

Model of Conicity



Continuity of pressure : $P_f + P_b = P_{T1}$ (1)

Continuity of flow : $Q_f + Q_b = Q_{T1}$ (2)

$$(2) \rightarrow \frac{P_f}{z_1} - \frac{P_b}{z_1} = \frac{P_{T1}}{z_2} \Rightarrow P_f - P_b = \frac{z_1}{z_2} P_{T1} \Rightarrow$$

$$\stackrel{(1)}{\Rightarrow} P_f - P_b = \frac{z_1}{z_2} (P_f + P_b) \Rightarrow$$

$$\rightarrow P_f \left(1 - \frac{z_1}{z_2}\right) = P_b \left(\frac{z_1}{z_2} + 1\right) \Rightarrow \frac{P_b}{P_f} = \frac{z_2 - z_1}{z_2 + z_1}$$