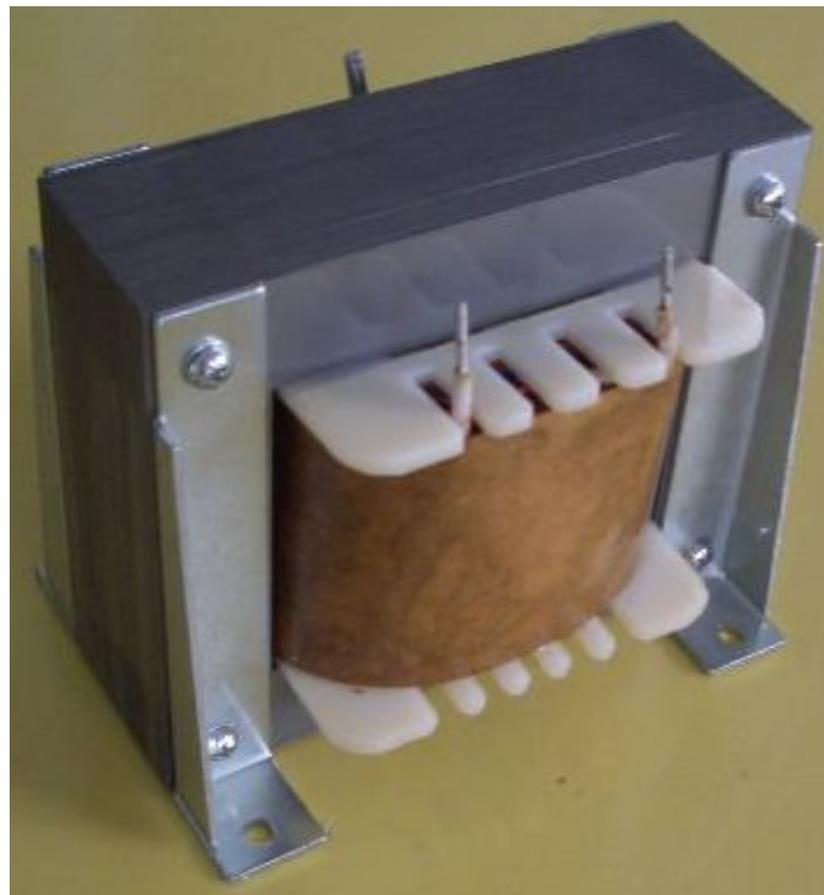
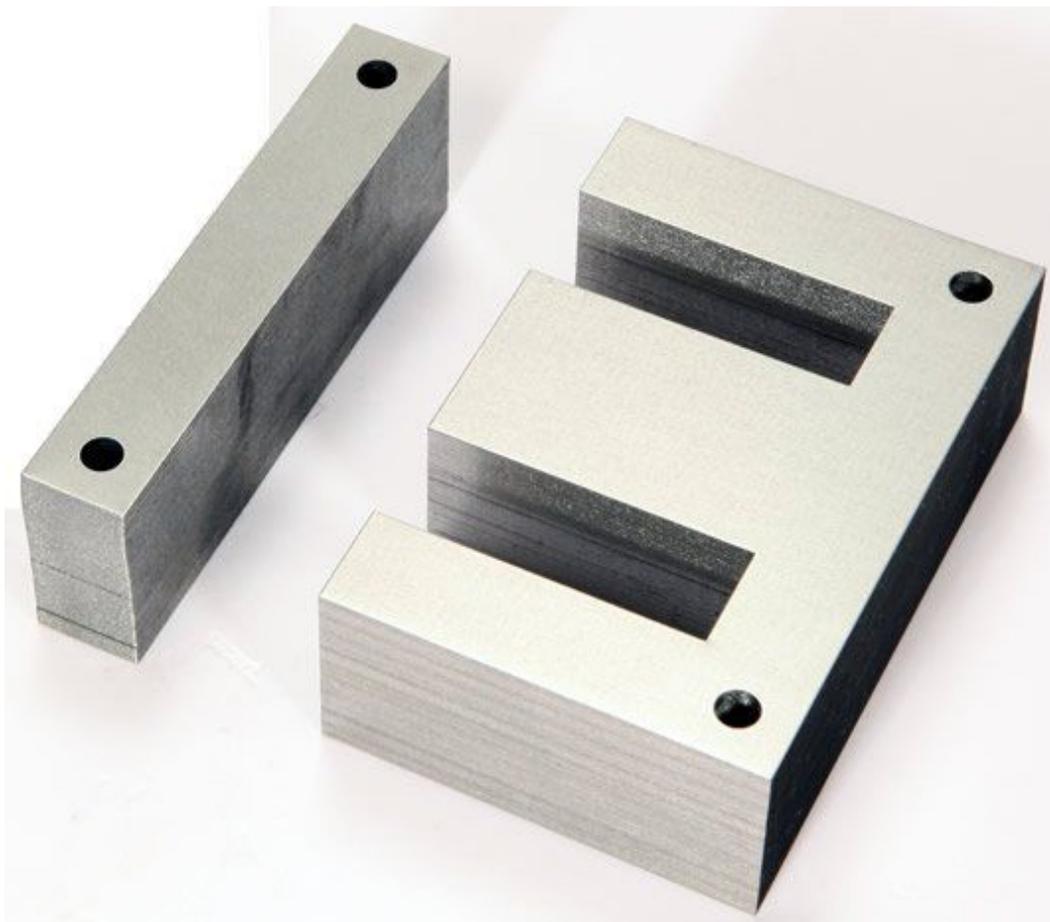
TRASFORMATORE A INDUZIONE

