



FRANK SHIELDS COPPER MRI SHIELD ROOMS

FS/MRI/RF/CU-0124

www.frankshield.com

COPPER MRI SHIELD ROOMS

Frank shields design, manufacture custom designed copper MRI shield rooms that can be easily installed. The panels are fabricated at our factory Modular shield sandwiched with two layers of conductive material and chip board which are bolted together with conductive strips.(copper / 18mm chip board / copper) . the floor shield is installed on a level surface by using a layer of chip board interlocked and installed to provide necessary electrical isolation .the ceiling panels are installed together and suspended at various points using dielectric isolator .the wall are self-standing up to a height of 3.5 m and beyond which on specialized cases we design special supports for the wall.



The air intake uses our custom design air ventilation system that provides smooth airflow at the same time meets the necessary shield specification and above. The doors and view window are designed and manufactured by Frank Shields and meets the acoustic and RF attenuation values beyond the required values set by the MRI manufacturers.

DESIGN THE PRESSURE DROPS FOR QUENCH PIPES FOR VARIOUS MRI'S



Designing the pressure drops for quench pipes in various MRI systems involves optimizing the internal piping structure to ensure that any rapid release of cryogenic gases, such as helium, during a quench event results in controlled pressure reduction. This is crucial for safety, as it prevents overpressure within the MRI equipment. The design must account for the specific requirements of different MRI models, ensuring efficient gas release while minimizing risks associated with pressure build-up.

- Design the pressure drops for Quench Pipes for various MRI's
- Fabricate and supply insulated Quench pipe with terminations and installation materials
- MRI Magnet Quench Pipe System





FABRICATE AND SUPPLY INSULATED QUENCH PIPE WITH TERMINATIONS AND INSTALLATION MATERIALS



Fabricating and supplying insulated quench pipes with terminations and installation materials involves producing and delivering quench pipes equipped with thermal insulation, end fittings, and all the necessary components for installation. These specialized pipes are crucial in MRI systems to manage cryogenic quench events safely and efficiently, ensuring minimal heat transfer and dependable functionality while simplifying the installation process.



MRI MAGNET QUENCH PIPE SYSTEM

Frank Shield's quench pipe products are well designed with the cryogenic engineering practices required to cope with the physical impact on the MRI magnet Quench Pipe system that a helium discharge produces.

RF DOOR

Our RF Door is manufactured by Frank Shields. The door measures 1300mm in width and 2300mm in height. The door is equipped with specialized door handles and locks to ensure that the necessary acoustic and RF functions can be achieved. The acoustic attenuation of 40dB is minimum assured value of the door. The door is designed to be installed either inside opening or outside opening with hinges on the left or right. This is a specialized door designed by us to give flexibility in case the site changes design at the time of installation of the room.



RF WINDOW

Our RF Window as a slandered size of viewable area that measures 1200mm in width and 1000 mm in height. The windows of wider size are also available up to 2000mm wide and 1200mm height. These must be custom ordered

The RF windows are manufactured using steel mesh and acoustic glass, therefore the optical visibility will be around 30% less, which is rough estimate . the shield window provides minimum 90dB t 100 MHz

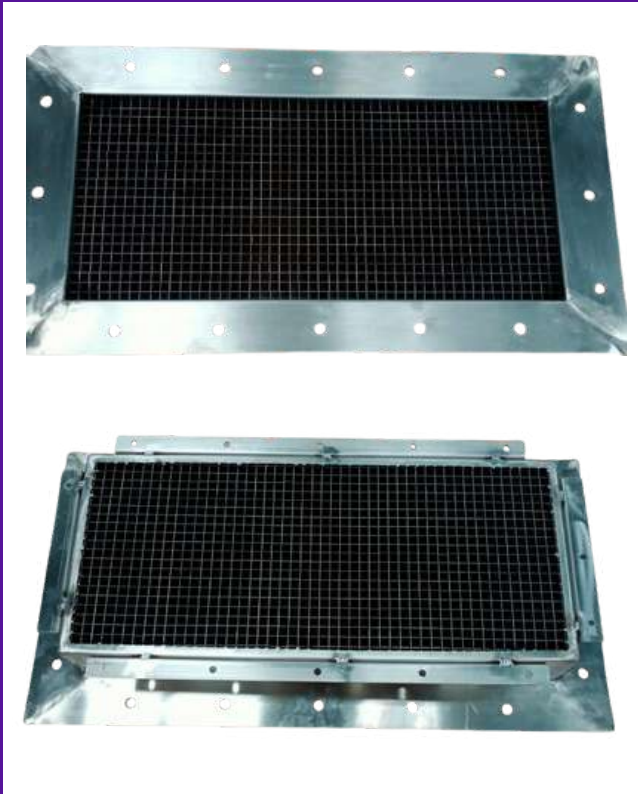


RF FILTER

Frank shields RF filter provides the necessary for drawing power in to the MRI room, at the same time to provide the necessary shield integrity of minimum 100dB

The RF filter comes in standard power rating 32 Amp 12 Line





HONEYCOMB

Honey comb filter provides the necessary provision for running the air –condition duct into the MRI room ,at the same time to provide the necessary shield integrity. The External duct to the shield honey comb is isolated by getting it connected to the wooden isolator frame installed external, the honeycomb comes in standard sizes but nonstandard sizes are also possible to supply but on longer lead times

