

## Adsorpsi dan desorpsi gas metana pada bejana bertekanan (vessel) dengan kenaikan tekanan secara bertahap = Adsorption and desorption methane gas vessel with increasing pressure gradually

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### Abstrak

Bahan Bakar Minyak (BBM) adalah sumber alam yang tidak dapat diperbaharui. Meningkatnya kebutuhan bahan bakar minyak (BBM) tidak seimbang dengan ketersediaan bahan bakar lain padahal setiap tahun produksi kendaraan bermotor naik. Selain itu hasil pembakaran pada kendaraan bermotor menghasilkan polusi udara yang menjadi salah satu faktor pemanasan global. Masalah tersebut perlu dipecahkan dengan cara mencari energi alternatif yang lebih bersih dengan nilai oktan tinggi serta ketersediaannya di alam masih banyak dan dipilih gas alam dengan komposisi utama gas metana (CH<sub>4</sub>). Walaupun penggunaan gas alam masih sedikit disebabkan tempat penyimpanan yang memiliki tekanan besar 150 bar (CNG), keadaan masyarakat sosial yang bingung akan dalam menggunakannya dan masih jarang nya stasiun bahan bakar gas. Maka dibuatlah sistem ANG yang dianalisa lebih rendah tingkat tekanan gas yang digunakan. Metode isotermal (volumetrik) yang digunakan untuk proses adsorpsi dengan memvariasikan suhu adsorpsi yaitu 5°C, 15°C dan 15°C dengan 5-35 bar dengan menggunakan metode bertahap dalam memasukkan tekanan gas metana (interval 5 bar).

.....Fuel is one of non renewable resources. The consumption of fuel are not balanced with another resources. The biggest consumption of fuel is vehicle. The production of vehicles are increasing every year so that the consumption of fuel to high and longer of time, the fuel resources will be lost while the gas resources are less to use. Furthermore, the effect of fuel in combustion engine can produce CH<sub>4</sub> and CO<sub>2</sub> and another gases can create green house effect. From green house effect make increase temperature in the earth because the content of CO<sub>2</sub> and CH<sub>4</sub> are increasing. It has a dangerous impact for another life in the earth. For that we need something way to decrease the emission from the engine combustion vehicles and utilizing the gas resources. Although the gas resources are utilized by vehicle, the consumption of gas still little because the vessel to big size and has the pressure about 150 bar (CNG), that is make the people are so confuse to use it and the gas stations are rare. Adsorption is effective way to reduce pressure in vessel and gas emission which released. This study discusses the capacity adsorption CH<sub>4</sub> (ANG) at activated carbon. In this research the activated carbon used is a commercial active carbon. Adsorption measurement use volumetric method (isothermal) at temperatures 5°C, 15°C and 15°C with 5-35 bar pressure with step-by-step method?s (interval 5 bar). The objective from this research is to get capacity data and the rate adsorption at activated carbon until several work cycle.