1) El volumen inicial es

$$\mathcal{V} = \frac{N R T_0}{P_0} \qquad \text{donde} \qquad P_0 = P_* e^{-\frac{\mu_m}{R T_0}}$$

Al final de la compresión se tiene

$$\mathcal{V}_f = \frac{1}{3}\mathcal{V} = \mathcal{V}_{fg} + \mathcal{V}_{fl} \,, \qquad N = N_{fg} + N_{fl}$$

$$\longrightarrow \frac{1}{3}\frac{N R T_0}{P_0} = \frac{(N - N_{fl}) R T_0}{P_0} + \frac{N_{fl}\mu_m}{\rho_L}$$

$$\longrightarrow N_{fl} = \frac{\frac{2}{3} N R T_0 / P_0}{\frac{R T_0}{P_0} - \frac{\mu_m}{\rho_L}}$$

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2) $$e_{il} = h_l - \frac{P}{\rho_L} = h_g - L - \frac{P}{\rho_L}$$

$$h_g = c_p T = \frac{R}{\mu_m}\frac{\gamma}{\gamma - 1} T$$

$$\longrightarrow e_{il} = \frac{R}{\mu_m}\frac{\gamma}{\gamma-1} T_0 - \frac{P_0}{\rho_L} - L$$

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3) $$\Delta E_i = \mu_m N_{fl} (e_{il} - e_{ig}) \,, \qquad e_{ig} = c_v T = \frac{R T}{\mu_m (\gamma - 1)}$$

$$\longrightarrow \Delta E_i = \mu_m N_{fl} \left(\frac{R T_0}{\mu_m} - \frac{P_0}{\rho_L} - L \right)$$