The standard sizes are 300mm x 300mm , 450mm x 600mm , 600mm x 600mm , 300mm x 600mm

WAVEGUIDES

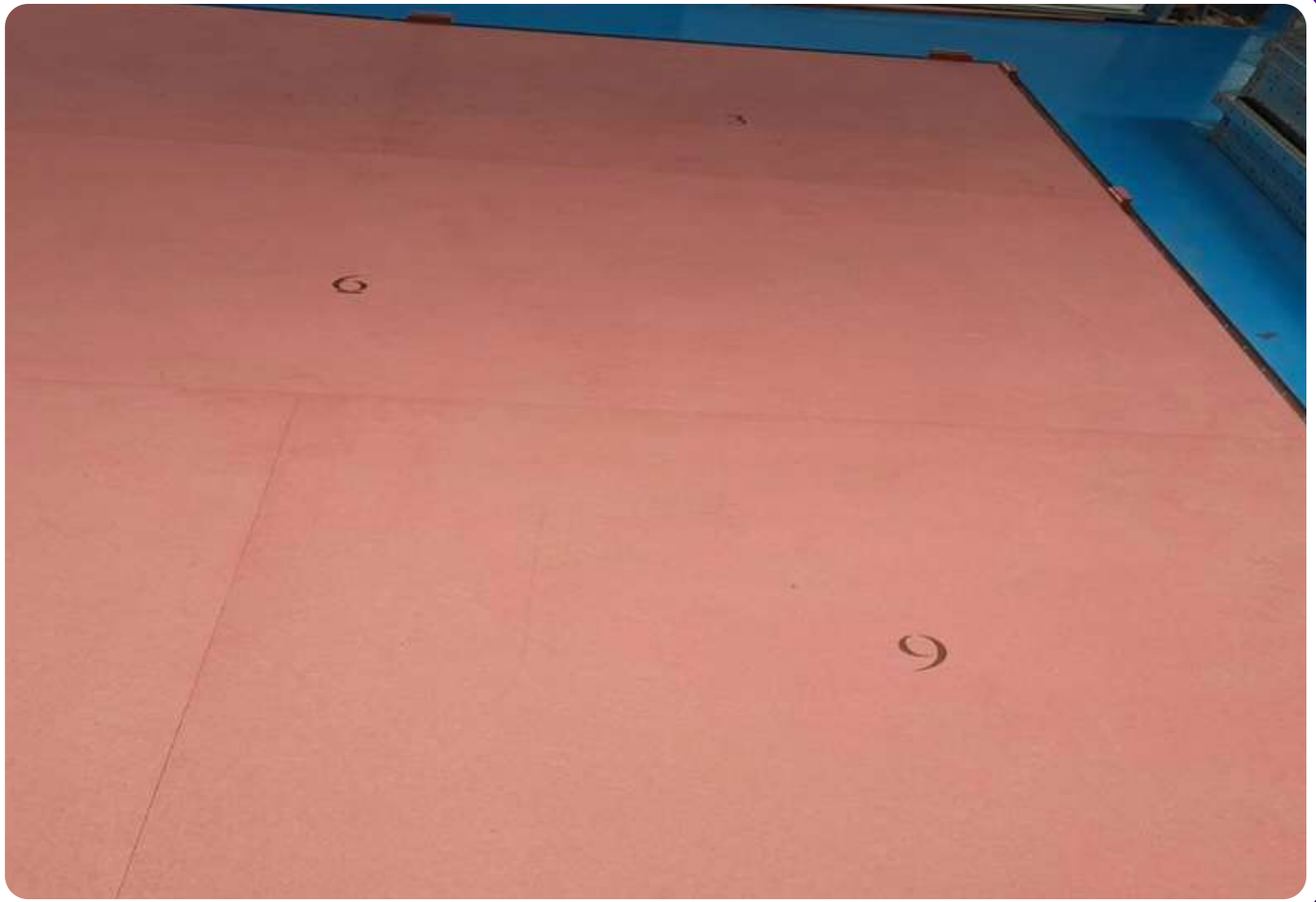
It is true that the MR scanner room is well shielded against radiofrequencies going in or out by virtue of its magnetic cage construction. Any structure (e.g , wire , pipe ,or duct) traversing the wall must pass through a penetration panel that contains RF filter and waveguides.

For pipes, ducts ,fiber optic cables, and tubing a different type of filter is needed, called a waveguide. The type of waveguide used in MR facilities is usually a circular (cylindrical) type with a cutoff well below the larmor frequency. In the range of frequencies used in MRI (10-300MHz) a cylinder with a length :width ratio of 4:1 or grater will be effective at blocking radiofrequencies in the desired range.



FLOOR CHIP BOARD

Our RF floor is constructed by first laying a layer of MDF as a base to lay wide strips of copper which is soldered together to form one seamless surface. Once the wall and ceiling panels have been installed a layer of tongue and groove chipboard covers the copper floor. For the Aluminum and GI cage also we are using the same flooring method.



Thank You



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