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**EXAMPLE: Heating values**

Reconsider the dubious bovine flatulence problem, but this time assume *complete combustion*. The enthalpy of reaction for methane is  $-802,290 \text{ kJ/kmol-CH}_4$  at  $25^\circ\text{C}$  (298 K) and 1 atm. As before, both the methane and the air enter at 1 bar and  $25^\circ\text{C}$ , and the products leave the chamber at 500 K and 1 atm.

- Find the heat transfer rate per unit molar flow rate of fuel for the process.
- Find the higher heating value, HHV.
- Find the higher heating value, LHV.



