39/1 $F = 100\,kN$ $h = 6{,}3\,m$

$t = 30''$

$$P = \frac{F \cdot s}{t} = \frac{100k \cdot 6{,}3}{30} = 21\,kW$$

39/3 $\dot{V} = 120\,\frac{l}{min}$ $t = 1'$

$h = 51\,m$

$$F = m \cdot g = 120 \cdot 9{,}81 = 1177{,}2\,N$$

$$W = F \cdot h = 1177{,}2 \cdot 51 = 60\,kJ$$

$$P = \frac{W}{t} = \frac{60k}{60} = 1000{,}62\,W$$

39/5 $v = 1{,}25 \frac{m}{s}$ $P = 20\,kW$

$$P = F \cdot v$$

$$F = \frac{P}{v} = \frac{20\,k}{1{,}25} = 16\,kN$$

Kops 2

$h = 818\ m \qquad \dot{V} = 25{,}3\ \frac{m^3}{s}$

$P_{ab} = 175\ MW$

$\eta = ?$

$m = V \cdot \rho = 25{,}3\ m^3 \cdot 1000\ \frac{kg}{m^3} =$

$= 25\,300\ kg$

$25{,}3\ m^3 = 25\,300\ l$

$F = m \cdot g = 25300 \cdot 9{,}81 = 248\ kN$

$W = F \cdot s = 248\,k \cdot 818 = 203 \cdot 10^6\ J$

$= 203\ MJ$

$P_{zu} = \frac{W}{t} = \frac{203\ MJ}{1\ s} = 203\ MW$

$\eta = \frac{P_{ab}}{P_{zu}} = \frac{175\ M}{203\ M} = 0{,}86 = 86{,}2\ \%$