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However, the optimal values of corresponding cylinder temperature increase significantly at ivc (717.24 K), evo (1088.5 K) and tdc (1560.8 K), respectively at a speed of 2500 rpm. Also, the engine speed had appreciable impact on the heat exchange parameters, because the values of these parameters increases as the engine speed increases. On the ecological parameters, the Bosch number and Hartridge smoke level were significantly influenced as the engine speed increases which is an indication that the smoke level and the soot concentration in the engine increases as the engine speed increases. Engine speed also had greater influence on the combustion parameters. The results obtained signified that engine speed raises the rate at which the combustion chamber is heated over the cranking of the engine. Turbocharging and Gas Exchange parameters also increases spontaneously as engine speed increases from 1500 rpm to 2000 rpm, and the values dropped at 2500 rpm. The heat transfer coefficient in the intake manifold reduces as the engine speed increases while that of the intake port increases as the engine speed increases. Engine speed also influences the exhaust system parameters, as the heat transfer coefficient in exhaust manifold remain unchanged because the exhaust system conditions had attained thermal equilibrium state while in the exhaust manifold. However, the heat transfer coefficient in exhaust port increases as the engine speed increases. The result also brings about the increase in value of Strokeal number. It is now evident that engine speed is significant in the study of engine performance parameters and the best values of those parameters would be obtained at a speed of 2000 rpm.

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