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**A NOVEL METHOD FOR THE PERFORMANCE CONTROL OF A GAS
TRANSMISSION COMPRESSOR**

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ABSTRACT

This paper presents the application of feed forward neural networks to the performance control of a gas transmission compressor. It is estimated that a global saving in compressor fuel gas of 1% could prevent the production of 6 million tonnes of CO₂ per year, [1]. Results of compressor model testing suggest that compressor speed can be estimated to within ± 2.5 %. The neural network property of function approximation is used to predict compressor speed for given process constraints and instrument input sets. The effects of training set size, instrument noise, reduced input sets and extrapolation from the training domain, are quantified. Various neural network architectures and training schema were examined. The embedding of a neural network into an expert system is also discussed.