Energias Renováveis - Hídrica

① $\dot{m} = Q \cdot \rho = 50 \cdot 10^3 \text{ kg/s}$

$P = \eta \dot{m} g h \iff h = \frac{150 \cdot 10^6}{0{,}72 \cdot 9{,}81 \cdot 50 \cdot 10^3} = 425 \text{ m}$

②

a) $P_N = 32 \cdot 700 + 2 \cdot 50 = 22\,500 \text{ MW} = 22{,}5 \text{ GW}$

$F_c = \frac{98\,800}{22{,}5 \cdot 365 \cdot 24} = 0{,}5$

b) $P_N = 20 \cdot 700 = 14\,000 \text{ MW} = 14 \text{ GW}$

$F_c = \frac{98\,630}{14 \cdot 365 \cdot 24} = 0{,}8$

③ $\eta_{carga} = \eta_{descarga} = 0{,}8$

Durante o dia:

$E_{produzida} = mgh\eta$

Durante a noite:

$E_{gasta} = \frac{mgh}{\eta}$

Custos noturnos < Lucros diurnos

$\iff P_{noite} \cdot \frac{mgh}{\eta} < P_{dia} \cdot mgh\eta \iff \frac{P_{noite}}{P_{dia}} < \eta^2$

$\iff \frac{P_{noite}}{P_{dia}} < 0{,}64$