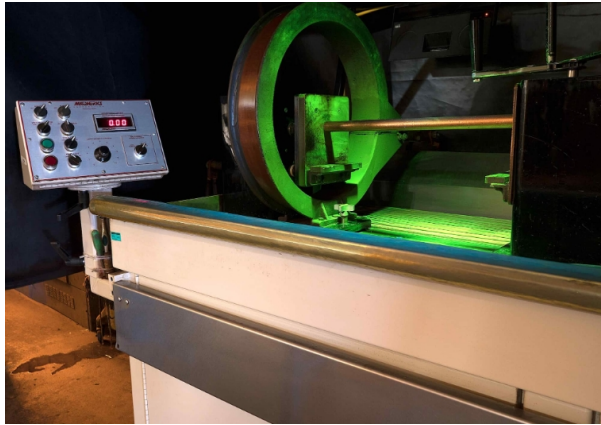


Magnetic Particle Inspection (MPI)



What is Magnetic Particle Inspection (MPI)?

[Applus+ XRI](#)'s testing capabilities cover the potential applications and industry requirements of magnetic particle inspection. Magnetic Particle Inspection (MPI) is a highly sensitive [non-destructive testing \(NDT\)](#) technique mainly applied to [ferrous materials](#). It excels at detecting surface and near-surface discontinuities, including hairline cracks. MPI works by magnetising the test material and applying a special carrier fluid containing iron oxide particles. These particles accumulate at the faulty spots, visibly indicating the presence of discontinuities. This method is renowned for its speed, cost-effectiveness and ability to ensure the safety of the material and its readiness for operational use.

Magnetic Particle Inspection (MPI) Techniques

Magnetic Particle Techniques are the work instructions in which the team uses to document and perform the work. They are used in every method of NDT.

Magnetic Particle Inspection (MPI) Equipment

Specifically the type of equipment we use in Magnetic Particle Inspection are:

- Multidirectional Units
- Cable Wraps
- Demagnetization
- Yokes
- SKC | SKD

How is the Magnetic Particle Inspection (MPI) Process

The Magnetic Particle Inspection (MPI) process involves several steps to effectively detect surface and near-surface flaws in ferromagnetic materials. Here's a general overview of the MPI process:

- **Magnetisation:** Use of direct or induced methods, with portable or fixed systems, to create a magnetic field within the material.
- **Magnetic particle application:** Application of a carrier fluid with magnetic particles on the magnetised material.
- **Discontinuity detection:** Observation of how magnetic particles cluster around defects, distorting the magnetic field.
- **Evaluation:** Analysis of these indications according to the acceptance criteria established to identify the defects in the material.

Benefits of Magnetic Particle Inspection (MPI)

Magnetic Particle Inspection (MPI) offers several benefits, making it a widely used non-destructive testing (NDT) technique in various industries. Here are some of the key benefits of MPI:

- **High sensitivity:** Detects very fine surface and sub-surface discontinuities.
- **Fast and cost-effective:** Offers one of the fastest and most cost-effective ways to verify material safety.
- **Versatile application:** Suitable for a wide range of ferrous components, including welded, cast and forged parts.
- **Minimal preparation:** Usually only one surface of the material needs to be accessed for inspection.
- **Portable technology:** Enables on-site inspection with minimal preparation, meeting both conventional NDT and advanced NDT needs.

Applus+ Laboratories Accreditations for Magnetic Particle Inspection (MPI)

[Applus+ Laboratories](#) is a leading provider of Nadcap-accredited Magnetic Particle Inspection services, with a significant presence in the US and UK.

Our facilities meet stringent standards such as NAS410/SNT-TC-1A/EN4179, ensuring that our MPI services meet the rigorous demands of aerospace and non-destructive testing.

Our commitment to quality is demonstrated by our wide range of customer certifications, which demonstrate our ability to meet and exceed industry-specific requirements.



Why choose Applus+ Laboratories for Magnetic Particle Inspection (MPI)

Selecting us for MPI services ensures access to the largest network of Nadcap accredited NDT services in key markets. Our expertise in conventional and advanced NDT, combined with the use of state-of-the-art equipment and compliance with international standards, ensures that your ferrous materials are inspected to the highest levels of accuracy and reliability.

Our solutions are tailored to the specific challenges of industries requiring the highest material integrity, such as [aerospace](#), [automotive](#) and power generation. By counting on us, you benefit from decades of NDT experience, backed by a team of highly skilled technicians, and a high capacity to handle projects of any scale, from small components to large-scale industrial applications.

Choose Applus+ Laboratories for Magnetic Particle Inspection and partner with a world leader in NDT services, where quality, reliability and customer satisfaction are at the heart of everything we do.