



Technology Offer

Title:

Novel High Speed Non-Destructive Testing (NDT) technology (Ref: 09 GB 4200 3FRU)

Abstract:

A spin out company from a Yorkshire University has developed 'Process Compensated Resonance Testing (PCRT)' for the aerospace, power generation and various engineering related industries. PCRT is a revolutionary non-destructive testing technology that can determine if a component is structurally sound and fit for service quickly at a fraction of the usual inspection costs. The company is looking for partnership with an end user to develop technology into a commercial product.

Description:

Process Compensated Resonance Testing (PCRT) is based on the physics fundamental that any hard component will resonate at specific frequencies that are a function of its mass, shape, and material properties. Material alterations or flaws can change the normal resonant pattern.

The analytical tool of Resonant Ultrasound Spectroscopy, coupled with advances in computer-based analytical software, has resulted in PCRT, an analytical tool of enormous potential. This technology is achieving growing acceptance (over 150,000,000 automotive parts tested with PCRT in 2008) in inspection of manufactured components such as connecting rods, crank shafts, suspension components, etc. Proprietary software algorithms developed to compensate the analysis for normal manufacturing parameter variations, and novel algorithms for monitoring structural changes in a part over its life, are combined into PCRT systems that can increase production yield, optimise part life, and significantly reduce field failures of components.

PCRT is a fundamental shift in NDT philosophy and applications. Current technologies strive to highlight indications that could represent structural deficiency in a component. The PCRT technology accurately measures the structural similarity of a component to known good parts, and is also able to measure the structural changes in a single part throughout its useful life. PCRT uses patented genetic pattern recognition algorithms to develop sorting modules that evaluate the frequency responses of tested components. With the sorting modules developed, the software provides for rapid, accurate, and operator independent pass/fail assessments.

The PCRT algorithms capabilities:

- Contains built-in pattern recognition capability which performs data analysis and pattern comparisons.
- Provides optimisation and selects relevant frequencies for detection of response changes which are indicators of potential defects.
- Can compensate for normal part variations by using only selected resonant frequencies sensitive to the typical defects encountered.

Innovations and advantages of the offer

PCRT provides rapid, accurate, and operator independent pass/fail assessments, increase production yield, optimise part life and significantly reduce field failures of components.

Current and Potential Domain of Application

Automotive

Aerospace
advanced manufacturing
Metals industry

List of Keywords

Technology

- Vibration and Acoustic engineering
- Acoustic Technology related to measurements
- Analyses / Test Facilities and Methods
- Other Non Destructive Testing
- Sensor Technology related to measurements

Market

- Chemicals and Materials
- Speciality/performance materials: producers and fabricators
- Industrial Services
- Manufacturing

Current Stage of Development

Available for demonstration - field tested

Exploitation of RTD Results

None

Collaboration Type

- Testing of new applications
- Engineering
- Technical consultancy
- Quality control

Comments

- Type of partner sought: Industry
- Specific area of activity of the partner: People undertaking non destructive testing of products.
- Task to be performed: Partnership with an end user to customer PCRT technology into a manufacturing process to impliment on new products and processes.

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