

# MRT200/400 - Up to 0.4 Tesla Magnetic Annealing Tool

## Thin Film Head Production

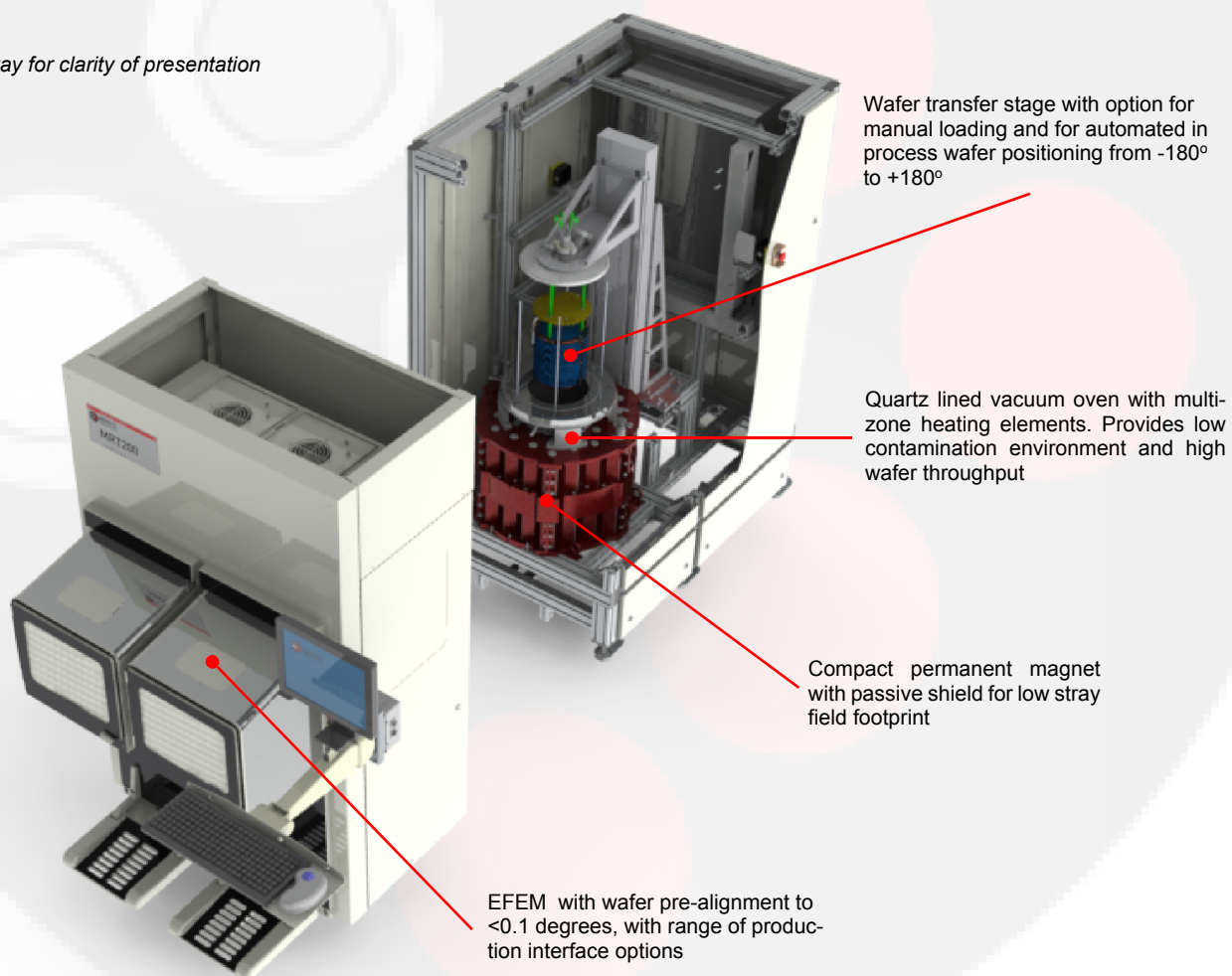
The Magnetic Solutions MRT200/400 is a modular platform for magnetic annealing of wafers up to 200mm in size at fields up to 0.4 Tesla and at temperatures up to 600°C.

A range of compact permanent magnets provides options for fixed fields of up to 0.4 Tesla. The magnet incorporates a passive, self shielding design that minimizes the stray magnetic field footprint of the tool, allowing the siting of multiple tools in close proximity for volume production. The magnet requires no maintenance, contributing to the high uptime and reliability of the MRT200/400 design.

The tool incorporates Magnetic Solutions patented high throughput oven technology for large wafer batches of up to 50 x 200mm wafers. With an operating temperature up to 600 °C, the oven provides high accuracy thermal control to within 1 °C in a clean processing environment. The medium loss design of the oven provides fast response at all stages of the thermal process with flexibility to accurately control ramp rates, overshoot, settling times, set-point accuracy and thermal uniformity at soak.

### Tool Layout

*Enclosure cut away for clarity of presentation*



The tool can be supplied with a single process module comprising a compact permanent magnet and vacuum oven or can be configured with multiple process modules. Product can be manually or automatically loaded, with a single wafer handling robot addressing all process modules. This design provides high wafer throughput in a compact package, incorporating unrivaled process flexibility and reliability.

**Specification Summary**

Batch configuration options: 50 x 150/200mm Si / AlTiC (2 process modules)  
25 x 150/200mm Si (/ AlTiC 1 process module)

Wafer orientation: In plane of the magnetic field direction  
*Option for in process wafer positioning -180° to +180°*

Magnetic field range: 0.2 Tesla - MRT200  
0.4 Tesla - MRT400

Magnet type: Permanent magnet  
Magnetic homogeneity: +/- 3 %  
Magnetic uniformity: +/- 1 degree  
Magnetic set-point accuracy: < 5 mTesla  
Stray field: < 0.5 mTesla at 1 m from tool  
Magnetic shield: Passive shielding

Thermal range: 150 – 450 °C . *Extendable to 600 °C if required*  
Ramp rate: Up to 8 °C/min  
Set-point accuracy: 1 °C  
Thermal uniformity: +/- 2 °C

Vacuum range: 2 torr to <5E-3 torr  
Gas: Up to 4 process gasses  
Contamination monitoring and control: Automated ROR check  
*Options for; Gas line filters and Oxygen scrubbers*

Wafer loading:: Automated via EFEM. *Option for manual loading*  
Load-port capacity: 2 x 25 wafer manual load cassette  
Wafer alignment: <0.1 degrees by automated prealigner  
*Options for ; SMIF load ports  
Wafer bar code reader  
OCR reader*

Certifications: SEMI S2 /S8  
CE  
Seismic zone 4

Connectivity: SECS/GEM capable

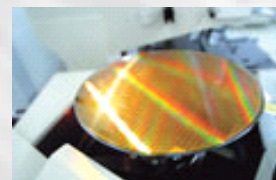
Installation configuration: Bay/Chase or ballroom to class 10

Performance metrics:  
> MTBF > 2,000 hrs  
> MWBF > 5,000  
> Uptime > 97%

**Installation** Worldwide by Magnetic Solutions Ltd

**Warranty** 2 year warranty provided

**Lead-time** 16-20 weeks subject to tool configuration and PO timing



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