

C.02.01.A1 – Modelo de Mistura Reativa Ideal

Aplicação em FTAf – Finite Time Air-Fuel Otto Engine Model

Prof. C. Naaktgeboren, PhD



<https://github.com/CNThermSci/ApplThermSci>

Compiled on 2020-09-10 17h27m57s UTC

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \longrightarrow$$

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$\bar{u}(T) = \left(b_1T + \frac{b_2T^2}{2} + \frac{b_3T^3}{3} + \frac{b_4T^4}{4} \right)_{T_{ref}}^T,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{u}(T) = \left(b_1T + \frac{b_2T^2}{2} + \frac{b_3T^3}{3} + \frac{b_4T^4}{4} \right)_{T_{ref}}^T,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{h}(T) = \left(a_1T + \frac{a_2T^2}{2} + \frac{a_3T^3}{3} + \frac{a_4T^4}{4} \right)_{T_{ref}}^T + \bar{R}T_{ref},$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{u}(T) = \left(b_1T + \frac{b_2T^2}{2} + \frac{b_3T^3}{3} + \frac{b_4T^4}{4} \right)_{T_{ref}}^T,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{h}(T) = \left(a_1T + \frac{a_2T^2}{2} + \frac{a_3T^3}{3} + \frac{a_4T^4}{4} \right)_{T_{ref}}^T + \bar{R}T_{ref},$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{s}^\circ(T) = \left(a_1 \ln(T) + a_2T + \frac{a_3T^2}{2} + \frac{a_4T^3}{3} \right)_{T_{ref}}^T + \bar{s}_{ref}^\circ,$$

$$T_{min} \leq T \leq T_{max} \quad \therefore$$

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{u}(T) = \left(b_1T + \frac{b_2T^2}{2} + \frac{b_3T^3}{3} + \frac{b_4T^4}{4} \right)_{T_{ref}}^T,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{h}(T) = \left(a_1T + \frac{a_2T^2}{2} + \frac{a_3T^3}{3} + \frac{a_4T^4}{4} \right)_{T_{ref}}^T + \bar{R}T_{ref},$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{s}^\circ(T) = \left(a_1 \ln(T) + a_2T + \frac{a_3T^2}{2} + \frac{a_4T^3}{3} \right)_{T_{ref}}^T + \bar{s}_{ref}^\circ,$$

$$T_{min} \leq T \leq T_{max} \quad \therefore$$

- Verificação de **limites**;

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{u}(T) = \left(b_1T + \frac{b_2T^2}{2} + \frac{b_3T^3}{3} + \frac{b_4T^4}{4} \right)_{T_{ref}}^T,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{h}(T) = \left(a_1T + \frac{a_2T^2}{2} + \frac{a_3T^3}{3} + \frac{a_4T^4}{4} \right)_{T_{ref}}^T + \bar{R}T_{ref},$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{s}^\circ(T) = \left(a_1 \ln(T) + a_2T + \frac{a_3T^2}{2} + \frac{a_4T^3}{3} \right)_{T_{ref}}^T + \bar{s}_{ref}^\circ,$$

$$T_{min} \leq T \leq T_{max} \quad \therefore$$

- Verificação de **limites**;
- Coef./func. **próprios**; e

Padrões nos Cálculos:

$$\bar{c}_p(T) = a_1 + a_2T + a_3T^2 + a_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{c}_v(T) = b_1 + b_2T + b_3T^2 + b_4T^3,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{u}(T) = \left(b_1T + \frac{b_2T^2}{2} + \frac{b_3T^3}{3} + \frac{b_4T^4}{4} \right)_{T_{ref}}^T,$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{h}(T) = \left(a_1T + \frac{a_2T^2}{2} + \frac{a_3T^3}{3} + \frac{a_4T^4}{4} \right)_{T_{ref}}^T + \bar{R}T_{ref},$$

$$T_{min} \leq T \leq T_{max} \quad \rightarrow$$

$$\bar{s}^\circ(T) = \left(a_1 \ln(T) + a_2T + \frac{a_3T^2}{2} + \frac{a_4T^3}{3} \right)_{T_{ref}}^T + \bar{s}_{ref}^\circ,$$

$$T_{min} \leq T \leq T_{max} \quad \therefore$$

- Verificação de **limites**;
- Coef./func. **próprios**; e
- Produtos **matriciais**.



Photo by eberhard grossgasteiger from Pexels