non linearità ed isteresi



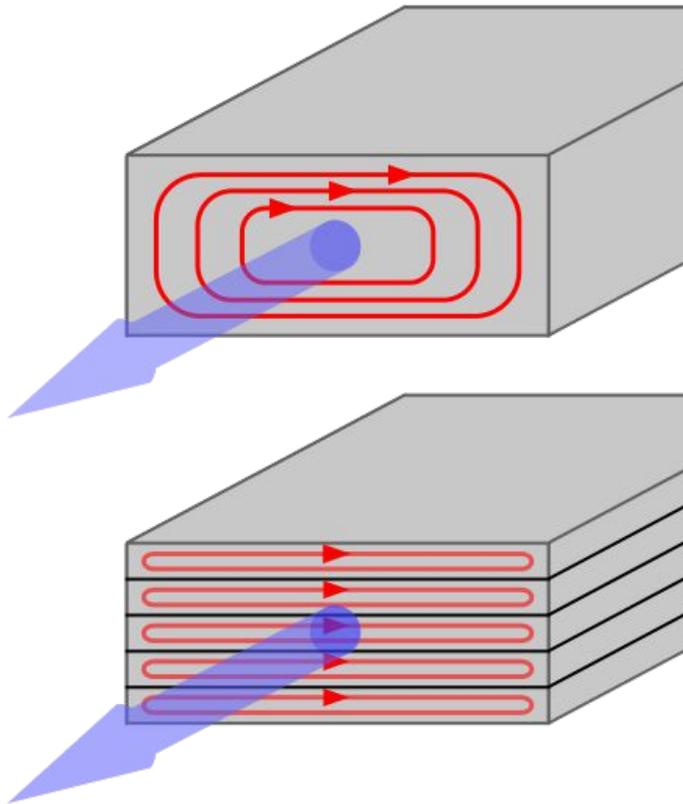
TRASFORMATORE A INDUZIONE

nucleo a lamierini per piccolo trasformatore – correnti parassite

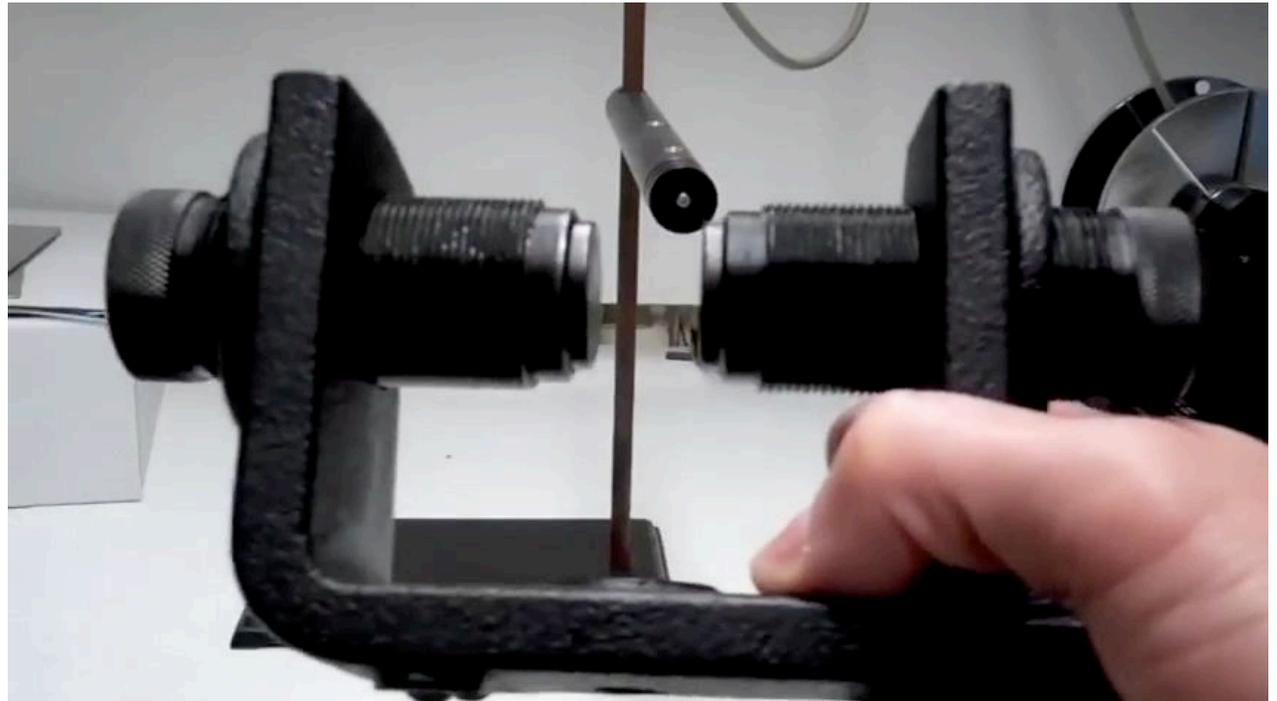


TRASFORMATORE A INDUZIONE

nucleo a lamierini per piccolo trasformatore – correnti parassite

