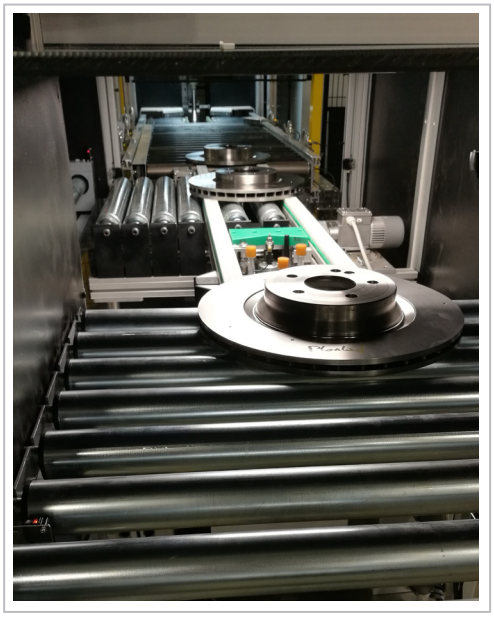
IBT - Industrial Brakes Tester

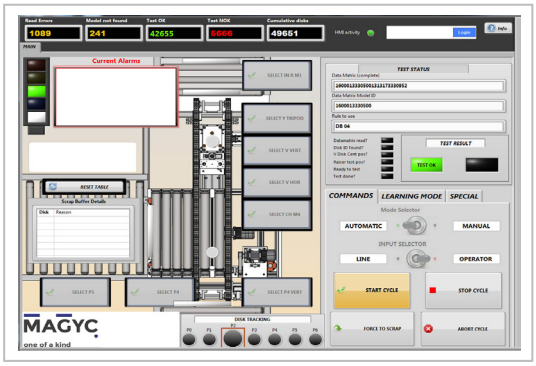
Vibration Technology

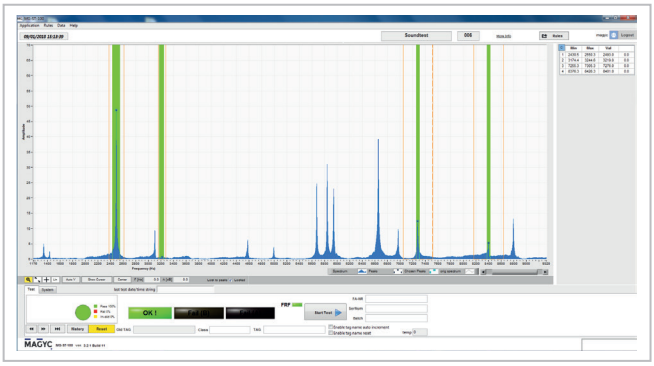
THE PRODUCT

The IBT Industrial Brake Tester is designed to provide a quick, *full automated* and cost-effective industrial NDT analysis of rotors.
Brake rotors are received from the production line and analyzed and, according to the test result, are sent to the next production step or moved to the scrap buffer.
The heart of IBT is the MG-ST-100 technology, based on the principle of acoustic signature, which provides the right solution for quality inspection and for dynamic measurements of parts.
The IBT is interconnected with the brake disk production line and is completely automatic.

Every part, product or component has its unique acoustic resonant signature that reflects its composition, dimensions and stiffness. The resonant frequencies (eigen-frequencies) are almost exactly the same from good part to part; however they will change when internal or external changes occur. Any deviation from the expected signatures indicates a variation of part characteristics or in manufacturing process.
The testing procedure consists of acquiring the vibration of the excited part and analyzing a predefined set of selected frequencies. The entire test cycle takes less than 10 second for each rotor, allowing cost-effective and efficient quality control.



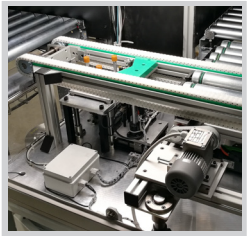




FEATURES

ROTOR TYPES

- Disks and Drums
- Cast Iron
- Pin Disk
- Blechtopf
- Co-fused (Steel+Cast iron)
- Interfuse (Steel+Al)



ANALYSIS & FILTERING

- Full FRF (Frequency Response Function)
- Q-Factor
- Neural Network (upon request)
- Temperature compensation
- Aging compensation
- Weight compensation
- Voids, cracks and debonding
- Manufacturing process deviation

INDUSTRIES

- Automotive
- Trucks & Buses
- Racing
- Rail
- Others with customization (ceramics, sintering, medicals)

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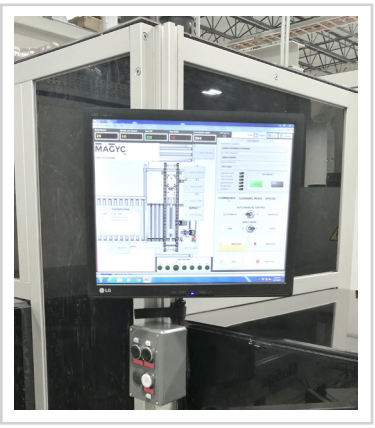
SYSTEM SPECIFICATIONS

- Cycle Time: 10 sec
- Brake Disk Size: from 230mm to 450mm
- Power Supply: 400 Vac at 50 Hz (optional 480 Vac at 60 Hz for US Market)
- Touch Screen Panel Indicator: Hardware Status / Test Result
- Simple Machine Interface to Factory SPC
- Automatic Product Recognition
- Global Mass: 600 kg
- Dimensions: 1600 x 600 x h2000 mm (without rollers for input and scraps)



SOFTWARE

User friendly Human-Machine Interface (HMI)
The HMI gives the operator a simple interface to monitor machine status, products position along the machine and test results.

Disk model identification
The IBT is equipped with a Data Matrix reader which allows the automatic recognition of the product to apply the correct acceptance criteria.

Learning tools
Wizard software interface guides the user through the definition of the testing criteria that will be used for each product code.
The process starts with a batch of products with known quality level and ends with the definition of the correct "testing rule".
Every testing rule can be managed according to process variations with different versions or characteristics.

Production
During the production, IBT automatically take the product, recognize it, self-adapt, test it and guides the product to the next process step or to scraps buffer.
Result is shown on the screen and communicated through the digital I/O, Active-X and serial ports.

Database and Log Archive
IBT stores in a database the following data: product type and code, acquired data, testing results and defined set of limits.
A log of machine events and operations is also created for post-processing analysis and activity management.
The user can access the machine by a multi-level management tool with individual password.

MECHANICAL SPECIFICATIONS

- MG-ST-100 Hardware
- High quality Cardioid Microphone
  - Standard range: 20Hz – 20kHz
  - Extended range: 4Hz – 100kHz
- Load Cell (type and resolution depends on application)
- Instrumented Hammer from 3 to 20N
- Disk Input Roller Conveyor
- Disk Scrap Roller Conveyor
- Self Configuring Testing Area
- Data Matrix reader
- Double Touch Screen Monitor (Automation HMI plus Test Configuration Interface)