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$$\rho = 1400 \frac{\text{kg}}{\text{m}^3}$$

$$D = 1\text{ cm} = 0.1\text{ m}$$

$$V = \frac{\pi}{4} \cdot D^2 \cdot h = \frac{\pi}{4} \cdot (0.1)^2 \cdot 1\text{ m} = \frac{\pi}{400} \text{ m}^3$$

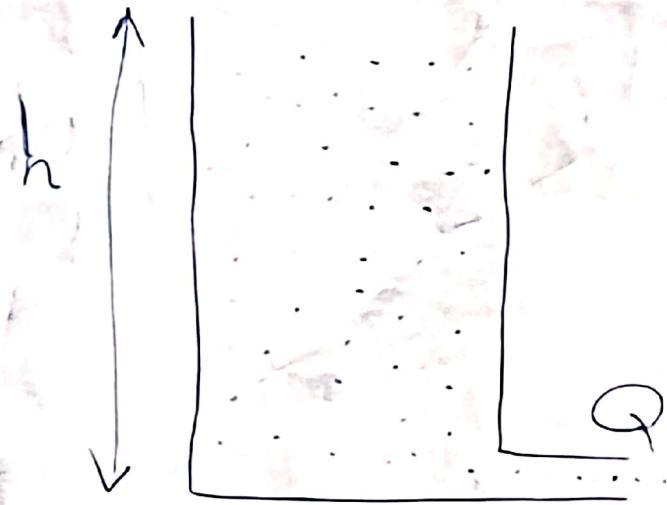
$$\dot{m} = ? \frac{\text{kg}}{\text{h}}$$

$$\dot{m} = 1400 \times 0.1 \times 1.58 \times 1 = 221.2 \frac{\text{kg}}{\text{s}}$$

$$A = \pi r^2 = \pi \times (0.1)^2 = 0.0314 \text{ m}^2$$

$$221.2 \frac{\text{kg}}{\text{s}} \times \frac{1000 \text{ s}}{1\text{ h}} = 221200 \frac{\text{kg}}{\text{h}}$$

مفرغ



$$\rho \cdot g \cdot h$$

سائل تعبئه

$$\text{Power} = Q \cdot g \cdot h$$

$$\text{Power} = Q \cdot g \cdot h$$

Randman

$$m = 1000 \frac{gr}{s}$$

$$Q = ? \frac{cc}{s}$$

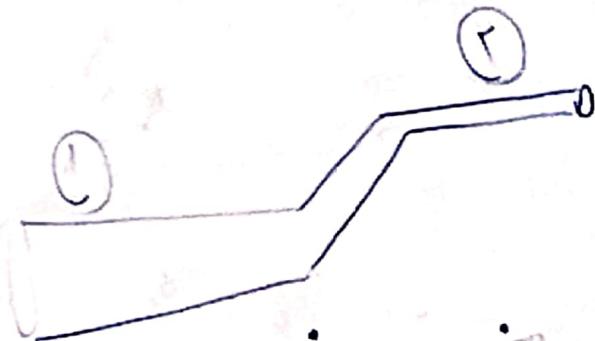
$$m = \rho V A$$

$$Q = V A$$

$$m = \rho Q \rightarrow Q = \frac{m}{\rho}$$

$$1000 \frac{gr}{s} \times \frac{1 \text{ cm}^3}{1 \text{ gr}} = 1000 \frac{\text{cm}^3}{s} \xrightarrow[1cc=10^3]{10^3} 1000 \frac{cc}{s}$$

## اصول جریان سیالات



۱- قانون بقایه جرم (ماده)

$$\dot{m}_1 = \dot{m}_2$$

$$\rho_1 V_1 A_1 = \rho_2 V_2 A_2$$

$$V_1 A_1 = V_2 A_2$$

اصل ندام  
پیوستگی

Continuity Equation

۲- قانون بقایه انرژی

$$\rho = 1 \text{ kg/m}^3$$

$$g = 9.8 \text{ m/s}^2$$

$$D = 14 \text{ cm} \rightarrow \alpha \frac{1 \text{ m}}{1 \text{ cm}} = 14 \times 10^3 \text{ m}$$

$$r = 10 \text{ m/s}$$

$$h = 10 \text{ m}$$

Rad. & %.

$$\text{Power} = Q \cdot f \cdot h$$

$$Q = AR$$

$$f = \rho \cdot g$$

$$A = \pi r^2 = 3.14 \times (0.7)^2 = 1.54 \text{ m}^2$$

$$Q = AR = 1.54 \times 1.1 \times 10^3 \text{ W} = 1.694 \text{ kW}$$

$$f = \rho \cdot g = 1.0 \times 9.8 = 9.8 \text{ m/s}^2$$

$$\text{Power} = Q \cdot f \cdot h \rightarrow 1.694 \times 9.8 \times 10 \times 10 = 169.1 \text{ kW}$$

$$169.1 \text{ kW} \times 100$$

$$= 169.1 \times 100 = 16910 \text{ W}$$

$$16910 \text{ W} = 16.91 \text{ kW}$$



P v h

$$I_{hp} = V \cdot F \cdot h$$

$$\text{Power} = Q \cdot V \cdot h$$

$$P = Q \cdot V \cdot h$$

or  
P = Q · V · h