INTISARI

Salah satu contoh fenomena aliran dua fase ditemukan pada *pressurized water reactor* (PWR) pada reaktor nuklir. Bila terjadi kebocoran, pada bagian saluran primer *hotleg* terdapat cairan pendingin (*coolant*) dan uap panas (*hot steam*) yang yang berasal dari reaktor mengalir secara berlawanan arah (*counter-current*).

Dilakukan eksperimen pada model sistem PWR dengan skala 1:30. Pengukuran perbedaan tekanan dilakukan dengan menggunakan sensor *differential pressure* yang dihubungkan dengan akusisi data agar dapat di komputasi. Digunakan fluida berupa air dan udara yang mengalir dalam pipa akrilik berdiameter 25,4 mm. Pengukuran perbedaan tekanan yang dilakukan dengan perubahan variasi kecepatan antara air dan udara, diteliti bagaimana karakteristik dan pola alirannya.

Untuk aliran strata perbedaan tekanan naik dengan perlahan seiring kecepatan superfisial udara dinaikkan. Pada aliran *wavy*, gradien tekanan lebih tinggi daripada aliran strata. Saat *onset of flooding* yang ditandai terbentuknya *slug,* kenaikan perbedaan tekanan sangat tinggi.

Kata kunci: Aliran Dua Fase, Aliran Berlawanan Arah, *Pressurized Water Reactor*, Aliran Strata, Aliran *Wavy, Slug, Onset of Flooding,* Perbedaan Tekanan

ABSTRACT

An example of two phase phenomenon can be found in *pressurized water reactor* (PWR) of nuclear reactors. If there is a leakage, coolant in primary circuit of hotleg and hot steam coming from reactor flows counter-currently.

PWR system model is using a scale of 1:30 of the actual hotleg in this experiment. Pressure drop is meassured by using differential pressure sensor which is connected to data acquisition for computation. The experiment is using water and air which flow in acrylic pipe witg 25,4 mm of diameter. Pressure drop is measured with velocity of water and air as independent variable and then observed how the characteristic and the pattern of the flow are.

For stratified flow, the pressure drop increase slowly as superficial velocity of gas is being increased. When wavy flow occurs, pressure gradient is higher than stratified flow. The increasing of pressure drop is very high when onset of flooding initiated by slug.

Key Words: Two Phase Flow, Counter Current flow, Pressurized Water Reactor, Stratified Flow, Wavy Flow, Slug, Onset of Flooding, Pressure Drop