$$100 = \frac{\Delta U}{\Delta t} + 75$$

$$\boxed{\frac{\Delta U}{\Delta t} = 25\,W}$$

**EXAMPLE:** In changing the state of a gas adiabatically from an equilibrium state A to another equilibrium state B, an amount of work equal to 22.3 J is done on the system. If the gas is taken from state A to B via a process in which the net heat absorbed by the system is 9.35 cal, how much is the net work done by the system in the latter case? (Take 1 cal = 4.19 J)

Case I: Adiabatic process $\Delta Q_{AB} = 0$

$$\Delta W_{AB} = -22.3\,J$$

Acc. to 1st Law $\Delta Q_{AB} = \Delta U_{AB} + \Delta W_{AB}$.

$$0 = \Delta U_{AB} + (-22.3\,J)$$

$$\boxed{\Delta U_{AB} = 22.3\,J}$$