



Magnetic Annealing Tool

Featuring High Field Strength Superconducting Magnet

At a Glance

- *Field strength to 2.0 Tesla*
- *Two maximum temperature ratings available: 300°C and 525°C*
- *Vacuum 10^{-7} Torr*
- *Automated wafer rotation option*

Despatch's Magnetic Annealing Tool provides process flexibility and improved yield, enabling recording head manufacturers to make significant advances in product performance. The product features a wide range of field strength options, including superconducting magnets up to 2.0 Tesla. Tight temperature uniformity of +/- 0.5°C across each wafer and within the wafer stack maximize product yield.

Model MT-300

Standard Features

- Superconducting magnet: Field strength 1.7 Tesla standard. Field uniformity $\pm 2\%$ Divergence angle $< 1.5^\circ$
- 15 wafer levels per batch, plus 1 control
- 300°C maximum temperature
- Automatic mass flow controlled back-fill/inert gas capability
- Temperature uniformity: $\pm 0.5^\circ\text{C}$
- Standard vacuum system: 10^{-5} Torr
- Ramp-up rate: 5°C per minute
- Ramp-down rate: 5°C per minute
- Magnetic shielded enclosures for operator safety
- User friendly graphical interface, featuring real time graphing, alarm monitoring, and SECS/GEM compatibility

Options

- High Vacuum: 10^{-7} Torr
- Wide variety of magnet options:
 - permanent magnet 0.1 to 0.25 Tesla
 - standard electromagnet to 1.3 Tesla
 - superconducting electro-magnet to 2.0 Tesla
- Automated wafer loading capability
- Automated wafer rotation; allows wafer orientation relative to magnetic field to be changed during processing. Eliminates manual handling, with associated errors and contamination.
- 200mm wafer size capability

Model MT-500

Standard Features

- Superconducting magnet: Field strength 1.7 Tesla standard. Field uniformity $\pm 2\%$ Divergence angle $< 1.5^\circ$
- 10 wafers per batch
- 525°C maximum temperature
- Backfill/Inert gas capability
- Temperature uniformity: $\pm 2.5^\circ\text{C}$
- Standard vacuum system: 10^{-5} Torr
- Ramp-up rate: 5°C per minute
- Ramp-down rate: 5°C per minute
- Magnetic shielded enclosures for operator safety
- User friendly graphical interface, featuring real time graphing, alarm monitoring, and SECS/GEM compatibility

Options

- High Vacuum: 10^{-7} Torr
- Wide variety of magnet options:
 - permanent magnet 0.1 to 0.25 Tesla
 - standard electromagnet to 1.3 Tesla
 - superconducting electro-magnet to 2.0 Tesla
- 200mm wafer size capability
- Automated wafer loading capability

Industry Leading Throughput

Despatch's Magnetic Annealing Tool provides recording head manufacturers with the best overall throughput in the industry, by combining large load capability with excellent temperature ramp-up and cool-down rates. Standard load sizes are 10 wafers per batch for the MT-500 and 15 wafers per batch for the MT-300, and optional configurations can hold as many as 20 wafers per batch. Temperature ramp-up and cool rates of over 5°C per minute allow for shortened cycle times and increased throughput. Despatch Magnetic Annealing Tools maintain their excellent temperature uniformity during the ramp phase of the process cycle. *See Figure A Below*