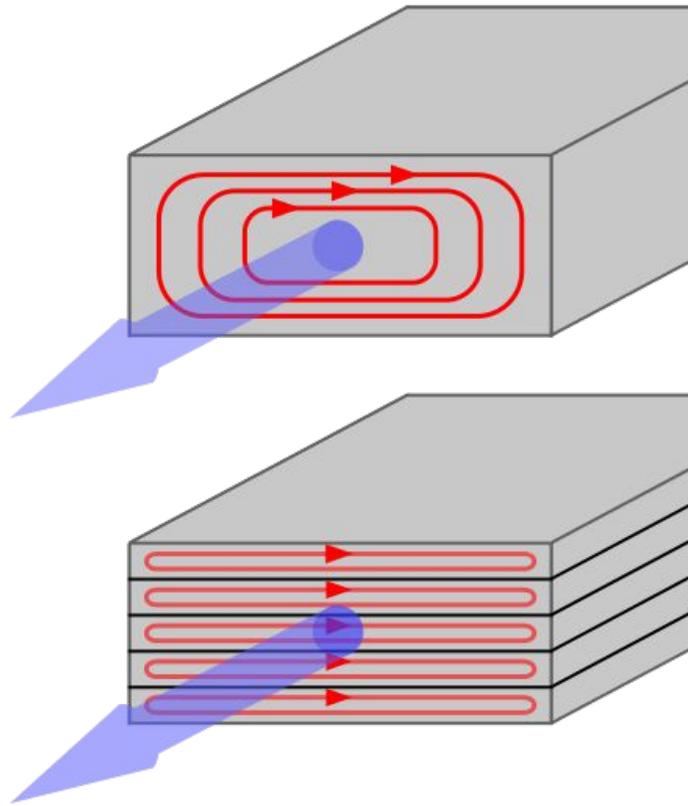


$$P_{cp} = \frac{\pi^2 f^2 B_M^2 s^2}{8 \rho}$$



TRASFORMATORE A INDUZIONE

nucleo a lamierini per piccolo trasformatore – correnti parassite



$$p_{cp} = \frac{\pi^2 f^2 B_M^2 s^2}{8 \rho}$$

+

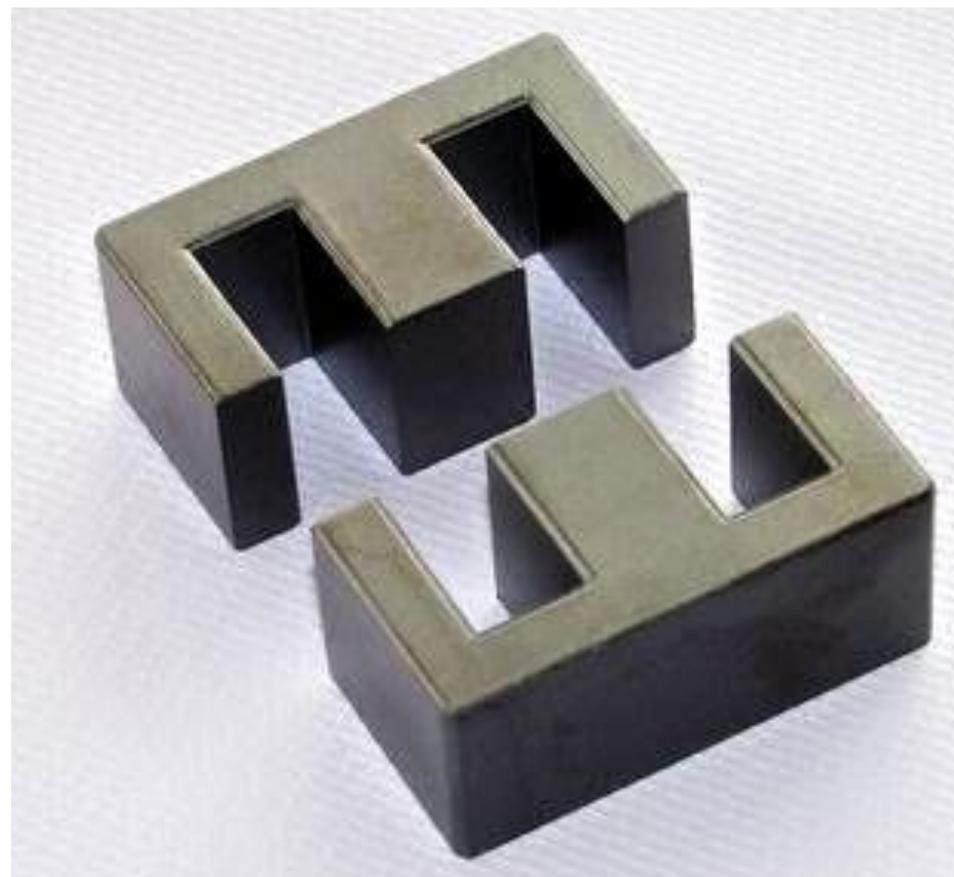
