Thesis Title	Development of Liquid Fuel Porous Combustor – Heat Exchanger
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Abstract

This experimental research is to develop heat exchanger and liquid fuel burner which are combined in the same unit.The design of these system is based on several porous meduim advantages, i.e. high surface area per volume ratio and high absorption coefficient, so this concept has appropriately applied to heat exchanger and liquid fuel burner because it has been compacted. In this research, the appropriate stack of stainless steel wire net was used as porous medium in the heat exchanger, for enhancing heat transfer to a cooling air by radiation and convection, and also used liquid fuel porous medium burner for burning liquid fuel (kerosene). A porous burner system of liquid fuel combustion unnecessarily used droplet spray in conventional spray burner because kerosene was supplied dropwise, instead of using droplet spray, to the top surface of the porous medium burner that was evaporator. Furthermore, the rock bed was used as porous medium inside the combustion chamber to enhance evaporation and combustion. A stable and complete combustion was achieved in this work. Highly combustion temperature and low CO, NO_x emissions, 281 and 125 ppm respectively, were achieved at CL = 9 kW, Φ = 0.48 and P_e = 160 mm. In this condition, Highly thermal efficiency is 31.02 percent at air flow rate of 4.50 l/s in the heat exchanger. The effects of various parameters including equivalence ratio, thermal input, porous emitter and air flow rate in heat exchanger on the combustion characteristics were clarified.