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(54) Title: METHOD AND APPARATUS FOR MEASURING THE RELATIVE DENSITY OF A GAS

(57) Abstract

Apparatus (2) comprises a chamber (4) to which a gas in question, for example natural gas is supplied through inlet (6) and leaves through outlet (8). The speed of sound SoS at ambient temperature is measured using any suitable method such as electronic control and calculating means (14) and an ultra-sound emitter (10) and an ultra-sound receiver (12). The ambient temperatures T_a is observed by temperature sensor (22), and a thermal conductivity sensor measures the thermal conductivity of the gas at two different temperatures above ambient temperature. One value ThC_H of the thermal conductivity is measured at 70 °C above ambient and the other value ThC_L of the thermal conductivity is measured at 50 °C above ambient. The control means (14) calculates the relative density RD of the gas according to the formula $RD = g.ThC_H + h.ThC_L + i.SoS + j.T_a + k.T_a^2 + 1$ where (g, h, i, j, k and l) are constants.

