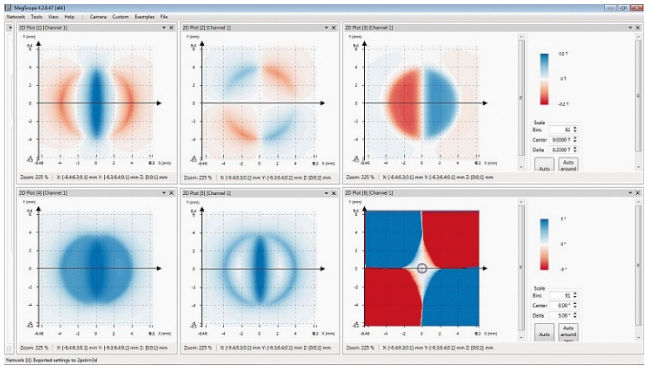
MAGCAM
advanced
magnet
inspection

Magcam Combi Scanner

The Magcam MiniCube3D Combi Scanner is a motorized mechanical X-Y-Z-R stage with an integrated magnetic field camera for magnetic field mapping of permanent magnets and permanent magnet rotors.
The Magcam Combi Scanner consists of a Magcam MiniCube3D magnetic field camera that is mounted on an XYZR axis combination. In 'Portal' mode, a flat measurement sample is placed on the sample plate and the MiniCube3D camera is stepped over the magnet to map the magnetic field. In 'Rotor' mode, a PM rotor is mounted on a motorized rotary axis and the MiniCube3D camera measures the field distribution on the mantle of the rotor. IN a combination of portal and rotor mode, axial rotors and large ring magnets can be efficiently measured as well. The user can flexibly define the distance and area to be measured with micrometer accuracy.

The scanner is equipped with a laser sensor to measure the height/diameter/dimensions of the sample under test.
The scan stage is controlled automatically by Magcam's powerful MagScope Measurement & Analysis software.
The scanner is optionally delivered in a fully integrated safety housing or clean room housing.



Left: Magcam Combi Scanner with 300mm x 300mm x 300mm scan range in a safety housing.
Right: Automatically recorded and stitched magnetic field images of a large magnet.

Benefits:

- 30x faster than single sensor systems
- Fully automatic measurement procedure
- Measurements of large area magnets, assemblies, radial and axial PM rotors
- Volume magnetic field measurement resulting from a single plane measurement
- Measurements at accurate distances from magnets
- Batch testing of magnets in trays
- Advanced data analysis through Magcam's powerful MagScope software

Features:

Hardware:

- XY scan range: 300mm x 300mm
- Z scan range: 300mm: this is the maximum height of the magnet/assembly under test

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- Rotor diameter range: 0 - 500mm
- Axial measurement range: 0 - 300mm
- Integrated MiniCube3D or MiniCube1D magnetic field camera
- Mapping speed: 120mm²/s (full resolution)
- Dimensions (LxDxH): 880mm x 1110mm x 1900/2150mm (height in transport/installed mode)
- Repeatability per axis: +/- 1.3µm
- Positioning accuracy of X and Y, and Z axes: 24µm
- Repeatability of angular axis (unidirectional): 0.2 arc-min
- Integrated calibrated positioning frame for accurately positioning magnets in a reproducible way
- Automatic collision detection and protection
- Optional high accuracy laser for sample size measurement

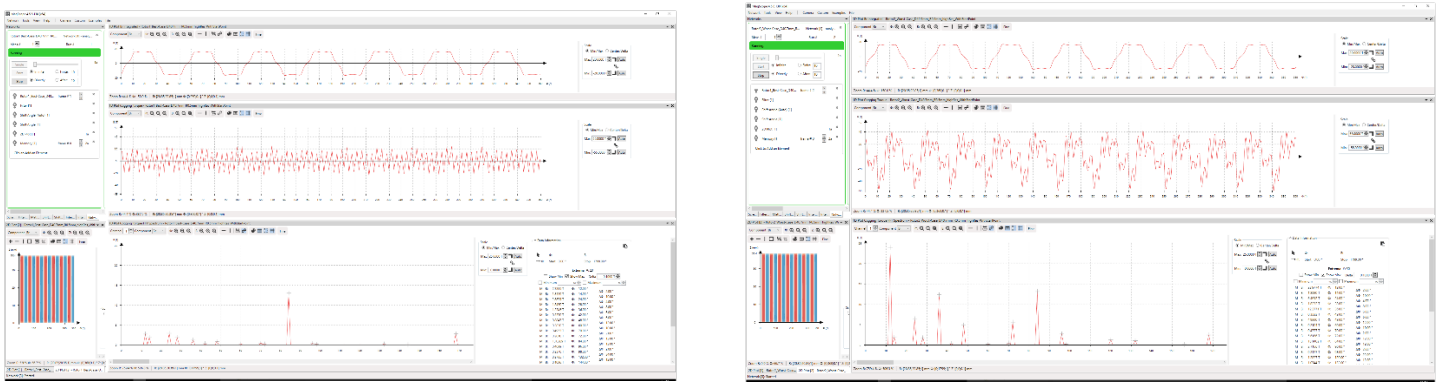
Software:

- The scan stage is controlled automatically by the MagScope Measurement and Analysis software.
- Automated scanning and image stitching

The stitched large area images can be analyzed in the same way as individual camera images.

Data analysis possibilities include:

- 3D magnetic field distribution
- North/south pole identification
- Field homogeneity
- Local material and magnetization defects
- Automatic zero crossing detection
- Automatic pole count
- Automatic pole size measurement
- Pole length/angle measurement
- North-south pole asymmetry
- Magnetization angle deviation
- Magnetization vector value
- Local deviations from theoretical magnet
- Radial magnetic field distribution
- Magnet misalignment
- Volumetric magnetic field
- Fourier analysis (e.g. for NVH)
- Gradient analysis
- Crack detection
- Cogging torque analysis



Left: PM Rotor with low cogging torque (good rotor). Right: PM Rotor with high cogging torque (bad rotor).

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