

Medical Applications

Patient positioning during diagnosis, surgical procedures and treatment

State-of-the-art patient positioning solutions are required for use in diagnostic systems such as X-ray, CT (Computed Tomography Scanners), MRI (Magnetic Resonance Imaging), and multi-mode applications like PET (Positron Emission Tomography) and SPECT (Single Photon Emission Computed Tomography). They are also used in surgical procedures and treatments involving radiation therapy or particle therapy. These solutions include table tops (called "pallets, couches or cradles" in some parts of the world), extensions and accessories.

As a specialist in this field, Composiflex uses composite materials to meet the product performance parameters and design considerations for such specific medical applications.

Key Parameters

To accommodate larger patients, there has been a trend towards higher load ratings. Products are often designed for 800 lbs or higher with a 4X safety factor to withstand everyday clinical use. As digital imaging becomes more sophisticated, the requirements for minimizing artifacts and improving image quality have become more demanding. A lower attenuation improves image quality. It also reduces the equipment's energy consumption and limits the exposure of patients and medical personnel.

Product weight is often another important feature, particularly for accessories that are handled by medical personnel. Attachment features, finish and cost are significant for this application as well. Attachment solutions need to be both mechanically sound and imageable. Moreover, due to the high-end nature of the medical market, the products require impeccable finish. Lastly, it is important to control costs, as in most markets.



CT Scanner

Specific design considerations

Carbon fiber is "standard fare" for patient positioning products, due to its high strength and remarkably low X-ray/gamma absorption in comparison to phenolic, acrylic, or other conventional table top materials. Fiberglass, Kevlar® and other materials are often used in MRI applications. The sandwich construction of Composiflex imaging tops consists of a foam core integrally bonded between high-strength composite skins.

The monocellular structural foam core is 100% artifact-free and can be used to produce incredibly strong structures without adding appreciably to image attenuation. After the material choice, a critical part of the design is to determine the optimal lay-up of the composite materials. Fiber orientation of each layer is carefully determined for strength and transparency. A thorough understanding of how these products are used by medical service providers is necessary to enhance "ease-of-use". Patient positioning products are typically manufactured in autoclaves, large laminating presses or utilizing resin transfer molding (RTM). A high level of quality is required to consistently deliver mechanical and imaging performance, along with aesthetics. Tight dimensional and flatness tolerances are required to ensure fit and accommodate motion inherent in most types of medical equipment.

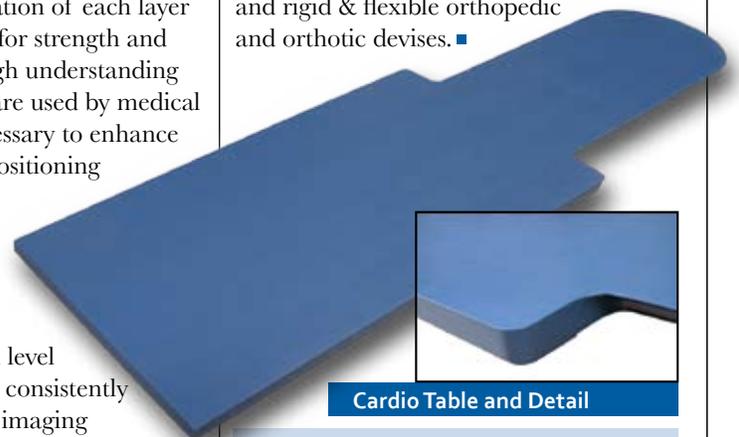
A full range of medical products

Composiflex's medical product portfolio consists of radiographic imaging tops

+ MORE INFORMATION

Composiflex has been designing and manufacturing advanced high-performance composites for more than 20 years. Specializing in custom-designed composite products, Composiflex currently serves the medical, military, aerospace, ballistic protection, industrial and recreational markets. Composiflex conducts operations in a 55,000 sq ft facility in Erie, PA.

and cradles, as well as radiolucent patient positioning and retracting devices, mammography accessories, oncology breast boards, biomedical composites using materials such as PEEK for implant and rigid & flexible orthopedic and orthotic devices. ■



Cardio Table and Detail

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