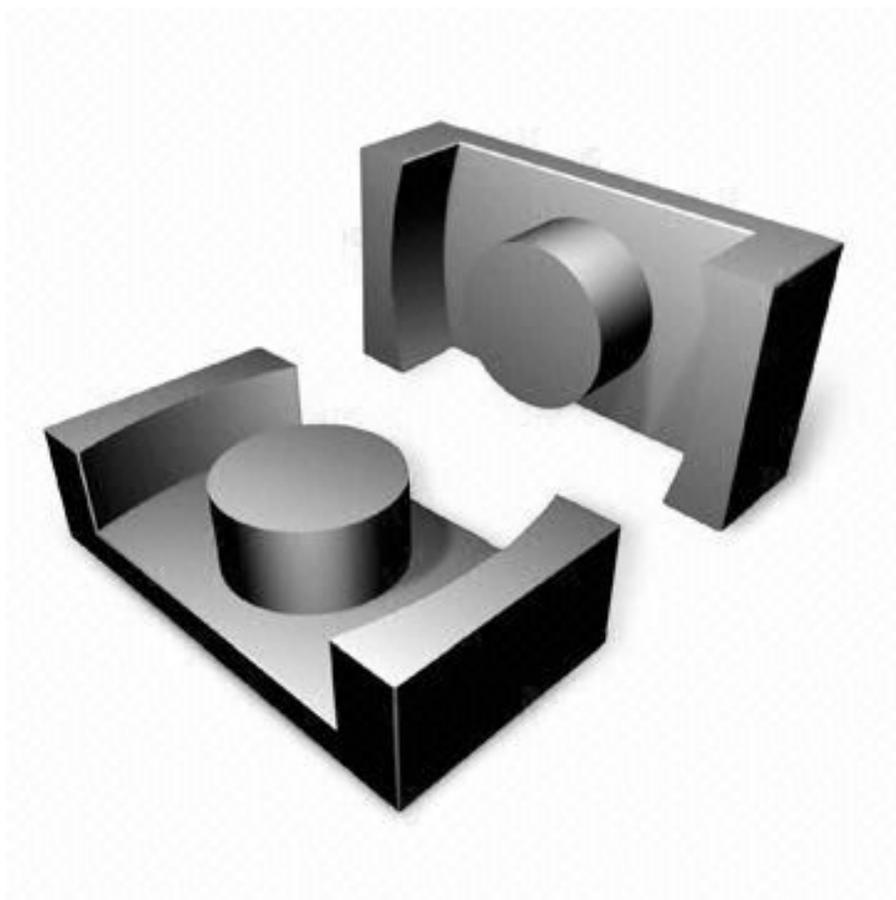
$$p_{ist} = \eta f B_M^{1,6-2}$$

=

$$p_t = \eta f B_M^{1,6-2} + \beta f^2 B_M^2 s^2$$

TRASFORMATORE A INDUZIONE

nuclei in ferrite per piccoli trasformatori



TRASFORMATORE A INDUZIONE

trasformatore toroidale (audio)



