Voltage across the battery is V. It goes from 0 to Vdd in time say T. so the slope is $\frac{Vdd}{T}$

Voltage across battery is $\frac{Vdd}{T}t$.

Energy supplied by battery is

$\int_0^T vidt = \int_0^T vc\frac{dv}{dt}dt = (\frac{Vdd}{T})^2 c\int_0^T tdt = \frac{1}{2}CVdd^2$

This is actually the energy stored in the capacitor. if T tends to zero the result will remain the same.

as anyway the voltage has to change from 0 to Vdd in zero seconds..