

LAMPIRAN CONTOH PERHITUNGAN

1. Viskositas

$$\begin{aligned}\mu_{nf} &= (1 + 2,5 \times 0,001 \text{ kg/m.s}) 0,001 \text{ kg/m.s} \\ &= 0,001 \text{ Ns/m}^2\end{aligned}$$

2. Densitas

$$\begin{aligned}\rho_{nf} &= 0,001 \text{ kg/m.s} \times 6000 \text{ kg/m}^3 + (1-0,001 \text{ kg/m.s}) \times 997 \text{ kg/m}^3 \\ &= 1,002 \text{ kg/m}^3\end{aligned}$$

3. Panas spesifik

$$\begin{aligned}Cp_{nf} &= (1-0,001 \text{ Kg/m.s}) \times (997 \text{ Kg/m}^3 \times 4170 \text{ J/ Kg.K}) + 0,001 \text{ Kg/m.s} \times (\\ &\quad 6000 \text{ Kg/m}^3 \times 551 \text{ J/Kg.K}) \\ &= (1-0,001 \text{ Kg/m.s}) \times 997 \text{ Kg/m}^3 + 0,001 \text{ Kg/m.s} \times 6000 \text{ Kg/m}^3 \\ &= 4153,3 \text{ J/Kg.K}\end{aligned}$$

4. Konduktivitas Termal

$$\begin{aligned}K_{nf} &= 383 \text{ W/m.k} + 0,59 \text{ W/m.k} + 2 (383 \text{ W/m.k} - 0,59 \text{ W/m.k}) 0,001 \\ &= 383 \text{ W/m.k} + 2 \times 0,59 \text{ W/m.k} - (383 \text{ W/m.k} - 0,59 \text{ W/m.k}) 0,001 \\ &= 0,59086 \text{ W/m.k}\end{aligned}$$

5. Reynolds Number

$$\begin{aligned}9350 &= \frac{6000 \text{ Kg/m.s} \times v \times 0,08 \text{ m}}{0,001 \text{ Ns/m}^2} \\ V &= 6000 \text{ Kg/m.s} \times 0,08 \text{ m} = 480 \\ &= 9350 \times 0,001 \text{ Ns/m}^2 = 9,35 \\ &= 51,336\end{aligned}$$