

(6)

Dengan menggunakan Koordinat Polar:

$$\theta^{\circ} = \frac{180}{\pi} \int_R^r \frac{R dR}{R^2 \tan \beta} = \frac{180}{\pi} \sum \frac{R}{R_i} \frac{\Delta R}{R \tan \beta}$$

Hasilnya seperti pada tabel berikut ini:

urutan	R	β	$\tan \beta$	$\frac{1}{R \tan \beta}$	$\frac{1}{R \tan \beta}$	ΔR	$\frac{\Delta R}{R \tan \beta}$	$\Delta \theta^{\circ}$	θ°
1	3,66	13°	0,2309	1,1837	1,055	0,59	0,627	35,9	0
b	4,25	14,25°	0,2540	0,926	0,814	0,78	0,610	34,9	35,9
c	5	15,92°	0,2852	0,702	0,603	1,00	0,603	34,5	70,8
d.	6	18,33°	0,3314	0,503	0,455	0,75	0,341	19,5	105,3
2	6,75	20°	0,3640	0,407					124,8

$$\Delta \theta^{\circ} = \frac{180}{\pi} \cdot \frac{\Delta R}{R \tan \beta}$$

θ° pd kolom 10 = jumlah $\Delta \theta^{\circ}$.

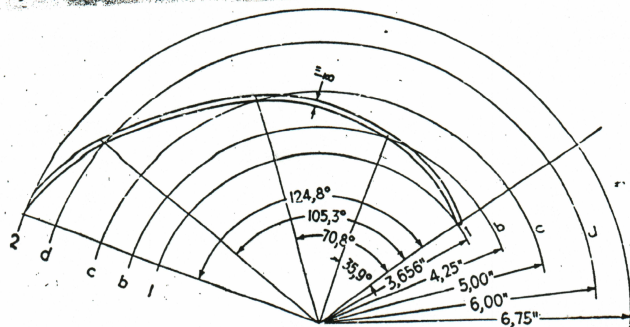
$$\begin{aligned} \text{Jumlah sudu: } Z &= 6,5 \frac{D_2 + D_1}{D_2 - D_1} \sin \left(\frac{\beta_1 + \beta_2}{2} \right) = 6,5 \frac{13,5 + 7,312}{13,5 - 7,312} \sin \frac{13 + 20}{2} \\ &= 6,5 \frac{13,5 + 7,312}{13,5 - 7,312} \sin 16,5 = 6,21 \text{ dibulatkan } \underline{\underline{6 \text{ buah}}} \end{aligned}$$

Lebar saluran (b): terlebih dahulu harus ditentukan besarnya faktor kontraksi (E).

$$b = \frac{144 \cdot Q}{\pi \cdot D \cdot E \cdot V_r}$$

$$E = \frac{\pi D - \frac{Zt}{\sin \beta}}{\pi D} \quad \left\{ \begin{array}{l} t: \text{tebal sudu} \\ V_r: \text{diambil dr gb. 6.10} \end{array} \right.$$

R	D	πD	$\sin \beta$	$\frac{Zt}{\sin \beta}$	$\pi D - \frac{Zt}{\sin \beta}$	E	V_r	b/2	b
3,66	7,312	22,95	0,225	3,34	19,61	0,855	12,00	1,75	
4,25	8,50	26,69	0,246	3,66	23,03	0,834	11,68	1,52	
5,00	10,00	31,42	0,274	4,27	27,15	0,863	11,41	1,32	2,64
6,00	12,00	37,68	0,250	4,78	32,90	0,875	11,09	1,12	2,24
6,75	13,50	42,39	0,275	4,82	37,57	0,886	11,00	0,99	1,98



B. DENGAN KOORDINAT POLAR

Skala : 1:1

