

microVEGA™ xMR

SELECTIVE LASER ANNEALING FOR MONOLITHIC MAGNETIC SENSORS

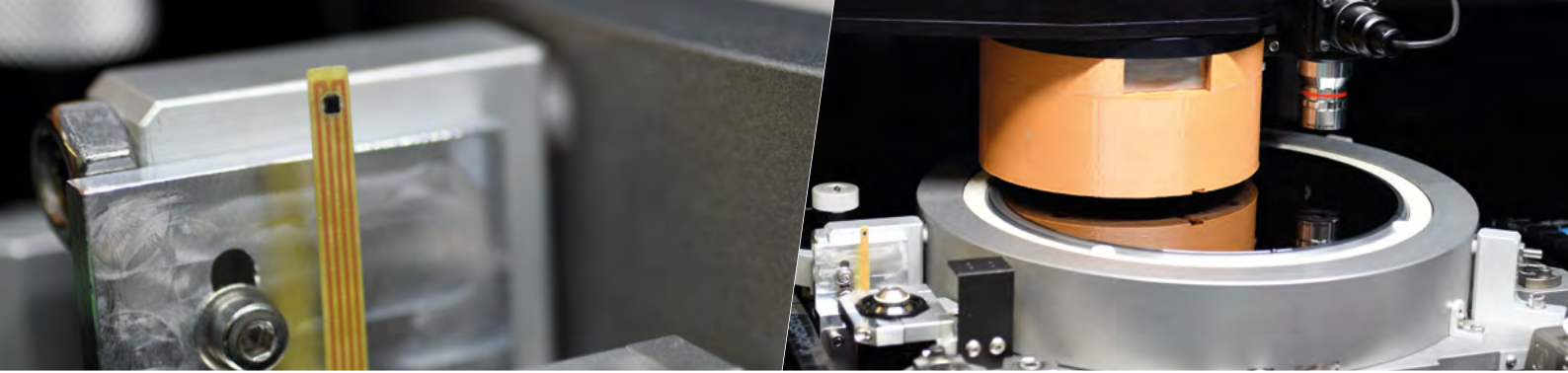
The microVEGA xMR system provides high-throughput laser annealing for monolithic magnetic sensor formation.

Thanks to its highly flexible tool configuration, the microVEGA xMR can accommodate both Giant Magnetoresistance (GMR) and Tunnel Magnetoresistance (TMR) sensors. It simplifies the pinning for monolithically integrated sensor chips to an easily adjustable one-step-process - making it an ideal production solution in terms of cost, throughput, yield and sensitivity.

HIGHLIGHTS

- Single platform for both GMR and TMR sensors
- Cost-efficient production of monolithically integrated sensor chips in just one production step
- Very high energy homogeneity - resulting in improved sensor quality
- Flexible recipe programming and wide parameter range
- Allows for sensor processing close to read-out electronics





microVEGA™ xMR - SYSTEM CONFIGURATION



The microVEGA xMR uses on-the-fly spot and variable laser energy to provide selective heating of the pinning layer in each sensor in order to „imprint“ the intended magnetic orientation.

Magnetic field strength and orientation are adjustable by recipe, while high-temperature gradients ensure low thermal impact. This allows sensors to be processed directly next to read-out electronics as well as closer together, and enables the production of smaller sensors - freeing up space for processing more devices per wafer.

Suitable for	<ul style="list-style-type: none"> Adjustment of magnetic orientation, sensor position and sensor dimension for • Giant Magnetoresistance (GMR) sensors and • Tunnel Magnetoresistance (TMR) sensors
Wafer dimensions	<ul style="list-style-type: none"> • Wafer sizes up to 300 mm
Accuracy	<ul style="list-style-type: none"> • System positioning accuracy: $\pm 5 \mu\text{m}$ • Accuracy of magnetic field direction (orientation): $\pm 0.01^\circ$
Laser source and beam path	<ul style="list-style-type: none"> • ns laser source • NIR laser wavelength • Spot size in X and Y programmable by recipe
Integrated measurement	<ul style="list-style-type: none"> • Power sensor at chuck level • Laser beam analyzer at wafer level • Gauss-meter integrated • All relevant data are saved in log files
Standards	<ul style="list-style-type: none"> • CE/UL as option • Laser class 1 • ISO class 5
Options	<ul style="list-style-type: none"> • Heating chuck • Automatic wafer handling • SECS/GEM interface
System dimensions	<ul style="list-style-type: none"> • 2,716 mm x 2,317 mm x 2,118 mm (width, height, depth) including automatic wafer handling