

4. A vessel of capacity, 3 m^3 , contains 1000 moles of N_2 at 90° C . Assume that the gas is ideal and provide numerical answers for the following.

(a) The pressure and specific volume of the gas (careful! think about what is meant by 'specific').

(b) The specific heat capacities, c_P and c_v . (Assume that these values are constant with temperature.)

The gas now cools to a final temperature of 20° C .

(c) What is the final pressure of the gas?

(d) What is the change in the specific internal energy, Δu , and the specific enthalpy, Δh ?

(e) The heat transfer, Q .