Abstract

Detection of boiler tube leakage is a very important factor for power plant functioning, as approximately 60% of boiler outage is due to tube leakages. The traditional method has many drawbacks in leakage detection. In this study acoustic signal processing methods have been used to detect leaks in pressurized systems of utility and industrial power plants. A lab setup is designed and fabricated which mimics the boiler leakage. Leakage Sound waves are detected by transducers. The signal features are extracted. BPNN algorithm is used to study the datasets. Average specificity of 94% and sensitivity of 92% are obtained. Results show that the BPNN is able to detect tube leakages from holes of different diameters and distances efficiently. It emerges that this method of detection makes it promising as a real-time detector, which will progress the automatic detection of boiler tube leakage in boilers.

References

- Bjorn Widarsson, Erik Dotzauer, "Bayesian network-based early-warning for

Index Terms

Computer Science  Signal Processing

Keywords

Acoustic signals  Boiler tube leakage  BPN  Classification  Feature extraction.