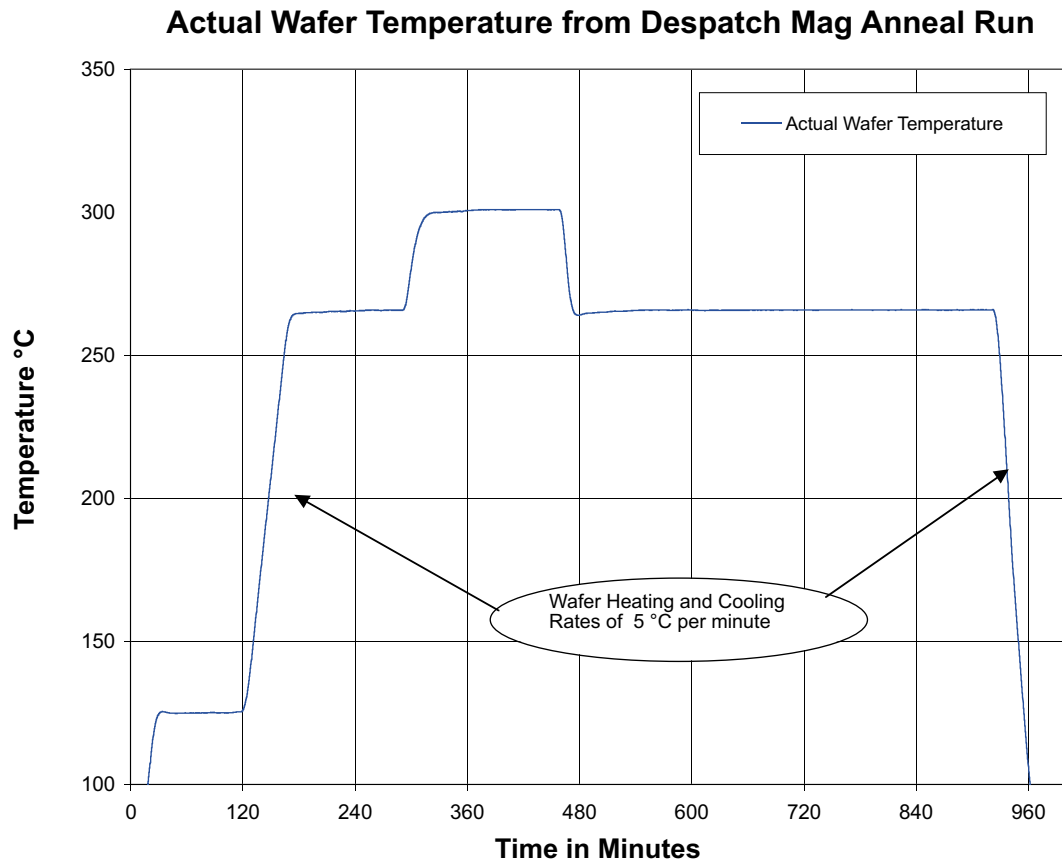


Figure A

Despatch

MODELS	MT-300	MT-500
TEMPERATURES Maximum Temperature Temperature Uniformity Ramp-up Rate Ramp-Down Rate	300°C ± 0.5°C 5°C/Minute 5°C/Minute	525°C ±2.5°C 5°C/Minute 5°C/Minute
MAGNETIC OPTIONS Permanent Magnet Electro-Magnet Superconducting Electro-Magnet Maximum Divergence Angle Field Uniformity	to 0.2 Tesla to 1.3 Tesla to 2.0 Tesla 2° ±2%	to 0.2 Tesla to 1.3 Tesla to 2.0 Tesla 2° ±2%
VACUUM Vacuum Base Pressure (standard) Deep Vacuum Option	10 ⁻⁵ Torr 10 ⁻⁷ Torr	10 ⁻⁵ Torr 10 ⁻⁷ Torr
WAFERS Maximum wafer size Standard wafer size Wafers per batch Rotation option available Rotation position accuracy	8" round (200mm) 6" round (127mm) 15 yes ±2°	8" round (200mm) 6" round (127mm) 10 no N/A
OTHER Footprint Height Power Requirements Automation Option	63"Dx51"W 88" 35KW yes	75"Dx61"W 96" 35KW no

Increased Yield

Despatch's patented Magnetic Annealing Tool helps increase recording head yield by maintaining tight tolerances throughout each batch

Temperature tolerance within each wafer, and between wafers in a batch, is better than $\pm 0.5\%$ of soak temperature. The MT-300 maintains temperature uniformity of $\pm 0.5^\circ\text{C}$, and the MT-500 holds temperature uniformity of $\pm 2.5^\circ\text{C}$
See Figure B

Precise magnetic field uniformity is also maintained. Field uniformity is better than $\pm 2\%$ throughout the work area. The maximum divergence angle is 2 degrees. These tight tolerances lead to excellent lot-to-lot consistency and superior product quality.

Wafer Temperature Uniformity After Stabilization

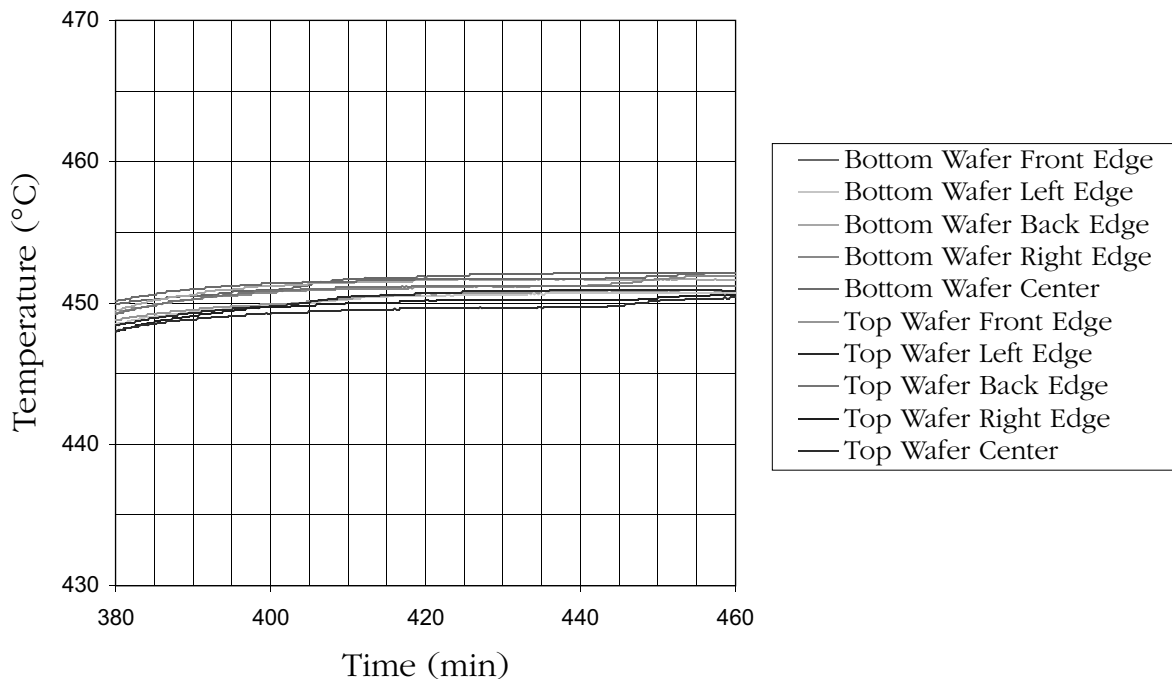


Figure B



Greater Process Flexibility

Despatch's Magnetic Annealing Tool offers flexibility to recording head process designers. With a wide range of temperatures, magnetic field strengths, wafer rotation, and a variety of material handling options, Despatch's tools enable head manufacturers to keep pace with rapidly changing technology.

*For a superior process tool, call
Despatch, the leader in thermal
processing technology.*

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