



GAMMA
PETROLEUM
SERVICES

NDT INSPECTION SERVICES

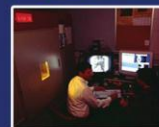
NDE METHODS

- Flaw Detection and Evaluation
- Leak Detection
- Location Determination
- Dimensional Measurements
- Structure and Microstructure Characterization
- Estimation of Mechanical and Physical Properties
- Stress (Strain) and Dynamic Response Measurements



SIX MOST COMMON NDT METHODS

- Visual
- Liquid Penetrant
- Magnetic
- Ultrasonic
- Eddy Current
- X-ray



VISUAL INSPECTION

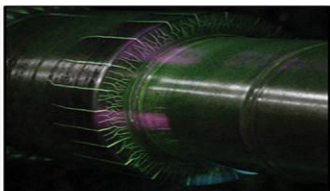
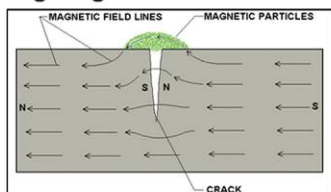
- Most basic and common inspection method.
- Tools include fiberscopes, borescopes, magnifying glasses and mirrors.
- Portable video inspection unit with zoom allows inspection of large tanks and vessels, railroad tank cars, sewer lines.
- Robotic crawlers permit observation in hazardous or tight areas, such as air ducts, reactors, pipelines.

MAGNETIC PARTICLE INSPECTION

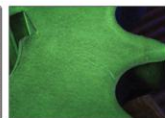
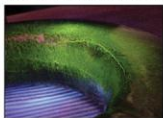
The part is magnetized.

Finely milled iron particles coated with a dye pigment are then applied to the specimen. These particles are attracted to magnetic flux leakage fields and will cluster to form an indication directly over the discontinuity.

This indication can be visually detected under proper Lighting conditions.



Magnetic Particle Crack Indications



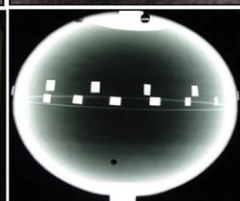
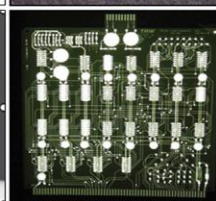
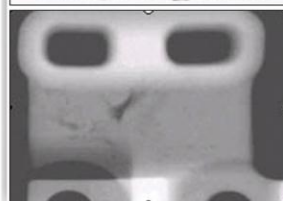
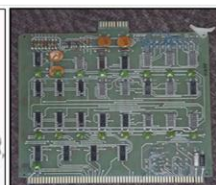
RADIOGRAPHY TESTING

The radiation used in radiography testing is a higher energy (shorter wavelength) version of the electromagnetic waves that we see as visible light.

The radiation can come from an X-ray generator or a radioactive source.

FILM RADIOGRAPHY

- The part is placed between the radiation source and a piece of film.
- The part will stop some of the radiation.
- Thicker and more distance area will stop more of the radiation.
- The film darkness (density) will vary with the amount of radiation reaching the film through the test object.



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