

A Brief Review on Parametric optimization of a CRDI Engine by using DOE Method

Vaibhav Rangari¹ and Harshad Deshpande²

PG Scholar, Department Mechanical Engineering¹

Assistant Professor, Department Mechanical Engineering²

PES Modern College of Engineering, Pune, India

Abstract: *It is a well-known fact that the automotive industries have predominantly ruled the global industrial and commercial sectors. However, an increase in the demand for fossil fuels and stringent emission norms have paved a way for alternative fuels in IC engines, certain optimization protocols are followed by the automotive industry to save the time and cost involved in production, design and engine operating conditions. However, due to the broad nature of this subject in automotive applications, the optimizations of engine operating conditions and their respective parameters are deeply delved into in this article. In order to guide novice engine researchers, this article intends to critically elucidate the Taguchi optimization techniques used by researchers for improving the performance of spark ignition, compression ignition engines, CRDI engines systems and its various sub-systems. This article begins with the need of biodiesel in today's era, need of biodiesel operating parameters optimization, introduction about the Taguchi technique for optimization, stepwise procedure for implementing the Taguchi's optimization technique, literature survey on experiments done by the different researchers in this area, and detailed case study on the research work done by different researchers to understand the methodology accepted and to understand the experimental results and graphs so that we can continue the same research with different new options and prepare the experimental design plan approach for screening and optimization of multi point optimization of Taguchi approach. From the review, it can be concluded that the Taguchi technique efficiently assists in exploring the in-depth engine function relation between the input variables.*

Keywords: Biodiesel, CRDI Engine, Parametric optimization, Performance Characteristics, Taguchi Method

