

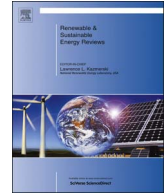


ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Renewable and Sustainable Energy Reviews

journal homepage: [www.elsevier.com/locate/rser](http://www.elsevier.com/locate/rser)



## The effect of combustion management on diesel engine emissions fueled with biodiesel-diesel blends



S.S. Hoseini<sup>a</sup>, G. Najafi<sup>a,\*</sup>, B. Ghobadian<sup>a</sup>, Rizalman Mamat<sup>b</sup>, Nor Azwadi Che Sidik<sup>c</sup>, W.H. Azmi<sup>b</sup>

<sup>a</sup> Tarbiat Modares University, Tehran, Iran

<sup>b</sup> Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

<sup>c</sup> Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia

### ARTICLE INFO

#### Keywords:

Combustion management  
Fuel additives  
After-treatment technology  
Biodiesel  
Diesel engine

### ABSTRACT

The present study is a literature review on previous proposed strategies in order to reduce the emissions of diesel engines. In this review, the results of effective strategies include; combustion management, fuel additives and after-treatment technology which are reported in various research studies are discussed. The overall results showed that using one strategy can not reduce all the emissions of diesel engines. However, employing several strategies simultaneously can reduce all the diesel engine emissions. The result from a survey showed that the best proposed solution for reduction of diesel engine pollutants is using biofuels, which consist of a combination of diesel, biodiesel and ethanol. Furthermore, synthesis of metal-based nano-catalysts must be used in these fuels; engines with turbocharger must be used and high compression ratio along with the increase of fuel injection pressure must be considered. Furthermore, exhaust gas recirculation (EGR) system must be deployed in engine for ensuring in the minimization of pollutants; diesel oxidation catalyst (DOC), elective catalytic reduction (SCR) and also diesel particulate filter (DPF) must be utilized.