

Problem 1-1

Output: $V_{LL} = 200\text{ V}$ (3- ϕ , rms) at 52 Hz,
 $I_o = 10\text{ A}$ at 0.8 lagging power factor
energy efficiency $\eta = 95\%$

Input: $V_{in} = 230\text{ V}$ (1- ϕ , rms) at 60 Hz,
input power factor = 1.0

$$P_{out} = \sqrt{3} V_{LL} I_o (\text{power factor}) = 2.77\text{ kW}$$

$$P_{in} = \frac{P_{out}}{\eta} = 2.916\text{ kW}$$

$$I_{in} = \frac{P_{in}}{V_{in} (\text{power factor})_{input}} = 12.68\text{ A (rms)}$$