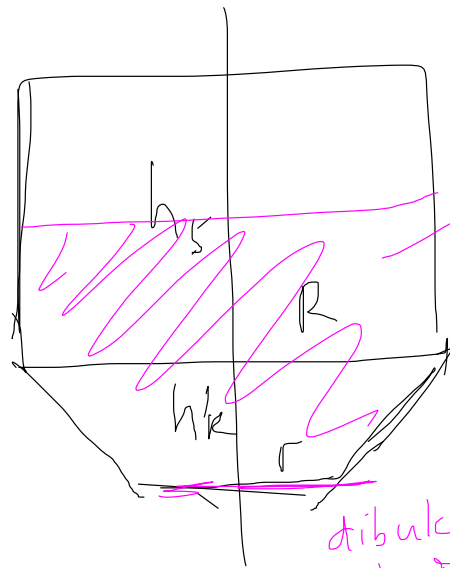




sl. pasir

* Menentukan Jantuan pada Dud :

* Mengukur LAJU keluarnya material dari katup.

dibuka $t=0$ } berapa menit sampai habis

Tugas Pengukuran :

- * R : jari-jari silo $\rightarrow$ meter/2 [cm]
 - * r : jari-jari katup silo [cm]
 - * h_k : tinggi kerucut terpotong [cm]
 - * h_s : tinggi silinder [cm]
- SILO 1 dan SILO 2 berbeda
- } meter

$$h_k = \frac{R-r}{r} h_o$$

$y = h_k \rightarrow$

$$y = \sqrt{\frac{R^2 h_o h_o^2 + R r h_o h_o^2 + r^2 h_o h_o^2}{r^2}} - h_o$$

$$= \sqrt{\frac{R^2 (\frac{R-r}{r})^2 h_o^2 + R r (\frac{R-r}{r})^2 h_o^2 + r^2 (\frac{R-r}{r})^2 h_o^2}{r^2}} - h_o$$

$$= \sqrt{\frac{(R^2 + R r + r^2) (\frac{R-r}{r})^2 h_o^2}{r^2}} - h_o$$

$$= \sqrt{\frac{(R^2 + R r + r^2) h_o^2}{r^2}} - h_o$$

$$= \frac{\sqrt{R^2 + R r + r^2}}{r} h_o - h_o$$

$$y = \left(\frac{R^2 + R r + r^2}{r^2} \right)^{\frac{1}{2}} h_o - h_o$$

create

Kesimpulan :

$$V = V_s + V_k, \quad V_k = \frac{1}{3} \pi [R^2 + R r + r^2] h_k$$

$$V > V_k \rightarrow y = h_k + \frac{V - V_k}{\pi R^2}$$

$$V = V_k \rightarrow y = h_k$$

$$V < V_k \rightarrow y = \left(\frac{3V h_o^2 + \pi r^2 h_o^3}{\pi R^2} \right)^{\frac{1}{3}} - h_o$$

$$h_o = \frac{r}{R-r} h_k$$

check : $V=0 \rightarrow y=0$ OK

$V=V_k \rightarrow y=h_k$ OK

parameter yang diukur :

$R, r, h_k \rightarrow V_{to y}$
 h_s (tinggi silinder) $\rightarrow V_{max}$ silo

$$V_{max} = V_k + V_{smax}$$

$$= V_k - \pi R^2 h_s$$

MATLAB
FUNCTION

volume-to-level

V_{to-y}