4

$$\frac{A_s}{A_g}\cdot\frac{A_g}{A_{o_2}^*} = \frac{A_s}{A_{o_2}^*} = 1.35$$

(2.25, 0.6)

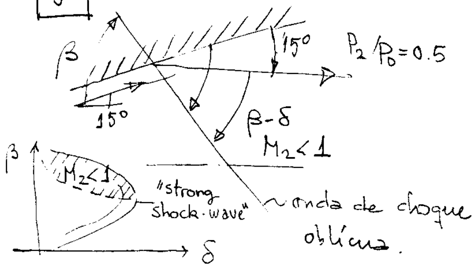
1.340 – 0.50
1.380 – 0.48 ⟶ $M_s = 0.495$

1.34 – 1.050
1.38 – 1.046 ⟶ $T_0/T_s = 1.049 \rightarrow T_s/T_0 = 0.9532$

$$\text{Empuje} = G \cdot V = G_{max}\, a_s M_s = G_{max} M_s \sqrt{\gamma R \frac{T_s}{T_0} T_0} =$$

<u>bloqueo</u> ⇒ $G = G_{max} = \rho_0 \sqrt{\gamma \frac{P_0}{\rho_0}}\, A_g \left(\frac{\gamma+1}{2}\right)^{-\frac{\gamma+1}{2(\gamma-1)}}$ $= \boxed{\sqrt{R T_0}\, G_{max}\, 0.5718}$

5



PROCESO ITERATIVO

- $\ast$ Hipótesis sobre $M_1^{(i)}$
- $\ast$ $\delta = 15°$ y $M_1^{(i)} \rightarrow$ diagrama $\rightarrow \beta$
- $\ast$ $M_{1n}^{(i)} = M_1^{(i)} \operatorname{sen}\beta \rightarrow$ TABLAS $\left(\frac{P_2}{P_1}\right)^{(i)}$
- $\ast$ $\frac{P_2}{P_0} \cdot \left(\frac{P_2}{P_1}\right)^{(i)} \rightarrow \left(\frac{P_1}{P_0}\right)^{(i)} \rightarrow$ TABLAS flujo isentrop $\rightarrow M_1^{(i+1)}$

{ β = ángulo de incidencia
δ = deflexión = 15°

$M_1^{(i)}$	β	M_{1n}	P_2/P_1	(P_2/P_1) P_1/P_0	$M_1^{(i+1)}$
2.2	81.5°	2.176	5.353	0.0934 (10.706)	2.2

$\beta = 81.5°$; $\delta = 15°$
$M_1 = 2.2$; $M_2 = 0.60$
$P_1/P_0 = 0.0934$, $P_2/P_0 = 0.5$

$$P_1/P_0 = \frac{P_2/P_0}{P_2/P_1}$$

$\frac{T_0}{T_1} = 1.968$; $\frac{T_2}{T_1} = 1.835$

$M_1 = 2.2 \rightarrow \boxed{\frac{A_{och}}{A_g} = 2.005}$

$M_{2n} = 0.5506$

$$M_2 = \frac{M_{2n}}{\operatorname{sen}(\beta-\delta)} = \boxed{0.60}$$

6 - 7

A_s^{eff} área efectiva de salida

$$\text{Empuje} = G_{max} \cdot a_s \cdot M_s = \quad \left(a_s = \sqrt{\gamma R \tfrac{T_2}{T_0} T_0}\right)$$

$$\frac{A_s^{eff}}{A_s} = \frac{A_s^{eff}}{A_g} \cdot \frac{A_g}{A_s} = \boxed{0.8911}$$

$$= \sqrt{R T_0}\, G_{max} \sqrt{\gamma\, T_2/T_0}\, M_s = \boxed{\sqrt{R T_0}\, G_{max}\, 0.6855} > \text{Empuje } \boxed{4}$$

$$\frac{T_2}{T_0} = \frac{T_2}{T_1} \cdot \frac{T_1}{T_0} = 0.9324$$

⇒ $\boxed{7}$ mayor empuje en onda oblicua
separación