



eZ-NDT™

Resonant Inspection Software

Compatibility: ✓ ZonicBook

Features

- Provides inspection of metal, ceramic, and hard plastic parts
- Removes the ambiguity that is common in other inspection systems
- Requires no parts preparation, making the test fast and inexpensive
- Tests parts in less than 2 seconds
- Quantifies and documents the first natural frequency for end-user comparison to final assembly resonant frequencies

IOtech's eZ-NDT™ (non-destructive test) systems provide a fast and inexpensive method of 100% inspection of production parts, such as powder metal, ceramics, and composites. eZ-NDT uses acoustic analysis to identify part variations that are caused by process inconsistencies and defects. eZ-NDT systems apply acoustic energy to your part, monitor its acoustic response, and analyze its resonant frequencies. It then compares the results to the acoustic signature of a known-good part stored in its library. The test takes less than two seconds and requires no special tooling, dyes, chemicals, cleaning, magnetization, or expensive and time consuming visual inspection equipment.

eZ-NDT can detect deviations in dimensions, material properties, and defects including cracks, residual stress, inclusions, and variations in hardness, tempering, porosity, mass, holes, bonding



Production Quality can be measured and recorded using eZ-NDT

and/or welding failures. Resonant inspection performs a whole body measurement, not just a spot check for visual indications. It also quantifies the first natural frequency, which many end users require for comparison to final assembly resonant frequencies. By keeping component first natural frequencies different from final assembly resonant frequencies, the end user avoids the potential for noise, vibration, or product damage. Because it's fast, you can test all of your parts, not just a sampling.

Before purchasing an eZ-NDT system from IOtech, we recommend that you engage in our Feasibility Study, where we verify that your parts respond appropriately to our inspection process.

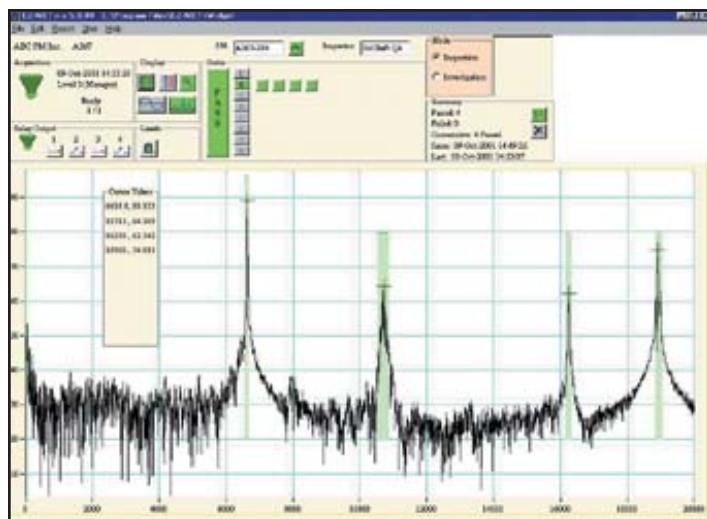
Theory of Resonant Inspection

When an object is struck by an external energy source, such as when it is "pinged" with a hammer, it will make a sound that is specific to the physical properties of the object, including its size, weight, density, and porosity. An example of where this phenomenon is often used is when determining whether melons are ripe to be picked from the vine. In that case the melon picker "pings" the melon and their trained ear determines whether the melon is ripe to be picked.

This same technique is used by eZ-NDT, except in this case the ZonicBook and eZ-NDT software running on a PC replace the trained ear. When an object is pinged with a hammer, the ZonicBook digitizes (records) the sound, which is immediately transferred to the PC for analysis. eZ-NDT software running on the PC decomposes the sound, effectively creating a "signature" that is unique to the object being pinged.

Generally speaking, all objects of similar physical composition will have the same signature. During the Feasibility Study, IOtech will confirm that your objects have a unique and measurable signature, and that the signature of known "good" objects is distinguishable from known "bad" objects. Presuming that condition is true, eZ-NDT software learns how to distinguish good objects from bad objects, and provides the operator with a simple GO or NO-GO indication after each object is pinged.

Software



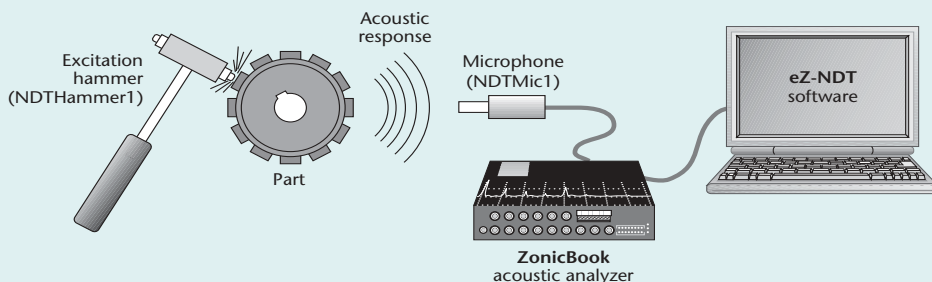
The eZ-NDT software is extremely easy to use, with step-by-step instructions and an intuitive graphical user interface. Three password-controlled security levels are provided: Manager (full access), Technician (limited access), and Inspector (test only). Only the



eZ-NDT™

General Information & Ordering Information

eZ-NDT™ hardware consists of an excitation hammer to “ping” the part, a microphone to measure the acoustic energy emanating from the part, a ZonicBook acoustic analyzer, and a PC running the eZ-NDT software. Two systems are available; the lower-cost Manual System for spot-check and low-volume inspection, and the Automated System for 100% inspection of high-volume production, including a conveyor system.



manager can access the setup screens that set the pass/fail criteria and the known-good resonant signature. Operators are provided with simple, straight forward screens showing the performance of each part against the predetermined resonant signature and the pass/fail results.

The eZ-NDT software stores several test parameters during normal testing. Users with Manager and Technician privilege levels can access part-specific information and summary reports, including statistical analysis.

Feasibility Study Service

IOtech offers a service that determines the feasibility of resonant inspection for your parts, minimizing the risk of problems during deployment of the final test system. As part of the Feasibility Study, IOtech tests a sample lot of both good and bad parts. The Feasibility Study isolates the resonant disparities between the two lots and states whether the part-under-test is a good candidate for resonant inspection. When the system is purchased, IOtech will include the pass/fail criterion developed during the Feasibility Study, and credit the cost of the Feasibility Study to the purchase of a system.

Ordering Information

Description	Part No.
eZ-NDT resonant inspection system for manual and automated systems	ZonicBook/618EZNDT

Accessories & Cables

Feasibility study performed by IOtech to characterize one part type	NDTFeas
Complete System, includes Manual hammer (NDTHammer1), Microphone (NDTMic1), Acoustic analyzer (ZonicBook/618E), (2) 6 ft BNC cables (CA-148), eZ-NDT Resonant Inspection software	NDTMansys
Manual, hand-held hammer	NDTHammer1
High accuracy, directional microphone	NDTMic1
Two day on-site training and system integration	NDTTrain*
Automation module with 8 relay outputs	NDTRelay2
6 ft BNC to BNC signal connection cable; 2 are needed to connect hammer and microphone to ZonicBook	CA-148

For complete information on accessories and cables, visit www.iotech.com/acc

Related Products

Hardware ZonicBook	p. 59
Software eZ-Analyst	p. 63



NDTHammer1

* Contact factory for availability