Designing a More Patient-Centric Battery Holder

Tom Blaha

Powering portable devices is a critical element in healthcare today as more and more medical technologies are used in the home or on the patient directly. As such, patients are responsible for the power supply (i.e., batteries) more often than a healthcare professional. As such, a new innovation in battery holder technology makes replacing them easier, which is most important for the very young and elderly.

For most people, changing a battery is usually a simple, intuitive, often forgettable task. Such may not be the case for

individuals who are unable to read or suffer from impaired vision, judgment, dexterity, or motor skills.

If the patient is too young to read printed instructions, aged, or suffers from a serious ailment that impairs his or her ability to perform simple tasks, and that person needs a battery-operated device to operate immediately and reliably, the inability to properly install the battery could have debilitating or potentially life threatening consequences.

While the development of a more ergonomic, patient-centric battery holder offers numerous benefits to the field of medicine, the inspiration behind this innovative concept came from the computer software field, prompted by the experiences of customer service representatives at Microsoft Corporation [1] who found themselves continually fielding unnecessary customer service calls stemming not from some software glitch, but from human error among consumers who had improperly installed batteries within a wireless mouse or keyboard, only to call the help desk complaining that a device malfunction was incorrectly self-diagnosed as a software problem.

Seeking to reduce the high volume of expensive calls to their consumer help desk, Microsoft employed design engineers to develop a simple, mechanical solution that would allow a mouse or keyboard to operate properly regardless of the orientation of the battery's positive and negative terminals.

The result of that effort was the invention of a patented technology known as InstaLoad, a simple, ingenious device that permits batteries to be inserted into the device bi-directionally without creating an electrical short or resulting in a failed connection.

Although similar technologies had previously been developed that enabled ease-of-use by the patient or consumer, these earlier solutions had two major drawbacks. First, they relied on complicated or expensive circuitry and, second, they often caused a continuous drain on battery power, thus significantly reducing expected product lifespan.

InstaLoad technology has proven to be a simple, yet ingenious solution, prompting mashable.com to note that "frankly, we can't figure out why no one invented this tech until now, but we're glad Microsoft did. They have the reach to really get device manufacturers on board, which will be crucial to InstaLoad's adoption."

Under the terms of the licensing agreement, Memory Protection Devices [2] is authorized to manufacture InstaLoad battery holders, which are designed for through hole mounting to PC board assemblies. Instaload works by enclosing each battery between a pair of battery contact assemblies. Each set contains both a positive and negative contact, with plastic setbacks to avoid short circuits, thus allowing the batteries to be oriented bi-directionally. Use of this device does require that two sets of PCB traces are used to accept bi-directional power, which can easily be configured when the PC board is being manufactured. This configuration allows the device to operate without any special electronics or circuitry.

While proper battery orientation is typically not a top-of-mind concern for youthful, tech savvy consumers, such is often not the case for a very young child who has yet to learn how to read, or elderly persons who are losing their sight, suffering from impaired judgment, and often uncomfortable with modern technology. For these patient populations, deployment of InstaLoad battery holders ensures a better user experience, resulting in better patient outcomes and reduced risk of shorts or other potential damage that my result from incorrect polarity.

Medical patients are not the only beneficiaries of this simple, yet innovative technology. Instaload battery holders have been proven useful to EMTs and first responders whose job it is to make instantaneous life and death decisions, and thus demand immediate and reliable performance from their battery-operated equipment. For example, if the situation involves a fire emergency and the first responder finds himself or herself in a dark, smoke-filled environment, use of Instaload ensures immediate battery power. Similarly, if a first responder is trapped or crawling through a confined space where battery orientation is impossible to determine, the use of the InstaLoad system can be critically beneficial, both to the first responder and those in need of their assistance. Besides medical devices, this technology is also ideally suited for portable lighting, flashlights, battery chargers, wireless computer mice and keyboards, as well as commercial, military, and law enforcement applications.

The InstaLoad system is available in standard configurations for AAA, AA, C, or D size batteries. Custom configurations are also available.

Tom Blaha is the president of Memory Protection Devices. He is primarily responsible for overseeing new product development, design engineering, and sales management.

Links:
[1] http://www.microsoft.com/
[2] http://www.memoryprotectiondevices.com/