Heat Treating

With every magnetic shield MµShield manufactures, the Company's goal is to attain the maximum shielding capacity or permeability for that part while maintaining its dimensional and structural integrity. MµShield meets these objectives by heat treating parts and material on-site.

Why is heat treatment necessary?

Typical manufacturing methods for magnetic shielding involve bending, forming, welding, hammering, and sanding. Bending and forming are mechanical operations which can workharden and/or stress high permeability materials. Welding introduces oxygen to the material, and sanding and hammering can introduce carbon. Each of these factors contribute to the degradation of the shielding performance of high permeability materials.

What is "Permeability?"

Imagine a sponge. Some sponges have big holes, some are more tightly structured, each absorbs liquid to a point of saturation. Magnetic shielding material is similar. It absorbs magnetic interference to its point of saturation. The absorption is based on its permeability. Highly permeable shielding material is similar to an industrial strength sponge.

How does heat treatment increase the permeability of shielding materials?

When the shielding materials that MµShield uses are exposed to extremely high levels of heat (2100°F for 1-2 hours), the grain of the material grows, increasing the materials ability to absorb magnetic flux. In addition, the hydrogen atmosphere in the heat chamber produces a chemical reaction with the shielding material, removing impurities such as carbon and oxygen, thereby enhancing the permeability. Finally, rapid and controlled cooling of the parts freezes the desired large grain of the shield yielding maximum permeability. MµShield engineers regulate the temperature and time the parts are in the heat chamber with care as it is critical that the parts maintain their structural and dimensional integrity.

Does MµShield provide heat treatment services for parts other than its own?

Absolutely. MµShield has a large heat treating capacity and is committed to investing in additional equipment to keep up with demand for these services. Fast turn around of heat treated parts is critical to MµShield customers.