

2. TRANSZFORMÁTOROK

2.1. Egyfázisú transzformátorok

$b) I_1 = \frac{S}{U_1} = \frac{100 \cdot 10^3}{5 \cdot 10^3} = 20 \text{ A}$ $I_2 = \frac{S}{U_2} = \frac{100 \cdot 10^3}{400} = 250 \text{ A}$ $c) A_1 = \frac{I_1}{S} = \frac{20}{3,2} = 6,25 \text{ mm}^2$ $A_2 = \frac{I_2}{S} = \frac{250}{3,2} = 78,12 \text{ mm}^2$ $d) \Phi_{\max} = \frac{U_m}{4,44 \cdot f} = \frac{4,26}{4,44 \cdot 50} = 0,01918 \text{ V} \cdot \text{s}$	$I_1 = 20 \text{ A}$ $I_2 = 250 \text{ A}$ $A_1 = 6,25 \text{ mm}^2$ $A_2 = 78,12 \text{ mm}^2$ $\Phi_{\max} = 0,01918 \text{ V} \cdot \text{s}$
$a) \cos \varphi_0 = \frac{P_0}{U_1 \cdot I_0} = \frac{8}{220 \cdot 0,18} = 0,2$ $I_{n1} = \frac{S_n}{U_1} = \frac{160}{220} = 0,72 \text{ A}$ $\cos \varphi_2 = \frac{P_{re}}{U_{2n} \cdot I_{n1}} = \frac{5}{15 \cdot 0,72} = 0,46$ $b) I_{1z} = \frac{U_1}{U_{2n}} \cdot I_{n1} = \frac{220}{15} \cdot 0,72 = 10,56 \text{ A}$ $I_{2z} = \frac{U_1}{U_2} \cdot I_{1z} = \frac{220}{24} \cdot 10,56 = 96,8 \text{ A}$ $c) \varepsilon = \frac{U_{2n}}{U_{1n}} \cdot 100 = \frac{15}{220} \cdot 100 = 6,81 \%$ $d) \eta_s = \frac{\frac{5}{4} \cdot S_n \cdot \cos \varphi_2}{\frac{5}{4} \cdot S_n \cdot \cos \varphi_2 + \left(\frac{5}{4}\right)^2 \cdot P_{in} + P_0} =$ $= \frac{\frac{5}{4} \cdot 160 \cdot 0,8}{\frac{5}{4} \cdot 160 \cdot 0,8 + 8 + \left(\frac{5}{4}\right)^2 \cdot 5} = 91 \%$	2.1.6. feladat $\cos \varphi_0 = 0,2$ $\cos \varphi_2 = 0,46$ $I_{1z} = 10,56 \text{ A}$ $I_{2z} = 96,8 \text{ A}$ $\varepsilon = 6,81 \%$ $\eta_s = 91 \%$