

SPRAY CHARACTERISTICS OPTIMIZATION OF BIODIESEL FUEL IN CONSTANT VOLUME CHAMBER USING MULTI-RESPONSE OPTIMIZATION TECHNIQUE

B. YONESHWAR^{1*}, C. RAJ KISHORE², K. VISHNU³ & P. RAGHU⁴

^{1,2,3}Student, Department of Automobile Engineering, Sri Venkateswara College of Engineering,
Pennalur, Sriperumbudur, Tamil Nadu, India

⁴Assistant Professor, Department of Mechanical Engineering, Sri Venkateswara College of Engineering,
Pennalur, Sriperumbudur, Tamil Nadu, India

ABSTRACT

This study primarily focuses on optimizing the spray characteristics of biodiesel fuel in a spray chamber. Three factors have been considered; fuel injection pressure, number of nozzle holes and fuel blends. To achieve this objective, these were chosen as the factors (injection pressure, number of nozzle holes, fuel blends). Three levels were chosen as the response variable namely, Spray penetration length (S), Spray angle (Θ) and Sauter mean diameter (SMD). These investigations were done with the aid of Taguchi full factorial array method. To calculate the response variables, the Multi Response Signal to Noise Ratio (MRSN) technique was used. To find optimum combination level of factors, the Taguchi's parametric design were exploited.

KEYWORDS: Taguchi, Spray Penetration Length, Spray Angle, Sauter Mean Diameter, Injection Pressure & Number of Nozzle Holes

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