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WHAT IS NONDESTRUCTIVE TESTING (NDT)?

Simply stated, it is exactly what its name implies—testing without destroying. More specifically, a nondestructive test is an examination of an object or material in any matter which will not impair its future usefulness. The purpose of the examination may be to detect internal or external flaws, to measure geometric characteristics, to determine material structure or composition or to measure or detect some of the object's or material's properties. The major tools of NDT are: radiography (the use of X and gamma rays), ultrasonics, dye penetrant, magnetic particle, eddy current and acoustic emission testing. In addition, NDT engineers and technicians are investigating and applying neutron radiography, leak testing, microwaves, ultrasonic imaging, lasers, holography, liquid crystals, infrared-thermal techniques and flash aid real-time radiography.

Increasingly, in our nuclear and space age—which some engineers have called the “materials age”—worldwide industry is ever more concerned with the need for nondestructive testing. No material is perfect, but it must have adequate properties to meet the increasingly rigorous demands made upon it. NDT provides the means to assure the detection or measurement of significant properties or performance capabilities of materials, parts, assemblies, equipment or structures without impairing their serviceability.

WHERE IS NONDESTRUCTIVE TESTING USED?

Some industries in which NDT plays a key role are:

Aerospace	Construction	Metals	Transportation
Aircraft	Electronics	Non-Metals	Utilities
Automotive	Food Processing	Nuclear	
Casting & Forging	Marine	Ordinance	
Chemical & Petroleum	Materials Joining	Security	

NDT, it should be pointed out, can—and should—be involved at all levels of these industries from research and design through manufacturing and maintenance.