

How Are You Influencing Emergency Medical Technology?



Jonathan Schroeder
Business Development Manager, PBC Linear

Our company specializes in linear motion and we have now worked with several companies which specialize in bringing emergency medicine to the third world or disaster struck areas which are most in need. The challenge is to design a mobile hospital/operating room based upon the size of a standard shipping container so it can easily be transported. The problem is that a container is not wide enough to be an effective work area. These companies have used our Hevi-Rail product to create a large telescopic system (a.k.a. drawer slide) which essentially doubles or triples the working area by allowing one or both sides of the container to expand outward. Environmental contamination, corrosion and very high moment loads made this application especially challenging. The mobile medical unit could literally go anywhere in the world and must be able to withstand any environment the world can throw at it (anything from a tropical rain forest to the Sahara Desert).

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Lance Heft
CEO, International Tube

Our goals are to assist Medical device companies to develop and design the most efficient, and safe way to assist the patient. Normally, if we can stretch the technology and create a smaller and less invasive device, that is easy and intuitive to use by the emergency personnel, the stress to the patient both physically and emotionally is reduced. This often results in a less traumatic procedure, a less invasive procedure, quicker recovery time, and less time in the hospital. Any time you can safely decrease the trauma to the body from an emergency procedure, the patient is obviously better off.



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Christine Van De Graaf

Product Manager, Embedded Modules Division, Kontron

Portability of equipment – combined with portability of data – is driving emergency medical device designers to push the limits of what they currently design. With extremely small Computer-on-Module (COM) form factors such as microETXexpress and nanoETXexpress, emergency medical applications that previously faced barriers due to size, performance issues or power consumption limitations can now be developed using a standard COM implementation.

COMs are standard and modular, therefore designers have access to a wide range of scalable performance and key features. In fact, COMs solutions implementing the latest Core™ i7 processors are available now for evaluation, incorporating an efficient two-chip solution for better signal integrity and minimized board space, enabling higher performance for smaller, power-constrained portable designs.

Simple customization inherent to COMs holds significant value for medical OEMs, and can be re-used from product generation to generation. Modules can be effectively switched out to achieve new performance as it becomes warranted, or to add features such as smart power management, tolerance to shock and vibration or extended temperatures. As a result, COMs deliver the long life required for medical designs, ensuring minimized design risk and allowing designers to get to market fast. Designers can plan ahead to accommodate increased performance and features, steadily developing new devices that provide greater efficiency, reduction of human error, quick turn diagnostic capabilities and seamless information gathering.



Brent Caldwell

Engineering Manager, Servometer

Medical product designers are often challenged to create miniature mechanical or

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structural parts out of metal. Especially for angioplasty, catheterization, and microsurgical equipment where required parts are simply too small to machine or form mechanically.

Servometer - PMG, LLC has been solving miniaturization problems in medical equipment design using their unique ability to electroform unmachinable geometries with special finishes, allowing for the production of light-weight, precision components for sensitive hand-held surgical tools, and as key components in advanced surgical imaging equipment used in routine and emergency surgical procedures.

Servometer also custom designs bellows manufactured from gold, either as a complete part or surface finish; which are used as autoclavable, flexible seals in operating room equipment. High purity "dynamic" gold bellows are a Servometer signature product.

Servometer has partnered with medical device companies to develop an experimental technology which uses an electrodeposited miniature metal bellows to sense and respond to blood and fluid pressure in the body, providing critical, real-time data for medical specialists. Presently, a Servometer flexible

bellows / rigid electroform combination is the principal component in a technology which provides vascular cooling during surgical procedures. Flexibility of the electrodeposited conduit allows the device to navigate through the body's blood vessels.



Marwan Fathallah
Director, Device Research, Hospira

Hospira develops products that focus on providing clinical decision support technology as a preventative measure to emergency care. Integrating smart pump

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technology with smart algorithms helps clinicians monitor patient vital signs to predict patient outcomes and suggest therapy as a preventative measure to emergency care. Our R & D and Medical teams pride themselves on developing easy to use products that help reduce the time and improve the workflow for nurses and clinicians, allowing them to focus on the patient, not managing devices, in an emergency setting. We are also looking at ways to provide the vital clinical information at the bedside on a moment's notice, to speed decision making and reduce adverse events in emergency settings.



Chris Turner
Director of Battery Technology, Nexergy Inc.

At Nexergy, we are working with our OEM customers to help make emergency medical devices more portable and reliable through the introduction and implementation of Lithium-Ion (Li-ion) battery packs for devices, ranging from defibrillators (AEDs) to suction devices. These devices have stringent requirements but more importantly it is critical that the battery works as expected when put into use.

Li-ion batteries provide specific benefits to emergency medical devices that go beyond allowing these devices to become smaller and lighter. Each of these devices has a particular set of needs that can be addressed now with all the varieties of Li-ion available each with an assortment of performance characteristics. For example, many emergency medical devices require high power battery designs to meet their needs. In many of these cases, these devices are being designed with a Li-ion technology referred to as lithium iron phosphate to ensure the high power requirements of these devices are met reliably, every time the product is needed. Not only does lithium iron phosphate have the power capability but it also has the long cycle and calendar life these devices need.

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