

SUMMARY

Nurul Fauziyah, Department of Mechanical Engineering, Faculty of Enineering, University of Brawijaya, Januari 2017, *The effect of pressure on formation, stability and storage capacity of propane butane hydrate using stirrer tank*, Academic Supervisor : Widya Wijayanti and Slamet Wahyudi.

Hydrate is a crystalline solid form of ice that is made up of water and gas due to high pressure and low temperature. The water molecule has a hydrogen bond to form a frame that has a cavity, and the cavity will be occupied by the gas molecules. Nowadays a lot of research on hydrate is used as an alternative for storage and transportation of natural gas.

Characteristics of hydrate has been considered important in the appliance of storage and transportation of gas in the industrial manufacture of natural gas hydrate. Characteristics include the hydrate formation rate, stability and storage capacity hydrate. The influence of pressure variations will determine the value of the characteristics of gas hydrates are formed, mainly propane butane gas hydrates. The greater the pressure, the characteristics of gas hydrates will increase. The independent variables in this study is a pressure of 2 bar, 3 bar and 4 bar. The dependent variable is the rate of formation, stability and storage capacity hydrate. Controlled variable is the volume of 50 cm³ demin water, the temperature of the cooling bath formation rate and stability at 0°C and -5°C.

The results showed that the characteristics of propane butane gas hydrate increased with increasing pressure. Characteristics include gas hydrate formation rate and storage capacity as well as the stability of gas hydrate hydrate. Hydrate formation rate is expressed in the form of pressure that exist in the hydrate and the amount of consumption of propane butane gas hydrates. Mol consumption was biggest with the variation of pressure of 4 bar at 0,03627 mole pressure of 1.98 bar hydrate. Propane butane gas hydrate stability expressed as the pressure in the gas hydrate decomposition and mole of gas hydrate decomposition. The biggest decomposition pressure variations occur at 4 bar pressure of 1.5 bar. The biggest decomposition of mole gas hydrate occur at 4 bar with 0.0282 mole. The hydrate storage capacity also exists in the variation of pressure of 4 bar at 0.477 V/V with the storage pressure of 1.82 bar hydrate.

Keywords : Gas hydrate, Propane -butane, pressure, rate of formation