

THE EFFECTS OF OILS ON INTERNAL COMBUSTION ENGINES USING NEURAL NETWORKS

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ABSTRACT

This paper presents a procedure of testing and evaluation of internal combustion engine oil quality. The application of neural networks on vehicle engine system for fault detecting and analysing engine oils is improved. Two types of oils, which are used and unused, are analysed for predicting the performance of the engine. Three types of neural networks are employed to find the exact neural network predictor of vehicle engine oil performance and quality. In order to analyse the oil quality for both cases, an accelerometer is located at the bottom of the car engine for measuring the related vibration.

REFERENCES

- [1] MARU, M.M., SERRATO-CASTILLO, R., PADOVESE, L.R., "Influence of oil contamination on vibration and wear in ball and roller bearings", *Industrial Lubrication and Tribology*, vol. 59(3), 2007, pag. 137–142
- [2] GONÇALVES, A.C., CUNHA, R.C., LAGO, D.F., "Maintenance of a reducer by vibration and wear particles analysis", *Journal of Quality in Maintenance Engineering*, vol. 12(2), 2006, pag. 118-132
- [3] YILDIRIM, Ş., "Design of an artificial neural network predictor for analysis of a hydrodynamic thrust bearing system", *Industrial Lubrication and Tribology*, vol. 58(2), 2006, pag. 89–94
- [4] CANBULUT, F., SINANOĞLU C., YILDIRIM Ş., "Neural network analysis of leakage oil quantity in the design of partially hydrostatic slipper bearings", *Industrial Lubrication and Tribology*, vol. 56(4), 2004, pag. 231–243
- [5] SINANOĞLU, C., NAIR, F., KARAMIŞ, M.B., "Effects of shaft surface texture on journal bearing pressure distribution", *Journal of Materials Processing Technology*, vol. 168, 2005, pag. 344–353
- [6] TAPLAK, H., UZMAY, İ., YILDIRIM, Ş., "An artificial neural network application to fault detection of a rotor bearing system", *Industrial Lubrication and Tribology*, vol. 58(1), 2006, pag. 32-44
- [7] SINHA, A.N., MUKHERJEE, P.S. DE, A., "Assessment of useful life of lubricants using artificial neural network", *Industrial Lubrication and Tribology*, vol. 52(3), 2000, pag. 105-109