

Creating innovative, precise, and specialized medical equipment enclosures

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Advances in medical technology in the past century alone have made possible what was previously considered unfeasible. Where once certain illnesses caused the deaths of millions worldwide, medical innovation has now eliminated many dreaded diseases. Where once we had no way to properly diagnose a simple infection, medical imaging technologies today allow us to venture deep into the human body without ever having to make an incision. As a result of medical and technological innovation, dramatic improvements in life expectancy and mortality rates have occurred. Modern medicine is indeed a marvel.

And thanks to devoted researchers and manufacturers, the rate of advancement in the medical discipline continues to escalate. Diagnostic and treatment devices related to countless ailments are becoming smaller and more powerful. Diseases are targeted and treated with increasingly more microscopic precision. Driving this innovation is an aging population that expects the health care industry to provide early diagnosis and state-of-the-art treatment options, creating an unprecedented demand for rapid and continual advancement of custom medical technologies.

In order to provide the equipment that often makes a life or death difference for critically ill patients, medical equipment industry leaders must predict and respond to the culture of rapid development with more innovative, more precise and more specialized equipment. And perhaps just as important, the manufacturers of enclosures and other components for medical supplies, devices and imaging technologies must jointly progress with the latest emerging design and fabrication techniques, processes and technologies. In an industry where product characteristics can mean the difference between success or failure—or even life or death—selecting a manufacturer in touch with the industry realities of innovation, precision and specialization is essential.

Although rapid innovation in medical diagnostic and treatment technologies provides countless benefits and drastically improves patients' quality of life, it also increases the risk of technology obsolescence. A detailed look at the place where mind meets metal—the shop—allows one to quickly discern whether or not the manufacturer of enclosures for medical supplies, devices and imaging technologies has the design, engineering and fabrication prowess to expertly support medical equipment manufacturers.

First, product design engineers should have a product and application knowledge base from which to draw. Engineering experience allows manufacturers of enclosures to understand the special requirements of housing sensitive medical equipment. This knowledge base enables the engineer to quickly translate design requirements into practical, cost-effective product designs. Product design

engineers must also be versed in the latest CAD and 3D design software. Such expertise allows the design engineer to create accurate and user-friendly product depictions.

After all approvals in the design process have been made, the fabrication process of enclosures becomes paramount—translating the design into an accurate reality requires the reduction of human error, and can only be performed by state-of-the-art fabrication equipment. Modern manufacturers streamline the enclosure fabrication process by synchronizing the computer software with the fabrication equipment, ensuring that human error is removed when inputting product specifications into the fabrication equipment. High-tech equipment is also utilized to perform as many operations as possible in order to eliminate time-consuming and costly extra steps in the fabrication process. Time and money can also be saved by selecting a manufacturer with the capability of performing all the steps of the enclosure fabrication process—cutting, machining, punching, bending, shaping, and finishing—under one roof, without the need to outsource to expensive subcontractors. And supporting the fabrication process requires a team of exceptional mechanical experts who understand the intricacies of the equipment and production process. Such innovative enclosure design and fabrication processes help medical equipment suppliers to get their products and services to market more quickly and more cost effectively than their competitors.

As leading medical equipment suppliers know, not only does every customer have specific needs, but today's complex medical applications require a level of sophistication and expertise unknown to past generations. The enclosures housing the applications are no exception. Because of the nature of today's medical equipment industry, medical equipment suppliers receive requests for products of all shapes and sizes. Depending on the application, enclosures may need to have a completely customized and high precision shape or size. They may require a variety of hole punches. For mounting associated electronics, enclosures often require specific self-cinching inserts such as studs, standoffs, blind studs, captive nuts, spring latches, rivets and right angle standoffs. To create any shape enclosure and to ensure a uniform finish coating, dedicated CNC milling equipment should be used prior to finishing the material. If a durable and attractive finish is needed, metal enclosures are often treated with both an undercoat and a top coat of powder paint, water-based paint or vinyl-clad aluminum. Other enclosures require effective shielding, ensured by utilizing overlapping seams and multiple fasteners, copper-beryllium and metal-impregnated gasketing, copper-nickel paint and the placement of additional fastening hardware. Still other enclosures require single or multi-colored screen printing and graphic overlays. Custom enclosures sometimes require custom accessories, such as handles, feet, knobs and mounting solutions.

To meet the unique needs of medical equipment suppliers, the ideal enclosure manufacturer is small enough to handle single or periodic orders, yet large enough to handle volume orders in the tens of thousands—all with the ability to provide the same level of customer service to any customer, regardless of the order's size. Not only must enclosure manufacturers be able to stay ahead of the innovation curve, they must also have the ability to create products to serve as tools in diagnosis and treatment procedures requiring the tightest of tolerances. Some diagnosis and

treatment devices and components simply cannot afford imprecision; therefore, enclosure manufacturers must possess the technology to create flawless products, every time. The best enclosure manufacturers have a dedicated team of engineers that work to streamline the process—from product design to fabrication—to create fully customized, high precision enclosures for any application. Fractions of an inch can mean the difference between success and tragedy when working with vital body systems. It pays to depend on an enclosure manufacturer that can consistently deliver innovative, specialized and precise enclosures using the latest software, machines and technology.

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