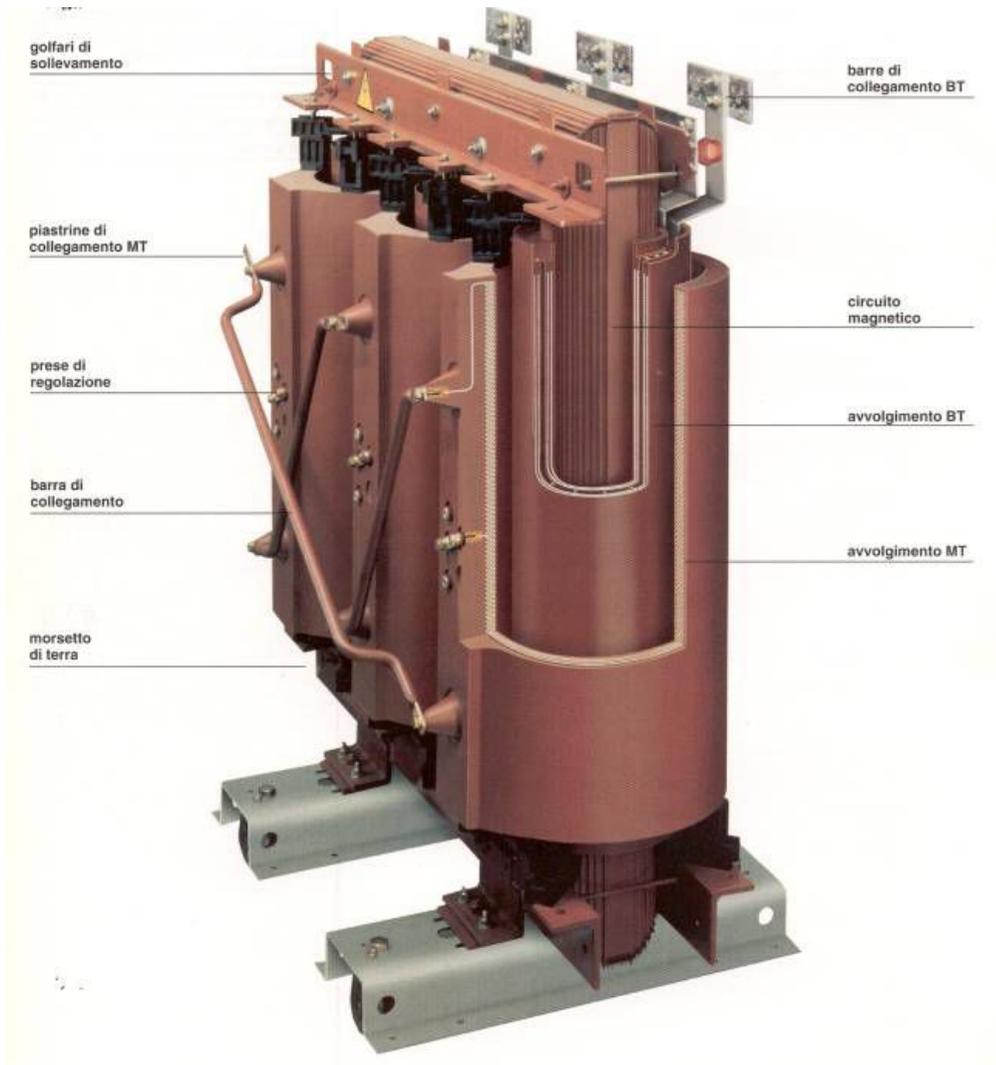
TRASFORMATORE A INDUZIONE

piccoli trasformatori



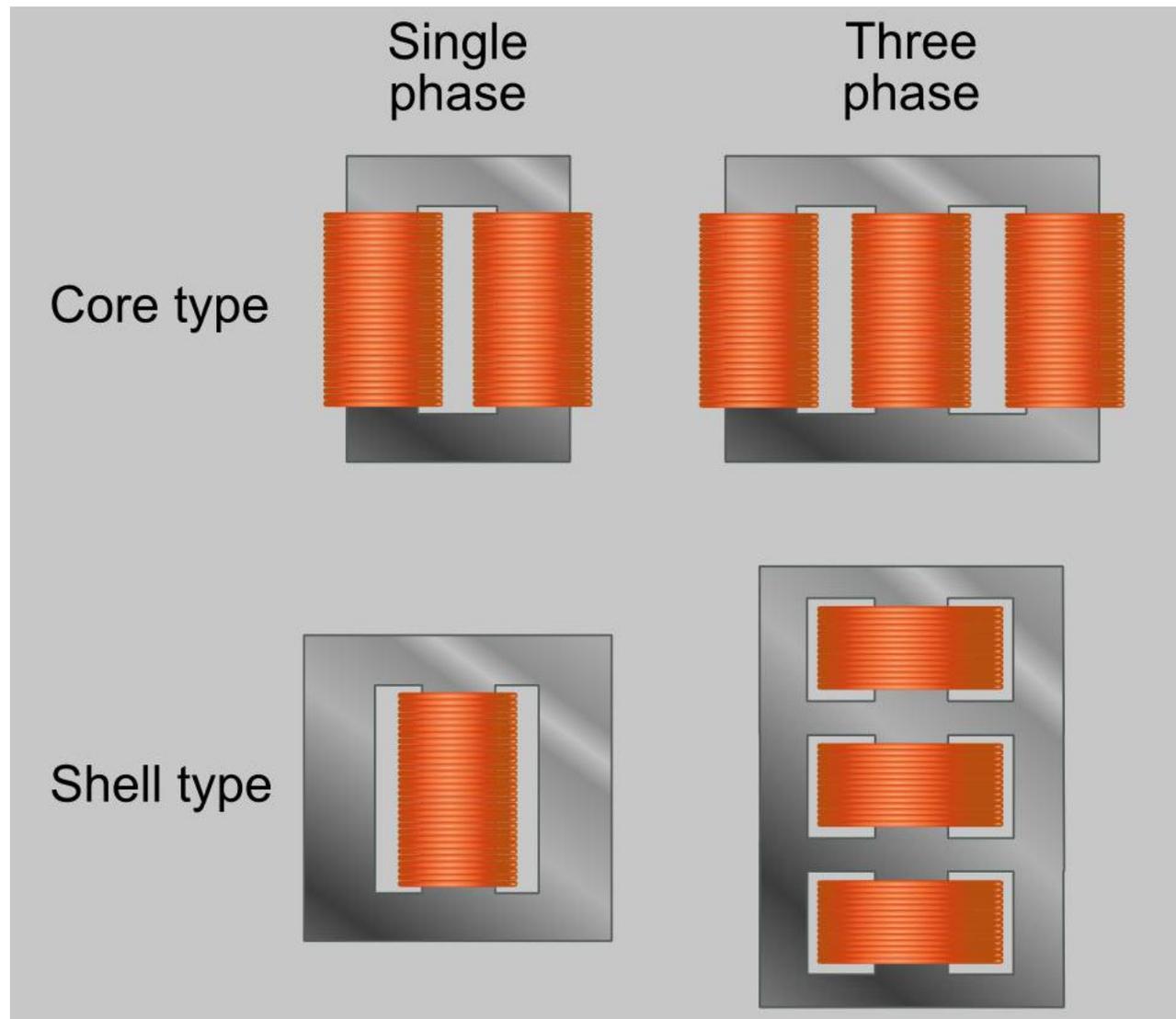
TRASFORMATORE A INDUZIONE

