Model validation for r = 12 and k = 1.3343 (constant c_v for hot air) finite-time Otto model, $\eta_t = 56.423\%$ air-standard Otto model, $\eta_t = 56.423\%$ 10^{3} 10^{2} 0.08 0.09 0.10 0.12 0.15 0.20 0.25 0.3 0.5 0.6 $v, m^3/kg$