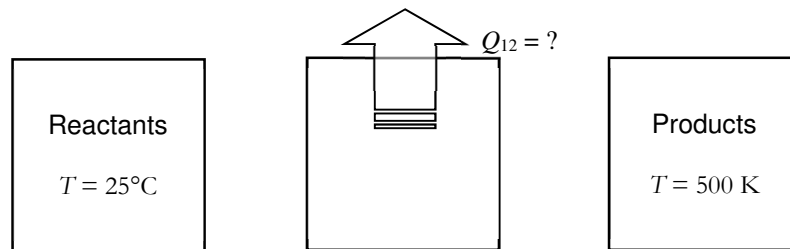

EXAMPLE: Combustion in a closed system

Let us reconsider the dubious bovine flatulence energy source problem. As before, the proposed process combusts methane (CH_4) with air and produces 90% CO_2 , 10% CO and no O_2 in the products. This time, however, the reaction occurs in a **closed system at constant volume**. The methane and the air are at 1 bar and 25°C before the combustion process, producing products at $T = 500\text{ K}$ after the reaction. Find the amount of heat transfer out (in kJ) for the process.



i	T [K]	$\Delta \bar{b}_f^0$ [kJ/kmol]	$\bar{u}(T)$ [kJ/kmol]	$\bar{u}(298\text{K})$ [kJ/kmol]
$\text{CO}_2)_2$				
$\text{CO})_2$				
$\text{H}_2\text{O})_2$				
$\text{N}_2)_2$				
$\text{CH}_4)_1$				
$\text{O}_2)_1$				
$\text{N}_2)_1$				