nucleo per trasformatore trifase



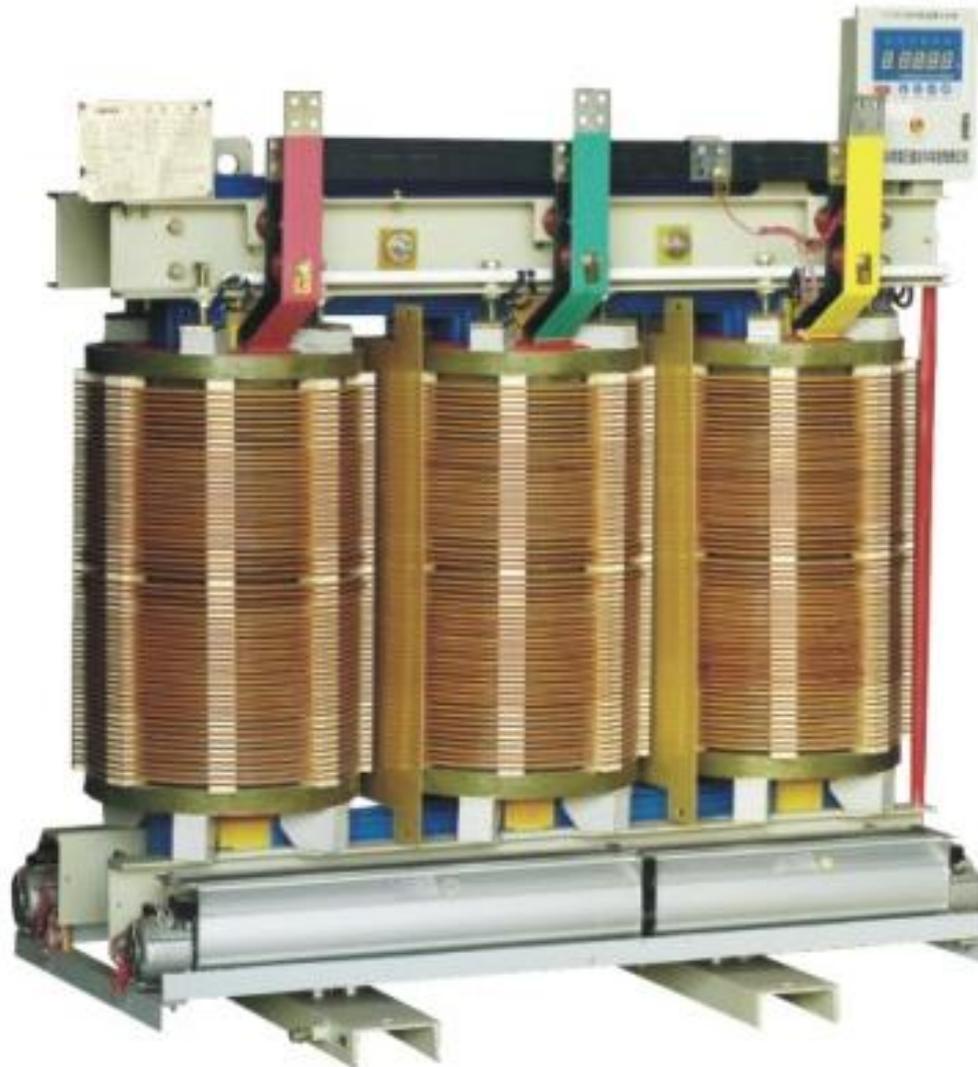
TRASFORMATORE A INDUZIONE

nucleo per trasformatore trifase



TRASFORMATORE A INDUZIONE

trasformatore trifase aperto



