QUESTION
2 kg of air in a closed-rigid vessel at 1 bar and 25°C is heated until its temperature is 100°C. The heat added to the air (in kJ) most nearly is

(A) 0
(B) 108
(C) 120
(D) 150

HINT
- Apply the closed system energy balance
- Note that since the vessel is rigid, there is no work
- The constant volume heat capacity of air is 0.717 kJ/kg-K

For a closed system
\[ m\Delta U = Q - W \]
and since it is a rigid vessel,
\[ W = 0 \]
Assuming air to be an ideal gas,
\[ \Delta U = C_v \Delta T \]

ANSWER
(B)

CONTRIBUTOR
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