

Research Title Development of Ceramic Rapid-firing Technique
for Fuel Resource Conservation

Name Mr.Yuttapong Naksopon

Organization Program of Ceramics Engineering Technology
Industrial Technology
Loei Rajabhat University

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ABSTRACT

The aim of direct air-inlet venturi burner application is to optimize firing efficiency of down draft ceramic kiln by directly airflow combination with pressure gauge controlled. The system can controlled a constant air pressure during firing and can adjusted the air pressure relative to the rising temperature directly. The apparatus is included venturi burner enhanced by drilling a hole at the air buffer and connected to a pressure gauge, an air compressor, tubes and valves. The air is introduced into the furnace by mixed with LPG. Temperature monitoring, firing atmosphere, value of fuel, time and firing rate is executed. The results found that firing efficiency of the apparatus at 1220 degree Celsius are able fire at both oxidation and reduction atmosphere by 32.7 and 38.6 kg of spent fuel to fire for 13 and 14 hours, and the firing rate are 94 and 87 degree Celsius/hour, respectively. When comparing the combustion performance of conventional firing and directly airflow equipment at 1220 degrees Celsius with oxidation atmosphere, it found that the former can be reduce firing time for 1 hour or 7.14 percent, increase firing rate for 7 degree Celsius per hour or 8.05 percent and reduce gas fuel for 1.4 kg or 4.11 percent.

Keywords: kiln, venturi burner, air-inlet, firing efficiency