

Task. An automobile engine provides 568 Joules of work to push the pistons. In this process the internal energy changes by -2778 Joules. Calculate q for the engine. The represents the amount of heat that must be carried away by the cooling system.

Solution

From 2nd thermodynamics law:

$$\delta Q = dU + \delta A$$

Where δQ – change in heat, given to or taken away from system

δA – work done by or on system

dU – change in internal energy

$$\delta Q = -2778 + 568 = -2210 \text{ Joules}$$

Answer

$$\delta Q = -2210 \text{ Joules}$$