SUMMARY

Andri Perdana Cristianto, *Department of Mechanical Engineering, Faculty of Engineering, Brawijaya University, December 2017, Effect of Additional Swirl Vanes Blade and Equivalance Ratio Againts Visualization and Temperature Distribution of Diffusion Flame, Academic Supervisor*: Widya Wijayanti *and* Nurkholis.

Swirl vanes are a device consisting of static blades used to cause a vortex to flow of the air passing through it. The purpose of using swirl vanes alone is to increase the mixing between fuel and air. Where the air passes through the swirl vanes will produce a vortex. The resulting vortex will produce a recirculation zone in the middle of the flow so that the flow becomes turbulent and will increase the mixing between fuel and air.

Swirl vanes used in this study were the temperature spread becomes more evenly distributed. The addition of the number of blades will also tend to reduce the height of the diffusion flame due to the greater degree of turbulence produced by the blades of vanes. The equivalent value of the ratio will affect the height of the flame where the greater equivalent ratio will increase the height of the diffusion flame. This due to the increasing amount of chemical energy in this case of oxidized methane fuel into heat energy

The results showed that increasing the amount of the blade will increase the temperature distribution of the diffusion flame, where the temperature spread becomes more evenly distributed. Increasing the number of blades will also tend to reduce the height of the diffusion flame due to the greater obstacles generated by the blades of vanes so that will result in more turbulent flow of reactants. The equivalent value of the ratio will affect of the height of the fire where the greater the equivalent ratio will increase the height of the diffusion flame. This is due to the increasing amount of chemical energy in this case of oxidized methane fuel into heat energy

Keyword*: Swirl vanes, equivalence ratio, temperature distribution, diffusion flame*