EXAMPLE: 1.0 m^3 of water is converted into 1671 m^3 of steam at atmospheric pressure and 100^0C temperature. The latent heat of vaporization of water of water is 2.3×10^6 J/kg. If 2.0 kg of water be converted into steam at atmospheric pressure and 100^0C temperature, then how much will be the increase in its internal energy? (Density of water = 1.0×10^3 kg/m^3, atmospheric pressure = 1.01×10^5 Pa)

$L_v = 2.3 \times 10^6$ J/kg

$\rho_w = 1000$ kg/m^3

1 m^3 of water = 1000 kg $\Rightarrow$ 1 kg = $\frac{1}{1000} m^3 = 10^{-3} m^3$

2 kg of water = 2×10^{-3} m^3 = V_i — (1)

1 m^3 of water = 1671 m^3 of vapour.

2×10^{-3} m^3 of water = $1671 \times 2 \times 10^{-3}$ m^3 of vapour

= 3342×10^{-3} m^3 of vapour.

$V_i = 2 \times 10^{-3} m^3$, $V_f = 3342 \times 10^{-3} m^3$

$p = 1.01 \times 10^5$ Pa