

Transformer



- Primary winding: N_1 turns

$$V_1(t) = V_1^{(rms)} \cos(\omega t), \quad I_1(t) = I_1^{(rms)} \cos(\omega t - \delta_1)$$

- Secondary winding: N_2 turns

$$V_2(t) = V_2^{(rms)} \cos(\omega t), \quad I_2(t) = I_2^{(rms)} \cos(\omega t - \delta_2)$$

- Voltage amplitude ratio: $\frac{V_1^{(rms)}}{V_2^{(rms)}} = \frac{N_1}{N_2}$

- Power transfer: $V_1^{(rms)} I_1^{(rms)} \cos \delta_1 = V_2^{(rms)} I_2^{(rms)} \cos \delta_2$