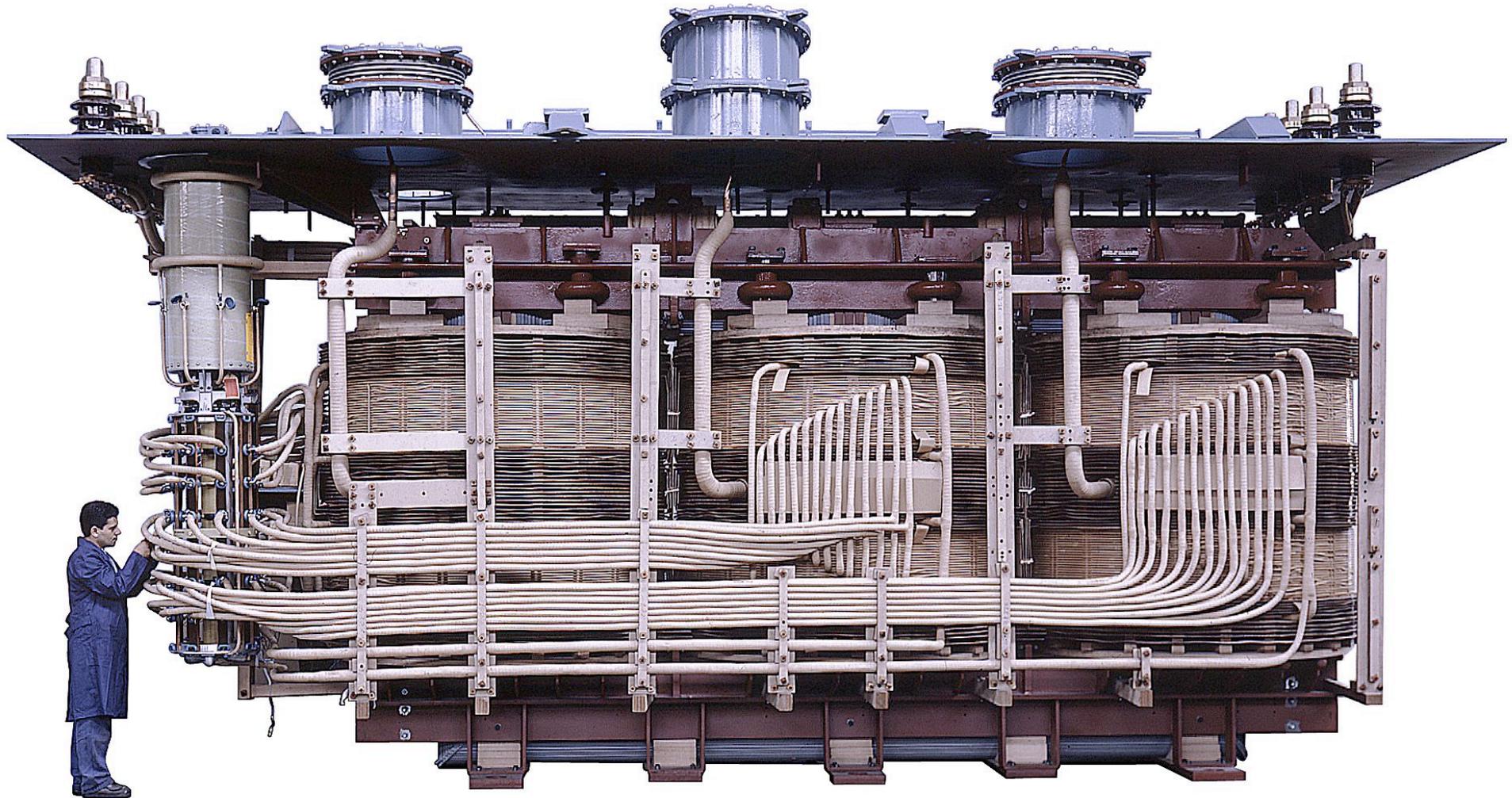
TRASFORMATORE A INDUZIONE

fasi di costruzione



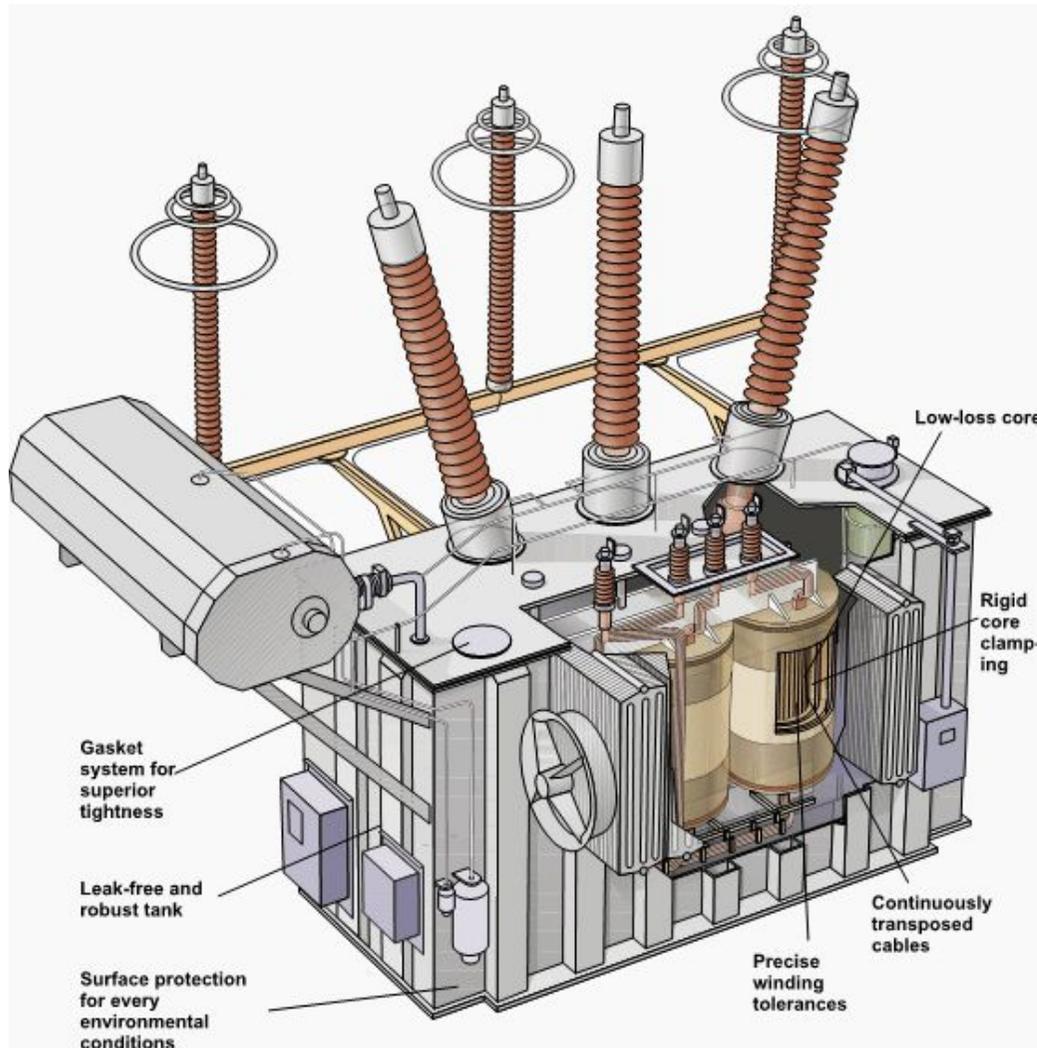
TRASFORMATORE A INDUZIONE

fasi di costruzione



TRASFORMATORE A INDUZIONE

trasformatore trifase sezionato



TRASFORMATORI PER SALE PROVE 800 kV



TRASFORMATORI DA LAB. A TENSIONE SECONDARIA VARIABILE

