



**DEVELOPMENT OF LOW COST CATALYST-COBALT SYSTEM FOR  
ENGINE EMISSION CONTROL**

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## ABSTRACT

This project targets on the reduction of exhaust gas emission of automobile and introduced alternative suitable catalyst for reducing automobile exhaust gas emission. The system used was Low Cost Catalyst-Cobalt, Titanium Dioxide ( $\text{TiO}_2$ ) as carrier beside introduced activated carbon to be act as catalyst. The system was installed in the exhaust line between the exhaust manifold and the muffler. Commercial automobile catalytic converter coated with precious catalyst was used as a standard in this study. The equipment used to analyze the concentration of exhaust gas was KANE-MAY QUINTOX (KM 9106) and the engine used was GASOLINE INTERNAL COMBUSTION ENGINE; PROTON WIRA 1.6 (INJECTION). The method used for catalyst preparation was similar as the commercial technology that involved impregnations, calcinations, and drying processes. The round shape stainless steel wire meshes were arranged in a row and been coated with  $\text{TiO}_2$  and Cobalt. Activated carbon was installed between the layer of stainless steel wire meshes and converter casing. Testing was run out at constant speed of engine at 1000 rpm and constant temperature at  $185^\circ\text{C}$ . Reading was taken before and after the converter to analyze the percentage of exhaust gas reduction. From the results, the reduction percentage of Carbon Monoxide (CO) and Oxide of Nitrogen ( $\text{NO}_x$ ) by used of Low Cost Catalyst-Cobalt system were 9.6% and 7.9% with concentration of  $\text{TiO}_2$  at 4 M and concentration of Cobalt at 1 M.

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