

Advanced Materials Show

Developing Consistent Materials with Advanced
Characterisation Innovation

June, 2022

GrindoSonic

THE IMPULSE EXCITATION TECHNIQUE

We map the mechanico-elastic profile of materials and parts

**Materials
Characterization**

**Material
Evolution**

**Quality
Assurance**

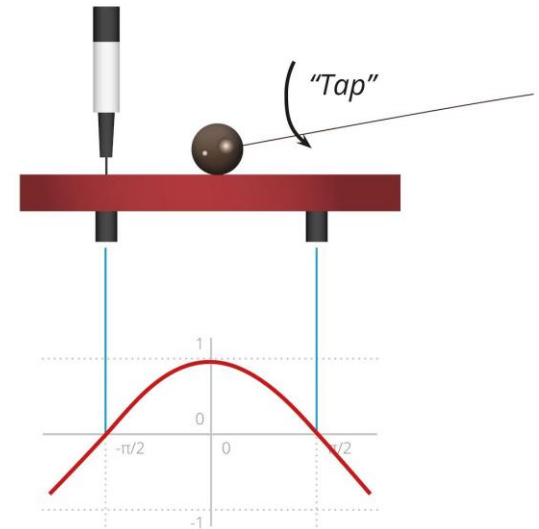
Impulse Excitation Technique

a NDT method to determine elastic properties and internal friction of materials

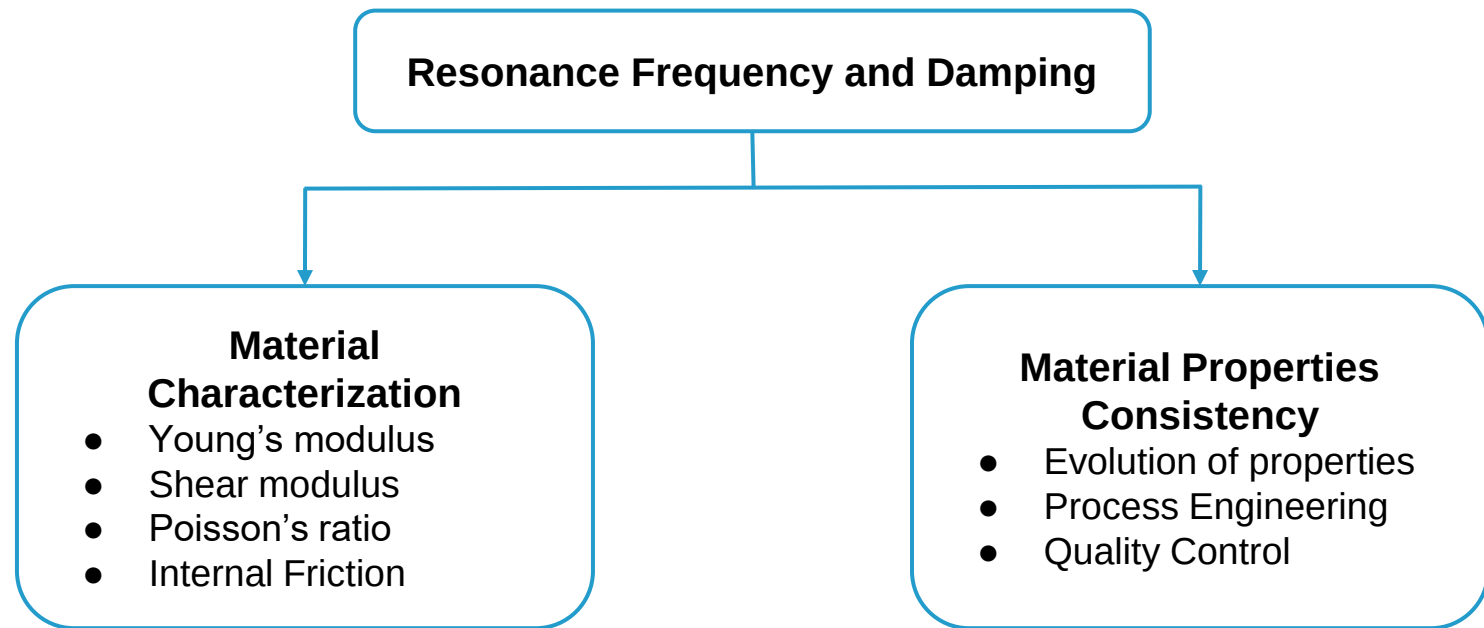
- By tapping the sample and recording the vibration signal
- Unlock the unique frequency signature
- Frequencies and damping are measured
- Calculates the E/G modulus of materials
- Allows accurate comparison of identical parts

