



DecaCoil Information Data Sheet

The DecaCoil™ System is a non-contact, multidirectional, induced Magnetic Particle Inspection system with automatic bath application and a motorized conveyor. The basic scheme of operation requires the loading of test components onto the motorized conveyor either manually or by means of plant robotics or conveying systems. These components are transported into the magnetizing tunnel, where they are sprayed with Magnetic inking material and magnetized in three vectors simultaneously.

These 3 separate output vectors are independently controlled, allowing the user to "balance" the field strength in all orientations. While one phase will be preferentially strong when compared to the other two at any given time, the use of 3 rotating phases simultaneously creates a "swinging field" of magnetism, which provides near equal sensitivity in all planes.

The DecaCoil™ offers compelling benefits over conventional wet horizontal inspection systems. These benefits include:

Non-contact Magnetic induction: (The principle theory behind the design of the DecaCoil replicates the use of a large Magnetic yoke, similar to the Magnaflux Y-6, Parker D-400, etc., but does so on an extremely large scale, allowing the magnetic field to be induced into the components through an air gap rather than needing direct contact.)

The system is 100% production speed capable. We have installed systems in manufacturing and inspection lab environments where the proof has been established that the system is capable of processing more than 100% production line speeds, and in fact, the limiting factor in terms of speed is the inspection time required to view the components for indications. The system can also use as many inspectors as you desire; therefore, if the inspection requires high scrutiny inspection, more inspectors will allow the inspection to keep up with DecaCoil's speed of processing parts.



The DECACOIL™ has proven tremendously reliable. Most installations have required no service calls, and when a service call was ordered, it was for a coil replacement, which is normal when millions of cycles have been processed. Our most recent service call was in Michigan, two years after installation and after 6.5 million parts had been processed! Compare this to the lead pads, copper contact plates, contactors, transformers, pumps, etc., that are required almost monthly on most standard equipment, and the reliability of the DECACOIL is apparent: (Not only low maintenance costs, but MORE UPTIME, allowing you to produce parts and inspect them reliably, with minimal down time for equipment repair).

The system uses Multi-Directional magnetizing, which allows the parts under inspection to be processed just once for defect detection in all orientations. Using swinging field magnetizing, we provide up to 3 different phases of magnetism, all concentrating on different defect orientations on simple or complex parts.

The DECACOIL™ is a DYNAMIC inspection: parts are processed continuously without "staging" them in a magnetizing station. In other words, the parts are not loaded into a headstock/tailstock to be magnetized but rather loaded on a conveyor, where they are processed automatically, without cycle time added to magnetize the parts. The parts are magnetized as they are conveyed. This allows you the opportunity to automatically load the conveyor, thus eliminating an inspector from the loading and processing positions and allowing this inspector to be used only to inspect the parts.

The DECACOIL™ automatically magnetizes, sprays, and conveys the part to your inspectors, who simply inspect the parts. The process also includes an automatic demagnetizing facility at the exit of the system. This allows all acceptable parts to move on to the next production process, or shipping, without the need for a separate demagnetization process.

The DECACOIL™ is automated except for the actual inspection. This not only allows your inspectors to ONLY concentrate on a scrupulous inspection of parts for defects, but it also ELIMINATES human process errors! The dynamic inspection scheme allows the parts to be magnetized without any possibility of arching on a part, missing a magnetizing cycle, etc. Controls are set up, and the testing occurs automatically, part after part.