



NDT Neutron Radiography

Neutron radiography is a nondestructive testing technique similar to X-radiography that can have important advantages in many specific situations. Large thicknesses of some dense metals can be penetrated; high sensitivity can be obtained for small details containing hydrogen and certain other light elements; materials of similar density can be contrasted: and highly radioactive objects can be neutron radiographed without interference from the gamma radiation.

The special features of neutron interaction with matter make it possible to inspect bulk of specimen and to produce images of components containing light elements such as hydrogen beneath a matrix of metallic elements, like lead or bismuth. The tech-

nique is complementary to X ray and gamma ray radiography and finds applications in diverse areas such as the examination of nuclear fuels and the detection of explosives.

The industrial application of neutron radiography has grown due to availability of suitable neutron sources, advancements of the techniques, and widening appreciation of the capabilities. Under 50 centers are now performing neutron radiography.

Most use neutron beams of predominantly thermal energy from a nuclear reactor source, but there are examples of different techniques, some using different neutron energies, and some using accelerator or isotopic neutron sources.