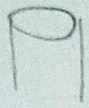
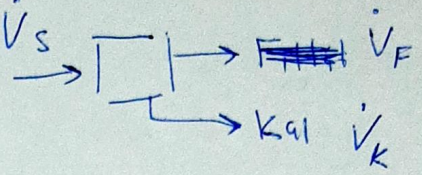
1-3 [2]



$D' = ?$

$t = 15\,°C$



kluda ve vode

$D' = D + \frac{1}{3}D$

$\dot{m}_S = 120\ t/h$

$w_S = 6{,}5\%\ CaCO_3$

$\rho = 999\ kg/m^3$

$\eta = 1{,}14 \cdot 10^{-3}\ Pa \cdot s$

$d_p = 40\ \mu m$

$\rho_p = 2700\ kg/m^3$

$$Ar = \frac{g \cdot (40 \cdot 10^{-6})^3 (2700 - 999)}{(1{,}14 \cdot 10^{-3}/999)^2 \cdot 999}$$

$1 - w_K = 65\%$

$Ar = 0{,}821$

$$Re = \frac{Ar}{18} \rightarrow d_p \quad v_u = 1{,}301\ mm/s$$

$$\dot{m}_K = \frac{w_S}{w_K}\dot{m}_S$$

$$\dot{m}_F = \dot{m}_S - \dot{m}_K$$

$$\dot{m}_F = 120\,000 \left(1 - \frac{0{,}065}{0{,}35}\right) = 97\,714\ kg/h$$

$$\dot{V}_F = \frac{\dot{m}_F}{\rho} = \frac{97\,714/3600}{999} = 0{,}02717\ m^3/s$$

$$S = \frac{V_F}{v_u} = \frac{0{,}02717}{1{,}301 \cdot 10^{-3}} = 20{,}88\ m^2$$

$$D = \left(1 + \frac{1}{3}\right) \cdot \sqrt{\frac{4 \cdot S}{\pi}} = \underline{\underline{6{,}9\ m}}$$