



SenQC™

Noise Based Quality Control & Non-contact Defect Detection

SenSound's SenQC™ test systems provide accurate noise based quality control and non-contact defect detection through acoustic signatures on the manufacturing line, quickly and without the need for an acoustic enclosure.

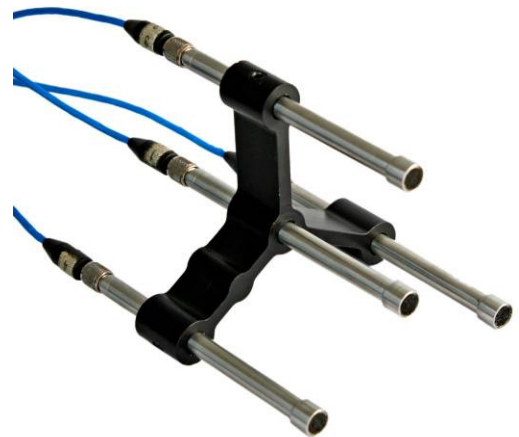
We help Companies improve product quality, reduce warranty costs and speed production line throughput by implementing better quality control of product noise levels and non-contact defect detection using noise signatures. We provide custom software and systems for in-line testing which eliminate background noise without the need of an acoustic enclosure. These systems use new and patented acoustic algorithms developed at the Wayne State University Acoustic, Vibration and Noise control Laboratory. Identifying the sound output of a product on manufacturing lines is usually impossible in a noisy manufacturing environment without the use of a costly enclosure. Acoustic signatures can often detect defects that can not be identified by other means, but again these are difficult to identify reliably in a noisy manufacturing environment without the use of an enclosure. SenQC eliminates the need for that enclosure, saving money and considerable cycle time in testing. The result is better product quality and improved manufacturing line throughput.

SenQC "Acoustic Lens"

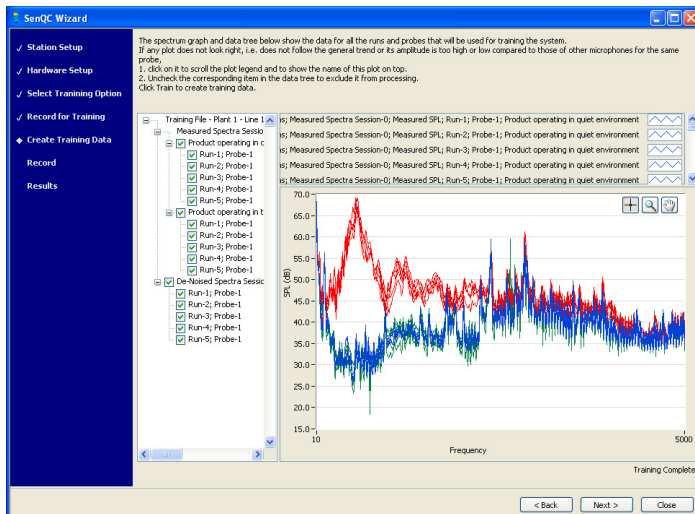
SenQC de-noises the acoustic signal by using one or more acoustic probes made up of 4 microphones that function as an acoustic lens. The "lens" focuses on the object of interest and can distinguish between the noise coming from the object and ambient noise such as:

- Neighboring machines running
- Tools or parts dropping on table and floor
- HVAC background noise
- People talking nearby, etc.

SenQC allows high through put 100% real time quality control testing in a manner not previously possible.



