Magnetic Shielding for Quantum Applications

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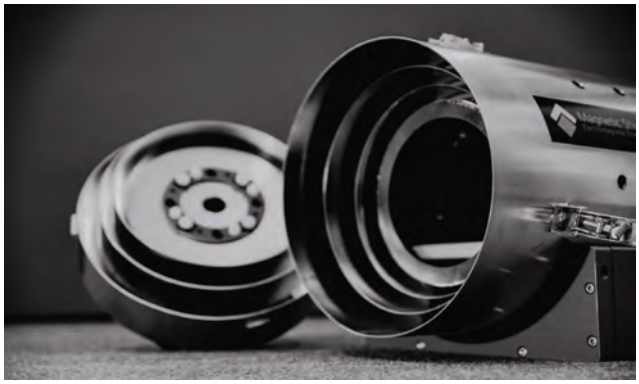
Magnetic shielding is required to maintain the coherence of quantum states by screening external magnetic flux sources. This is a vital step to improve the performance of quantum systems such as gravity sensors, quantum navigation, quantum timing including atomic clocks, and other quantum systems utilising the properties of entanglement. Magnetic Shields Ltd (MSL) are experienced in the design, simulation and manufacture of specialist shielding solutions for the global quantum computing industry.

Warm Shields

MuMetal and Supra-50 are high permeability materials at room temperature with saturation points of 0.75T and 1.6T respectively, enabling MSL to engineer your magnetic shielding solution for any magnetic environment.
As the name implies, warm shields are used outside of the cryostat to screen any external fields incident upon the entire system.



Cold Shields

Cryophy material is optimised for high permeability at cryogenic temperatures. Cryophy shields can be installed inside the cryostat to optimise size, weight and cost. MSL have experience with countless cryogenic and quantum applications, and can help optimise your solution from concept to installation.

Superconducting Shielding Layer

As well as Cryophy shielding for cold environments, MSL can also provide an aluminium layer for superconducting eddy shielding of AC field sources (such as 50Hz electrical noise). For warm environments, MSL utilise a high-purity copper layer for enhanced conductivity and optimised AC shielding.

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Degaussing & Active Shielding

MSL provides a CE marked demagnetisation (degaussing) system to remove the remanent field of Cryophy or MuMetal to achieve ultra-low fields of <5nT. We can also implement an active shielding solution for warm or cold environments, along with low-noise voltage drivers to achieve DC fields of <1nT with a magnetic noise floor of <15fT/√Hz.

MSL Capabilities

MSL have all production facilities required for magnetic shielding on-site, including manufacturing facilities for end-to-end fabrication of magnetic shields, and multiple furnaces to perform the vital heat treatment process. The design team at MSL consists of physicists, engineers and metallurgists who specialise in the design of magnetic shielding solutions from concept to installation.

Design **Manufacture** **Test** **Solution**

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