

# **Advanced Gas Turbine Rotor Shaft Fault Diagnosis Using Artificial Neural Network**

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## **Abstract**

The effect of vibration in plant leads to catastrophic failure of a system. This is why vibration monitoring of a system constitutes a very key practice of ensuring power plant availability. Force, Amplitude and Resonance a program written in Visual Basic Programming language was utilized in this study to monitor the vibration level of the Gas Turbine (GT17) in Afam thermal station and to calculate the force causing vibration on the bearing. The program was also run using the data obtained from the plant. Results show that vibration velocity amplitude of bearing 2 on weeks 5 and 8 were 6.7mm/s and 6.6mm/s and the forces causing vibration were  $2.545 \times 10^4 \text{N}$  and  $2.272 \times 10^4 \text{N}$  respectively. The comparison of results obtained with maximum vibration velocity amplitude of the machine (7mm/s) showed that the vibration of the machine was tending towards the maximum value. Therefore, proper attention should be given to bearing 2 to avoid failure of the Gas Turbine.

**Keywords:** artificial intelligence, condition monitoring, excitation force, amplitude, resonance

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