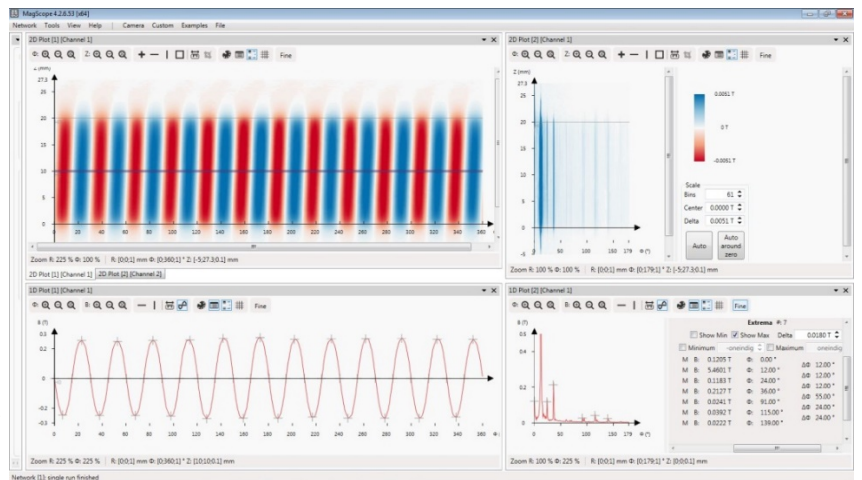


Magcam Rotor Scanner

Magcam's high speed rotor scanner is a 3-axis motorized scan stage with an integrated MiniCube1D or MiniCube3D magnetic field camera for measuring the radial or 3D magnetic field distribution of permanent magnet rotors, respectively. The magnetic field distribution on the full rotor surface can be measured in a few seconds with high axial and angular resolutions at close radial distances. It features PLC-controlled motorized axes for the radial, axial and angular directions. The scan stage is controlled automatically by the MagScope Measurement & Analysis software.



Left: Magcam Rotor Scanner (with rendered PM rotor).

Right: Measured magnetic field map data of a 24-pole rotor (in cylindrical coordinates) and cross section graph.

Features:

Hardware:

- Rotor diameter range: 0 - 500mm
- Axial measurement range: 0 - 300mm (up to 650mm upon request)
- PM rotor weight: 0 - 90kg
- Scan speed: up to 12.7mm of axial length in 2 seconds (with 0.1mm axial resolution, 1° angular resolution)
- Dimensions (LxDxH): 780mm x 1000mm x 1900mm
- Integrated MiniCube magnetic field camera
- Repeatability of radial and axial axes (unidirectional): 1.3µm
- Positioning accuracy of radial and axial axes: 24µm
- Repeatability of angular axis (unidirectional): 0.2 arc-min
- Mounting direction of rotor under test: vertical axis
- Automatic collision detection
- Run out compensation (~1 µm) using the laser sensor (optional)

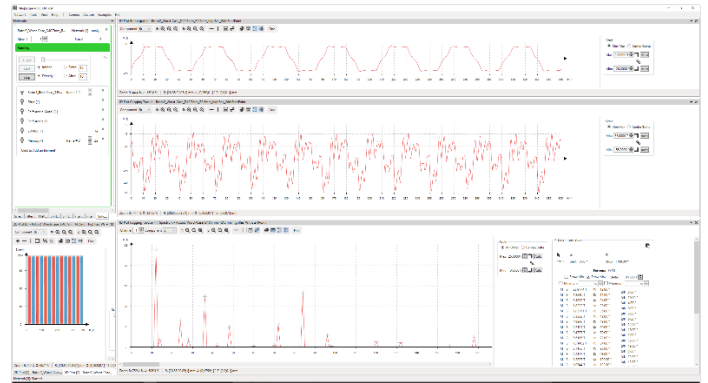
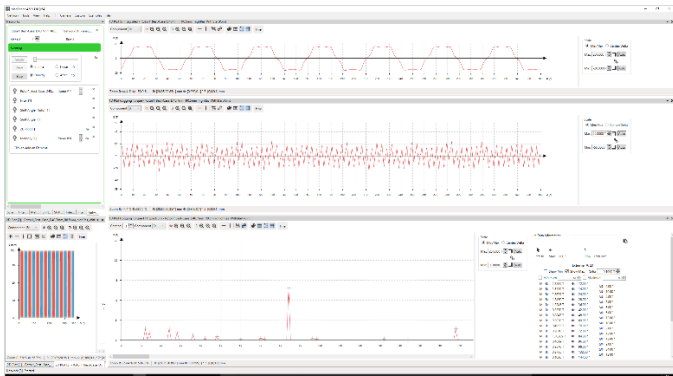
Software:

- 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:

- Automatic zero crossing detection
- Automatic pole count
- Automatic pole size measurement
- Pole height uniformity
- North-South pole symmetry
- Local magnetization / material defects
- Fourier analysis of harmonics, e.g. for NVH analysis
- Analysis of radial, tangential and axial magnetic field components (with MiniCube3D camera)
- Crack detection (SPM)
- Cogging torque analysis



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