

HOW DOES NON-DESTRUCTIVE TESTING WORK?

ACU-TEC uses advanced testing methods, and Non-Destructive Testing to give you a reliable and clear understanding of your equipment fitness. Areas of possible failure can be identified early, allowing you to make timely, economical repairs or to replace worn components, prior to unexpected breakdown, potentially saving you from personal injury, downtime, and their related costs. Non-Destructive Testing, (NDT) including Liquid Penetrant Inspection and Magnetic Particle Inspection, has been widely accepted in industry and has been used to ensure the safety of lift equipment, welds, hoists, and structures for more than four decades. The purpose of NDT is to detect defects before they can be seen by the naked eye. For example, most fatigue cracks in metal originate at the surface and propagate inward through the material. If detected in the early stages, such fatigue cracking can usually be repaired with a minimal investment of time and money.

MAGNETIC PARTICLE INSPECTION (MPI)

Most load bearing components of lift equipment are made of Ferro-magnetic material, such as steel. These materials are best tested using Wet Fluorescent Magnetic Particle Inspection (MPI).

A known magnetic field is electrically induced into the metal to be tested and the surface is sprayed with a specialized solution containing fluorescent iron oxides. Any crack or discontinuity in the metal causes a break in the magnetic field at the defect much like iron filings are drawn to an ordinary magnet and they align themselves along the gap. When viewed under intense ultraviolet (black light) rays, the defect areas glow bright fluorescent green against a blue coloured metal background. From the patterns, the Technician can not only determine what type of defect or crack is indicated, but can often also help determine the cause of the defect.

LIQUID PENETRANT INSPECTION (LPI)

Non-Magnetic materials such as stainless steel, aluminum, and ceramic construction require that other methods be used. Liquid Penetrant Inspection (LPI) will detect defects in such materials. It works differently than MPI.

Special dyes are applied to a clean surface and allowed to penetrate into subsurface defects by capillary action. After a prescribed time period, the dye surface is carefully removed leaving no visible trace of the dye on the surface of the test material. A developer, which is designed to act like a blotter, is then applied to the same area to pull any trapped dye from beneath the surface. When the developer turns the test area white, any dye which has been drawn from the subsurface will be a bright red colour against the white background indicating that there is subsurface defect.