$$M_{\mathrm{HC}} = \left(\mathrm{k}V_{\mathrm{n}} \times 10^{-4}\right) \times \left(\frac{\left(C_{\mathrm{HC_f}} - rC_{\mathrm{CH_3OH_f}}\right) P_{\mathrm{B_f}}}{T_{\mathrm{f}}} - \frac{\left(C_{\mathrm{HC_i}} - rC_{\mathrm{CH_3OH_i}}\right) P_{\mathrm{B_i}}}{T_{\mathrm{i}}} \right) + \left(M_{\mathrm{HC,out}} - M_{\mathrm{HC,in}}\right)$$