

## Performance and Emission Prediction in a Biodiesel Engine Fuelled with Honge Methyl Ester Using RBF Neural Networks

**Authors :** Shiva Kumar, G. S. Vijay, Srinivas Pai P., Shrinivasa Rao B. R.

**Abstract :** In the present study RBF neural networks were used for predicting the performance and emission parameters of a biodiesel engine. Engine experiments were carried out in a 4 stroke diesel engine using blends of diesel and Honge methyl ester as the fuel. Performance parameters like BTE, BSEC, Tech and emissions from the engine were measured. These experimental results were used for ANN modeling. RBF center initialization was done by random selection and by using Clustered techniques. Network was trained by using fixed and varying widths for the RBF units. It was observed that RBF results were having a good agreement with the experimental results. Networks trained by using clustering technique gave better results than using random selection of centers in terms of reduced MRE and increased prediction accuracy. The average MRE for the performance parameters was 3.25% with the prediction accuracy of 98% and for emissions it was 10.4% with a prediction accuracy of 80%.

**Keywords :** radial basis function networks, emissions, performance parameters, fuzzy c means

**Conference Title :** ICMAME 2015 : International Conference on Mechanical, Aeronautical and Manufacturing Engineering

**Conference Location :** New York, United States

**Conference Dates :** June 04-05, 2015