INTISARI

Studi eksperimental mengenai aliran dua fasa dengan fluida air dan gas dilakukan pada *T-junction minichannel* horizontal dengan penampang horizontal berukuran 1,25 mm x 2,25 mm di area downstream. Saluran mini yang digunakan memiliki diameter hidraulik sebesar 1,607 mm. Kecepatan superfisial udara dan kecepatan superfisial air yang digunakan pada penelitian ini bervariasi dengan rentang masing-masing J_G = 0,5926 m/s – 2,963 m/s dan J_L = 0,6257 m/s – 3,1864 m/s. Variasi radius belokan yang digunakan yaitu R080 dan R160. Pada penelitian kali ini data diambil menggunakan *high speed camera* untuk mendapatkan data visualisasi pola aliran yang terbentuk. Sedangkan untuk data penurunan tekanan didapatkan dengan *menggunakan pressure transducer* dan ADC (*Analog to Digital Converter*). Pada penelitian kali ini, dilakukan pengamatan terhadap pola aliran, dan karakteristik gradien tekanan pada masing – masing pola aliran berhasil diamati pada bagian downstream dari T-Junction dengan menggunakan analisis statistik berupa time series, Probability Distribution Function (PDF), dan PSD (*Power Spectral Density*) . Berdasarkan penelitian didapatkan beberapa pola aliran yaitu, *bubbly, slug, elongated slug, churn*, dan *elongated slug to churn***.** Dari hasil penentuan karakteristik gradien tekanan didapatkan bahwasanya seiring dengan meningkatnya kecepatan superfisial fluida air dan udara, fluktuasi gradien tekanan akan semakin meningkat pada ditunjukkan dengan grafik PDF yang semakin landai.

Kata kunci : aliran dua fasa, *minichannel, t-junction*, pola aliran, gradien tekanan, radius belokan *T-junction*

ABSTRACT

Experimental studies on two-phase flow with water and gas fluids were conducted on a horizontal minichannel T-junction with a 1.25 mm x 2.25 mm rectangular cross section in the downstream area. Minichannel have hydraulic diameter DH = 1,607 mm.. The superficial velocity of air and superficial velocity of water were in range of J G = 0.5926 m/s – 2.963 m/s and J L = 0.6257 m/s – 3.1864 m/s respectively. The various of t-junction corner radius were is R080 and R160. In this study, the data was taken using a speed camera to obtain visualization data on the flow patterns formed. Meanwhile, pressure drop data is obtained using a pressure transducer and ADC (Analog to Digital Converter). In this study, observations were made on flow patterns, and the characteristics of the pressure gradient in each flow pattern were successfully observed in the downstream part of the T-Junction using statistical analysis in the form of time series, Probability Distribution Function (PDF), and PSD (Power Spectral Density). Based on the study, several flow patterns were obtained, namely, bubbly, slug, elongated slug, churn, and elongated slug to churn. From the result of determining the characteristics of the pressure gradient in the downstream area of T-Junction using PDF analysis, it was found that along with the increasing superficial velocity of water and air fluid, pressure gradient fluctuation will increase in each flow pattern.

Keyword : two phase flow, minichannel, flow pattern, pressure gradient, t-junction corner radius.