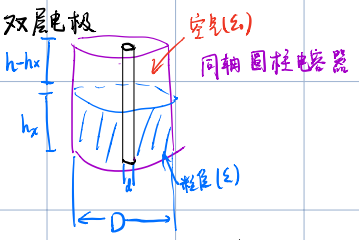
测料位

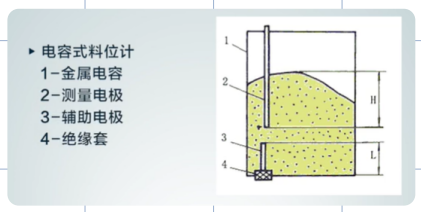
双层电极



$$C=\frac{2\pi\varepsilon_0 h}{\ln\frac{D}{d}}+\frac{2\pi(\varepsilon-\varepsilon_0)h_x}{\ln\frac{D}{d}}$$

$$\Delta C=\frac{2\pi(\varepsilon-\varepsilon_0)h_x}{\ln\frac{D}{d}}$$

单电极棒



$$C_{L0}=\frac{2\pi(\varepsilon-\varepsilon_0)L_0}{\ln D/d}$$

$$\frac{C_x}{C_{L0}}=\frac{H}{L_0}$$

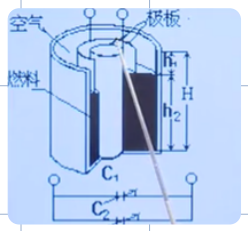
H变化与C_x、C_{L0}有关.

约去了料位高度不同造成的误差.

液位传感器. 与双层电极相似

$$\Delta C=\frac{2\pi(\varepsilon-\varepsilon_0)h_x}{\ln D/d}$$

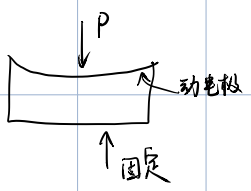
测油量.



$$C=C_1+C_2=\frac{2\pi\varepsilon_1(H-h_2)}{\ln r_2/r_1}+\frac{2\pi\varepsilon_2 h_2}{\ln r_2/r_1}$$

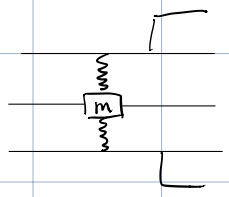
$$\Delta C=\frac{2\pi(\varepsilon_2-\varepsilon_1)}{\ln(r_2/r_1)}h_2$$

压差传感器.



上下片间距改变 ⟶ C改变.

加速度



a不同. 中间极板位置不同.

差动式