It is a robust, high-speed and intrinsically accurate and precise

Approved by international standards such as ASTM E1876, C747, C1259, C1548 and many more

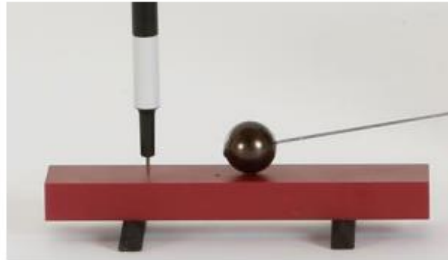


The Applications of IET

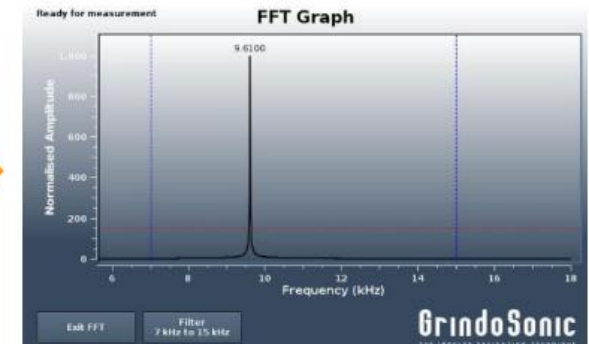
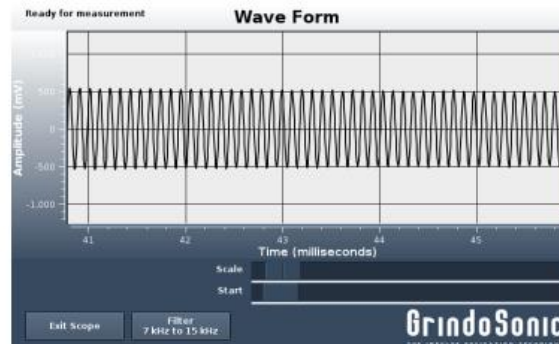


Materials Properties Consistency

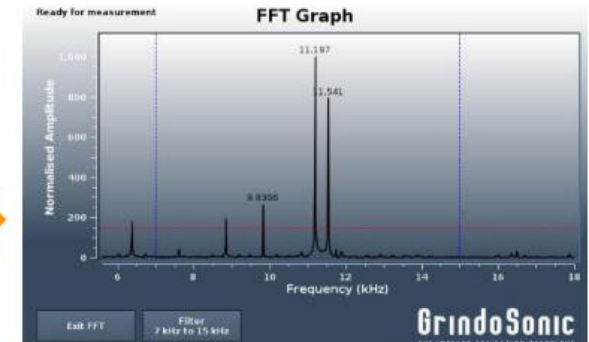
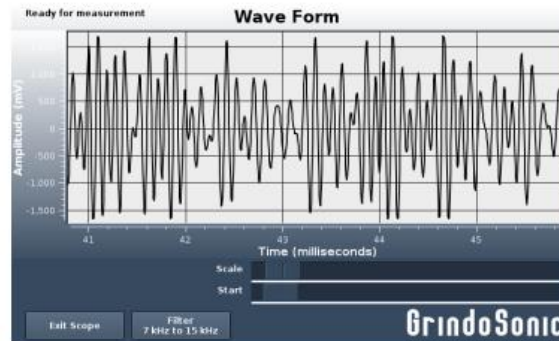
A unique fingerprint of your objects



