motor

$$U_n = 380\ V$$

$$I_n = 136\ A$$

$$U = 387\ V$$

$$I = 117\ A$$

$$\cos\varphi_n = 0{,}92$$

$$\cos\varphi = 0{,}86$$

$$ef_m = 0{,}91$$

pumpa

$$p_{izlaz} = 567\ kPa$$

$$p_{ulaz} = 63\ kPa$$

$$Q = 250\,\frac{m^3}{h}$$

$$\rho = 1000\ \frac{kg}{m^3}$$

$$H_{pumpe} = \frac{(p_{iz} - p_{ul})}{\rho * g} = \frac{(\,567 - 63\,) * 10^3}{10^3 * 9{,}81} = \frac{504}{9{,}81} = 51{,}38\ m$$

$$P_{motor\_ulaz} = U * I * cos\varphi = 387 * 117 * 0{,}86 = 38{,}94\ kW$$

$$P_{pumpa_{ulaz}} = P_{motor_{izlaz}} = P_{motor_{ulaz}} * ef_m = 38{,}94 * 0{,}91 = 35{,}44\ kW$$

$$P_{pumpa_{idealno}} = \rho * g * H * Q = 10^3 * 9{,}81 * 51{,}38 * 250 * \frac{1}{3600} = 35\ kW$$

$$ef_p = \frac{P_{pumpa\_idealno}}{P_{pumpa_{ulaz}}} = \frac{35}{35{,}44} = 98{,}76\%$$