ABSTRACT

Two-phase flow is part of a general multiphase flow that consists of several phases of the flow that is gas-liquid, liquid-solid and solid-gas. The basic characteristics of two-phase flow that is flow pattern, flow pattern maps, void fraction, and pressure gradient. On this research will be discussed about the investigation of pressure gradient on two-phase flow. Pressure gradient used on piping industrial world to know fluid pressure difference on the pipe. The problems pressure gradient is the influence of superficial fluid velocity and viscosity.

This research was on a glass pipe has a diameter of 1.6 mm with a slope of 5°. The condition of the system is not affected by the environment (adiabatic) at room temperature 27° C in a steady state. The materials used in this research is air and water with a mixture of 40%, 50%, 60%, and 70% Glycerin. A device used to measure the pressure drop is a pressure transducer. The data generated in the pressure transducer is still in the form of voltage, then converted into pressure.

The data obtained is the increased pressure gradient caused by increasing superficial velocity. The effect of viscosity on the pressure gradient can be seen in the time series graph. Experience increased pressure gradient caused by the increasingly large viscosity. Pressure gradient on J_G = 0,116 m/s J_L = 0,149 m/s with a viscosity of 40% produces an average pressure gradient 45,24 kPa/m, while the viscosity of 50%, 60% and 70%, the average pressure gradients resulting 47,59; 47,61; and 47,75 [kPa/m]. It shows the increasing viscosity of the resulting pressure gradient then will be increased.

Keywords: *Two-phase flow, pressure gradient, supervicial velocity, multiphase, viscosity*