

Make assumption that the surface of the hot well as 1, and the upper surface of the condenser as 2,

Base on Bernoulli equation

$$gZ_1 + \frac{u_1^2}{2} + \frac{P_1}{\rho} = gZ_2 + \frac{u_2^2}{2} + \frac{P_2}{\rho} + \sum hf$$

$$Z_1 = 0, P_1 = 0, u_1 = 0, Z_2 = 100, P_2 = -1 \text{ barg} = -100000 \text{ Pa}, \rho = 1000 \text{ kg/m}^3$$

$$gZ_2 - 100 + \sum hf = 0$$

Assume that the velocity $u=0.5 \text{ m/s}$ in the pipe connecting with hot well and condenser, and absolute roughness is $\varepsilon=0.3 \text{ mm}$, $\varepsilon/d=0.006$

Ref from chemical data book $\varepsilon/d=0.006$, then fluid resistance is

$$\sum hf = \lambda * \frac{Z_2 u^2}{2d} + (\zeta_1 + \zeta_2) \frac{u^2}{2} = 2.5 Z_2 + (1 + 0.5) * \frac{0.5^2}{2}$$

$$Z_2 = 8 \text{ m}$$

This show that if no flooding occurs, the height between the hot well and condenser must be at least 8 m

I am not sure that my calculation is right or not.

Please give me some comment. I really appreciate that.

Thank you very much.