

Energie und Energiedichte



$$u = L \cdot \frac{di}{dt}$$

$$W = \int_0^I i \cdot u \, dt = \int_0^I i \cdot L \frac{di}{dt} \, dt = \int_0^I i \cdot L \cdot di$$

$$W = L \cdot \frac{I^2}{2}$$

magnetische Energiedichte

$$\textcircled{K} = i \cdot W = H \cdot l \quad u = \frac{d\psi}{dt} = \frac{W \cdot d\Phi}{dt}$$

$$W = \int i \cdot u \cdot dt = \int \frac{H \cdot l}{W} \cdot \frac{W \cdot d\Phi}{dt} \cdot dt \quad | \quad d\Phi = A \cdot dB$$

$$W = l \cdot A \int_0^B H \, dB \quad \leadsto \quad w' = \frac{W}{V} = \int_0^B H \, dB$$

