

ME 201

Thermodynamics

Homework 17, Due Wednesday, 3/31/2006

1. Two kilograms of Refrigerant-134a is contained in a piston-cylinder system. It is initially at 160 kPa and 0°C and is compressed to saturated vapor at 0°C. The heat transfer from the cylinder is reported to be 30 kJ. Can this value be correct? What is the minimum work input required to carry out this process?
2. An inventor claims to have developed a device that has an inlet flow of air at 20°C, 300 kPa, and 5 kg/s and two outlet flows, air at 60°C, 270 kPa and air at 0°C, 270 kPa. He claims that there is no work or heat transfer involved in the device. Evaluate this claim.