



Consulting:

We work in conjunction with you and your colleagues to provide feasible, efficient, and cost effective shielding solutions. We have had countless opportunities to provide initial design assistance for new products which has enabled our customers to *significantly shorten their design cycle*. In some cases, a formal contract for this service is appropriate as it is the most cost effective and least time consuming alternative to shield design. In other cases, a quick study of the shield design you have created will enable us to guide you as you develop your product for production.



You may find it helpful for us to give you our perspective on a complicated shield you have designed for production. Our manufacturing experience enables us to look at a part from a production stand point, and to offer suggestions for improving cost efficiencies.

On occasion, MuShield is asked to visit a customer site for formal consulting on an electromagnetic interference problem. In cases such as these, we are contracted to provide a suggested solution, complete engineering drawings, and prototypes as necessary.

In order to concentrate on the areas in which we are most skilled, MuShield has elected not to become involved with shielding rooms from EMI. We are familiar with several highly respected companies that will provide this service, and we would be pleased to speak with you about them.

Let us know how we can be of service to you.



Gauss Meter Rental:

In an effort to eliminate expensive consulting fees or the need to purchase a gauss meter, MuShield has created a gauss meter rental service that simplifies the purchase of an appropriate shielding solution.

Because of the variety of shielding applications in the world today, MuShield has put together two meter rental programs designed to meet the requirements of

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most shielding applications. Each program is as simple as possible, and we give you plenty of time to take the measurements you need.

For more information on Gauss Meter Rental options or to order, please visit www.mushield.com.

Heat Treating:

MuShield heat treats parts & materials on-site.

With every magnetic shield MuShield manufactures, the Company's goal is to attain the maximum shielding capacity or permeability for that part while maintaining its dimensional and structural integrity. MuShield 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, cold working, and mechanical finishing. Bending and forming are mechanical operations which can work-harden and/or stress high permeability materials. Welding introduces oxygen to the material, and mechanical finishing and cold working can introduce carbon. Each of these factors contribute to the degradation of 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 the point of saturation. Magnetic shielding material reacts in much the same way. Depending upon its structure, magnetic shielding material absorbs magnetic interference to a point of saturation. As magnetic interference increases, so too should the permeability of the material.

How does heat treatment increase the permeability of shielding material?

When the shielding materials that MuShield 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

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enhancing permeability.

Finally, rapid and controlled cooling of the part freezes the desired grain of the shield, yielding maximum permeability. MuShield engineers regulate the temperature and the time the parts are in the heat chamber with care as it is critical that the parts maintain their structural and dimensional integrity.

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

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

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