Reduction of Gas Emission Through CO Converter and Gas Absorber System on Motorcycle Exhaust

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In line with the Paris agreement, the world's future is to target Net Zero Emission (NZE) to support global efforts for reducing greenhouse gas emissions. Global transportation increases greenhouse gas emissions, such as carbon monoxide (CO) and carbon dioxide (CO2). Catalytic converters have been applied to various vehicle exhaust systems to overcome this problem. Alternative to this solution, a non-catalytic converter prototype was developed based on exhaust gas heating and absorption principles. This research explores the effectiveness of a re-heater system in three temperature difference settings, i.e., 3, 6, and 9°C. In the absorption part, the system adopts the role of activated carbon and zeolite. This prototype was tested as a motorcycle exhaust in which the exhaust gasses were measured by a gas analyzer using the non-dispersive infrared (NDIR) method. The results indicate that the conversion of CO into CO2 depends on the applied temperature differences. The higher the temperature difference, the more CO gas is converted. The activated carbon-zeolite absorber successfully performed in reducing CO2 emission. This prototype system can decrease CO gas levels from the motorcycle engine to 23.3% at the highest temperature difference and shows promise for further development.

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