

Comparative Study on effect of Exhaust Gas Recirculation (EGR) on Performance and Emission characteristics of a Diesel Engine

¹Rajshree Kokate, ²Krunal Suryakant Kayastha, ³Bindi Thakkar
¹Assistant Professor, ²Assistant Professor, ³Assistant Professor
Parul University

Abstract - Diesel engine emissions are a major threat agent to the environment and human health, both in terms of global warming and carcinogenic action of these elements. This is especially critical concerning nitrogen oxides (NO_x), Hydrocarbons (HC), Carbon monoxide (CO) and particulate matter (PM). With the advent of stringent emissions regulations, the Exhaust Gas Recirculation (EGR) has become a critical component in diesel engine systems to reduce NO_x (nitrogen oxides) emissions. This is accomplished by returning cooled exhaust gas back to the engine. The EGR is designed to cool this re-circulated exhaust gas with coolant, thereby reducing its volume and increasing its density. In this paper, The impact of EGR on Diesel operations and Emission characteristics are analyzed. EGR can be applied to diesel engine without sacrificing its efficiency and fuel economy and NO_x reduction can thus be achieved. The increase in CO, HC, and PM emissions can be reduced by using exhaust after-treatment techniques, such as diesel oxidation catalysts (DOCs) and soot traps.

keywords - Diesel Engine, Exhaust gas recirculation system (EGR), Air-Fuel ratio (AFR), Oxides of Nitrogen (NO_x)
