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ASSIGNMENT 1 — Measuring Voltages

“*Calculate the required parasitic resistance R_W in one inductor (corresponding to the wire resistance between A_1 and $A_1{}'$ in Fig. 3, so that 2 inductors in series draws 1.2A from a single 5V voltage source.*”

$$\boldsymbol{R_w = \frac{V_w}{I}}$$ □

“*Calculate the required length of copper wire in one inductor to get the resistance found in question 1 for a 0.4mm diam (AWG26) copper wire when the resistivity of copper is $\rho = 1.7 \cdot 10^{-8}\ \Omega\ m$.*”

□

“*Use the drill and fill one reel with copper wire, as shown in Fig. 4. Grind the lacquer insulation off the ends (Fig.5 left). Measure the resistance R_W of your new inductor with RS-12. Assume that the length of the wire in the coil is 15m. Does this resistance correspond well with the value calculated inquestion 2? You can not expect a perfect match, but make sure that the value is greater than about 2 Ω ; otherwise the current and the heat will be too high.*”

□

Submitted by Rolf Vidar Hoksaas with Jonatan H. Hansen on February 19, 2020.