Ceramic bar

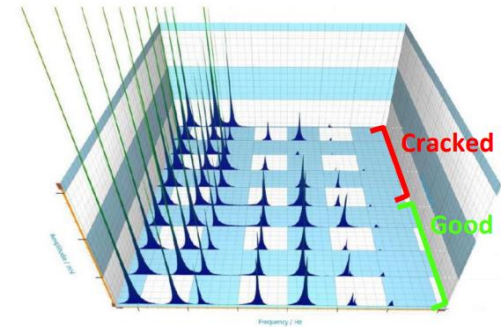
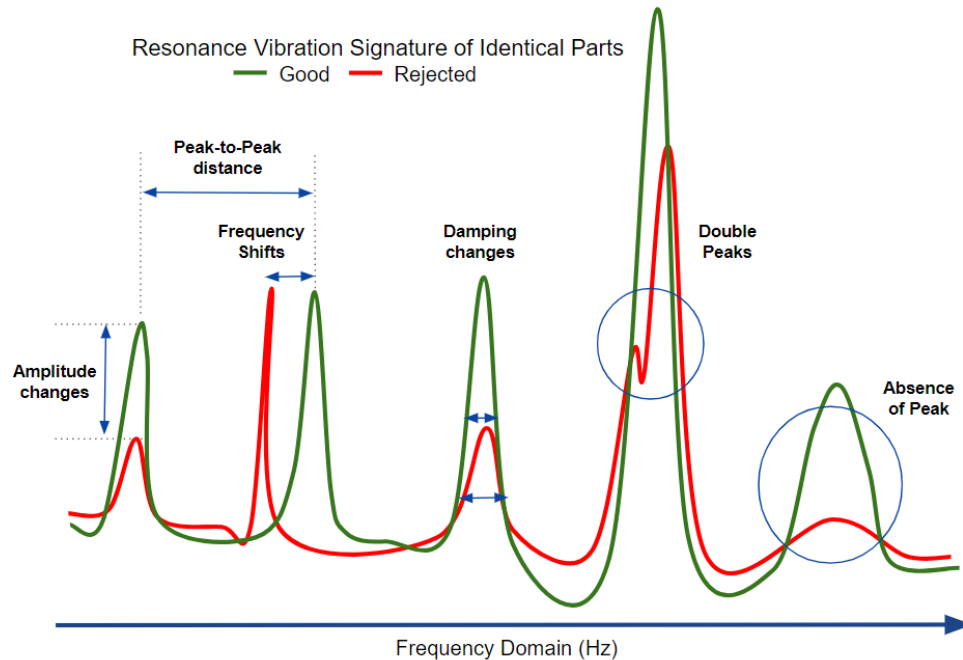


Brake bracket



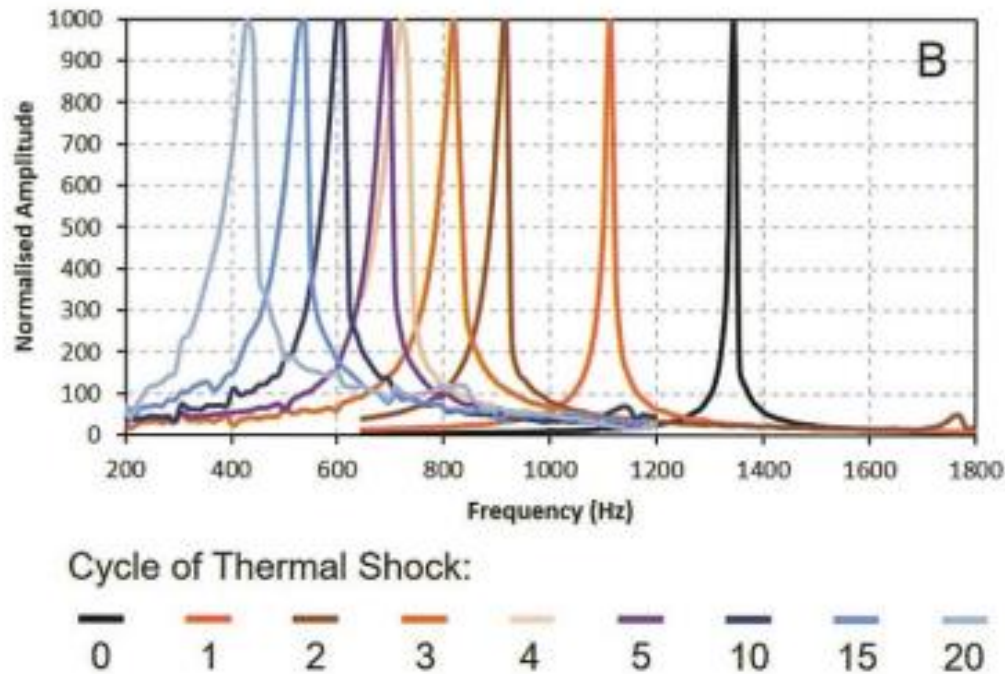
Materials Properties Consistency

Tracking changes



- Thermal Treatment
- Aging
- Thermal Shock
- Freezing/Freezing
- Nuclear/IR/UV Radiation
- Corrosion
- Chemical attack
- phase transitions
- part consistency

