

task_ezrkjzifcegttcpc_with_calculation

Student Group

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resonance, resonant circuit, RMS, exam ee2 SS2021

Exercise E1 Resonant Circuit (written test, approx. 4 % of a 120-minute written test, SS2021)

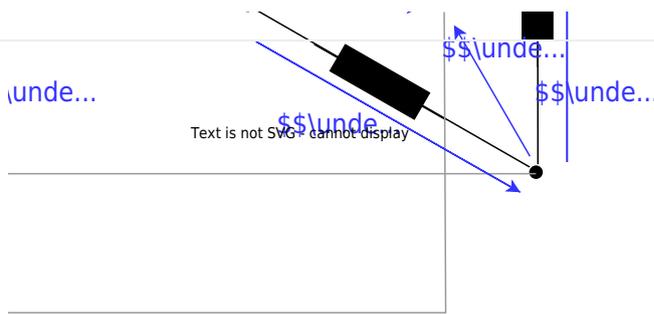
Specify the RMS value of the phase voltage U_{rms} based on the string voltage U_{rms} .
Results be considered in the following.

A voltage with the RMS value $U_{\text{rms}} = 110 \text{ V}$ is applied between the terminals of each winding.

Through each of the windings, there is a current with an RMS value $I_{\text{rms}} = 5 \text{ A}$ and $\varphi = 205.5 \text{ Hz}$ compared to the voltage.

Draw the circuit diagram. $U_{\text{rms}} = 110 \text{ V}$ is applied between the terminals of each winding, this is also the string voltage U_{rms} .

For delta configuration, the phase voltage U_{rms} is equal to the string voltage U_{rms} .
With the values: $f_0 = \frac{1}{2\pi \sqrt{20 \cdot 10^{-3} \cdot 30 \cdot 10^{-6}}} = 205.4681... \text{ Hz}$



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Last update: 2024/07/04 10:48