System Training and De-noising

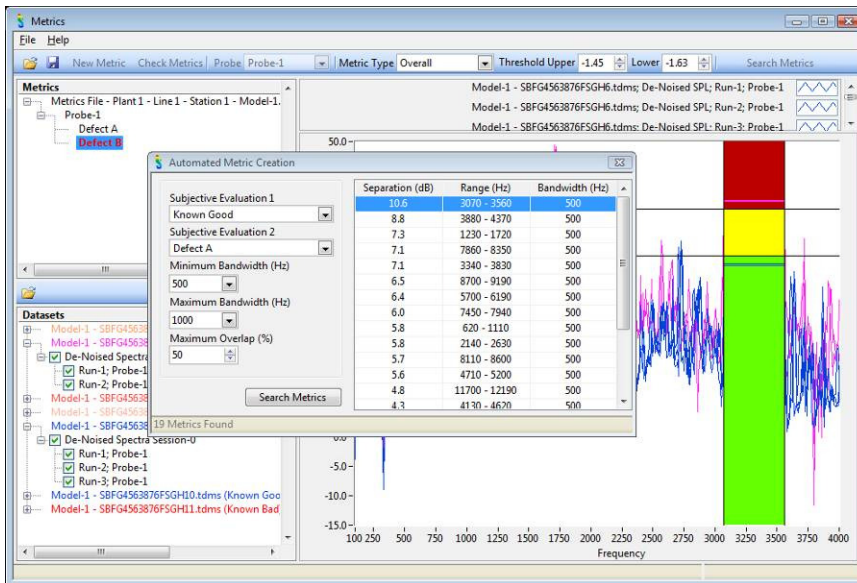


The system is trained to know three things: what a "good" product sounds like, some idea of the average ambient noise, and what defects sound like, if defect detection is desired. SenQC standard software provides software wizard guided training modules for each step of the training process.

SenQC is then able to de-noise the signal in order to provide an accurate representation of the sound output of the object being tested and to enable non-contact defect detection by enabling the identification of specific defect signatures. In a production environment, this testing is automated.

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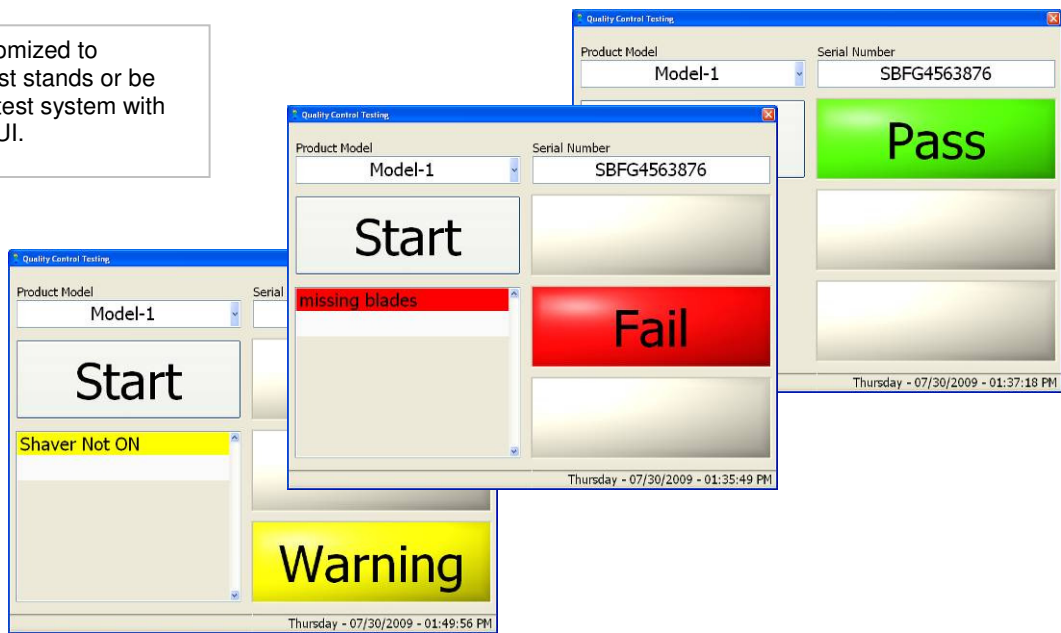
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SenQC provides a means for the user to select multiple pass fail metrics. SenQC software can be further customized in order to meet user requirements for specific defect detection criteria.

This is a completely automated process. After acquiring data for some known good and some known defective products, the user tags the datasets for the defective products with specific defect names. The software automatically scans these datasets to identify frequency bands that provide the best separation between the SPL spectra of all known good products and those with specific defects.

The system can be customized to integrate with existing test stands or be set up as a stand alone test system with user defined operator GUI.



Advantages

- No need for an enclosure and associate floor space and maintenance costs
 - Fast test cycle times
 - SPL spectra of direct sound from a target
- Suitable for low signal to noise ratios (up to S/N = -20dB)
 - Few microphones
 - Ability to detect defect signatures

Integration Options

SenSound's SenQC core technologies are tailored to the customers test environment and needs. SenSound will provide stand-alone turnkey solutions if required, or will work with the customer's in-house team test team, or in partnership with the customer's preferred test stand vendor.