

INVESTIGATION OF PERFORMANCE OF 4-STROKE SINGLE CYLINDER SI ENGINE OPERATING ON GASOLINE-ETHANOL FUEL BLENDS

S. V. SARODE¹ AND S. P. CHINCHOLKAR²

¹ Student, IV Semester M.Tech, Heat Power Engineering, Mechanical Engineering Department,
KITS College of Engineering, Ramtek - 441106, India.

² Associate Professor, Mechanical Engineering Department, KITS College of Engineering,
Ramtek - 441106, India.

Abstract

In this study, the effects of ethanol-gasoline (E10, E20, and E30) fuel blends are investigated on 4-stroke single cylinder variable compression ratio SI engine for analyzing the performance on testing parameters. The test were performed using an electric dynamometer while running the engine at constant speed of 2000 rpm and at five different engine load conditions (0.5, 1, 1.5, 2, 2.5 KW).The test were conducted by using different variable compression ratio i.e 6:1, 8:1 and 10:1. The result obtained from the use of ethanol-gasoline fuel blends are compared with conventional gasoline on S.I engine. The result indicated that when the compression ratio increased from 6/1 to 10/1 and when the composition of ethanol fuel increased in gasoline the brake thermal efficiency and volumetric efficiency increased, the brake specific fuel consumption and exhaust gas temperature are decreased. It was determined from the experimental results that the most suitable fuel in terms of performance and emissions was E30. The results show that increasing ethanol-gasoline blended will marginally increase the power and torque output of the engine.

Keywords : Variable compression ratio, Ethanol, Engine performance.