Effect of methane gas flow rate on adsorption capacity and temperature distribution of activated carbon

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Abstrak

Adsorbed Natural Gas (ANG) is one of the gas storage methods which specialize in low pressure. This method is more competitive compared to Compressed Natural Gas (CNG). ANG is based on an adsorption process that involves adsorbate and adsorbent. This research is conducted to observe the effects of gas flow-rate on adsorption capacity and the temperature distribution of adsorbent. The adsorbent is a commercially activated carbon, and methane gas is the adsorbate. Methane flow rates are 1 standard liter per minute (SLPM) and 20 SLPM. Temperature in the pressure vessel is maintained at 25°C and the pressure at 3.5 MPa. The result shows that the adsorption capacity of activated carbon is higher at a lower gas flow rate. While a higher gas flow rate causes a higher temperature difference in the adsorption and in desorption process.