

SUMMARY

Gregorius Dewangga Kian Pradipta, *Department of Mechanical Engineering, Faculty of Engineering, University of Brawijaya, June 2018, Simulation of the Influence of Reactane Velocity to the Characteristics of Methane Fuel Premixed Flame, Academic Supervisor: Agung Sugeng Widodo dan Moch. Agus Choiron.*

Fuel consumption in Indonesia is high, even though Indonesia has very much natural resource, especially natural gas reserves. To optimize the natural gas as the fuel, there is a need to research and observe. One of the component that compose the natural gas is methane, that has special characteristics from others. One of the characteristic of methane as a fuel is the flame characteristic. By studying the flame characteristic, we can reach the optimal combustion process. One of characteristic of flame characteristic is laminar flame speed. We can use many methods to observe the laminar flame speed, one method usually used to observe is bunsen burner method.

In this research will simulated the flame characteristics of methane fuel using bunsen burner with variation of reactane velocity. The main purpose of this research was to determine the effect of reactane velocity in combustion process and to determine the optimum reactane velocity in combustion process. This research, the value of equivalent ratio was set to 1 (in stoichiometric condition), and for the reactane velocity used nine variations, the variations were 0,239 m/s; 0,358 m/s; 0,477 m/s; 0,597 m/s; 0,716 m/s; 0,835 m/s; 0,954 m/s; 1,074 m/s; and 1,193 m/s to determine the effect on flame characteristics.

The result of this research is variation of reactane velocity have influence to the flame characteristic. The higher reactane velocity will increasing the flame height, the flame temperature, and laminar flame speed.

Keywords: Bunsen burner, methane, flame characteristic, reactane velocity.