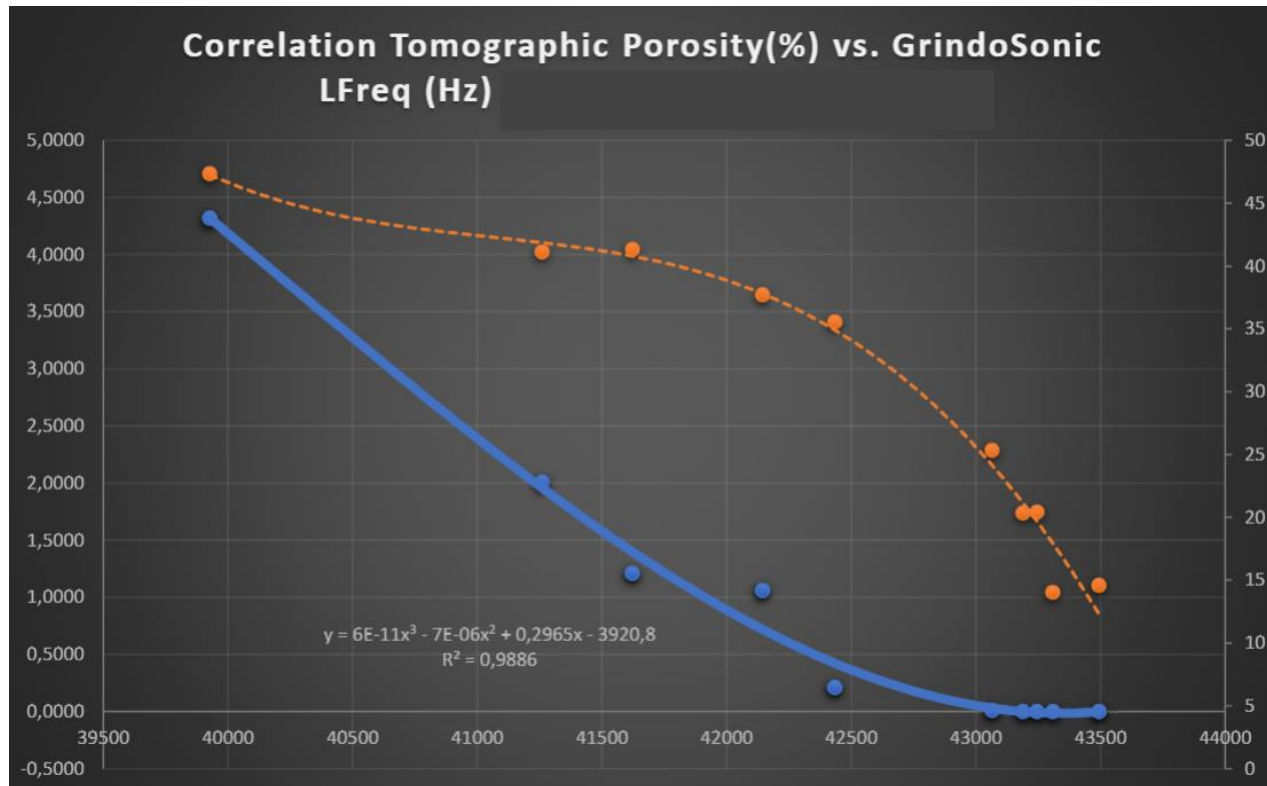
Material Property Evolution



Source : Technology Trends

- Frequency measurements have been used to control thermal degradation
- The frequency decreases indicate a loss of modulus value
- Increasing damping values indicate the formation of internal defects

Porosity in Additive Manufacturing



- There is a clear correlation 0.99) between porosity and resonant frequency
- The damping is an absolute measurement of the total internal friction and thus of the total amount of dissipative microcracks in the material

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THE IMPULSE EXCITATION TECHNIQUE

A non-destructive measurement technique for
Parts Consistency

Thank you for your attention

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