



Ensuring Winter Comfort for Amputees

Staying warm through a typical Manitoba winter can be a challenge for many, and it presents a special dilemma for people with limb amputations.

According to Bill Brereton, EMAT rehabilitation engineer, amputees, particularly upper limb amputees, often have difficulty keeping their stumps warm when outdoors in cold weather. This problem can limit the length of time amputees spend working or playing outdoors in cold climates.

Attempting to warm the prosthesis stump through the use of such means as wool socks is not a viable solution, as the stump's often limited blood flow prevents it from generating enough heat to avoid frostbite.

In 1999, an organization called Farmers with Disabilities of Manitoba sought an answer to the problem so they consulted the experts at Electronic and Mechanical Assistive Technologies (EMAT). The solution was the "amputee socket warmer," a battery-operated device featuring an electronically timed heating element that fits onto the prosthesis.

The device is connected to a belt clip that includes the temperature control and fits perfectly into a cell



phone case. The warmer can be attached to the prostheses in several ways, such as with tape or Velcro.

"We created a circuit, much like the ones used in electric blankets," says EMAT designer, Ed Slyker. "It automatically turns on and off to maintain a fixed amount of heat."

Slyker says EMAT recently applied for funding to further improve the socket warmer by making it lighter and the batteries longer lasting. The most recent version has proven popular primarily with arm amputees, though Slyker says the warmer could also be applied to leg prostheses.

The cost of the device is covered by Manitoba Health so the only user expenses are replacement batteries.

For more information about the amputee socket warmer and other adaptive products to promote personal comfort and independence, please call EMAT in Winnipeg at the phone numbers listed below. The design team is ready to meet your challenge.

Keeping Pace with Technology

Providing clients with innovative electronic and mechanical assistive adaptive technologies requires that EMAT team members stay well informed about all aspects of technological advancement.

That commitment to excellence is demonstrated in the department's participation in two recent professional development seminars in Minneapolis and Winnipeg, respectively. "Closing the Gap" is an annual Minneapolis assistive technology conference.

"The major emphasis at this year's gathering was the integration of children into schools," says EMAT rehabilitation engineer, Bill Brereton. "While our department does not usually have many requests for child-related technologies, the information shared will be very helpful in our work with adult clients."

Brereton says the conference presentations included several areas of interest to EMAT's staff, such as an EMG/EEG switch that could be applied to help people with advanced multiple sclerosis or ALS

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Press One (Switch) for Convenience

The advent of telecommunications technology has made it more complicated to reach out and touch someone, especially for people with limited physical mobility.

The EMAT electronics section has answered the call by modifying a new model of speakerphone that performs several functions at the touch of a single switch.

EMAT designers applied the single switch technology to the GE2-9316 telephone to allow one-button access to the memory dial features and the keypad. In addition to providing good quality sound and ease of programming, the modified phone enables users to navigate more easily through the automated phone-answering systems commonly used in today's marketplace.

When the phone is in its cradle, the user can now scan up to 12 pre-programmed phone numbers. When the phone is in use, the user can scan the 10 digits of the number pad to facilitate voice mail requests such as "press '1' for English", or "press '6' for information about your claim."

To dial a phone number not stored in the phone, the user should still access a telephone operator. With this service, an operator will place a call to any number requested. Under the present system, the phone company's technology times out too quickly to allow

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(Lou Gehrig's Disease). Another promising area was the development of digital cameras and cell phones controlled by assistive technology devices.

More than 200 presentations and 150 display booths showcased an interesting array of technology, each designed to help people live their lives as fully as possible. There was a similar goal at "Enabling Technology," a one-day program held in Winnipeg, highlighting not only major commercial technology but also local services that relate to this burgeoning field. A special highlight of this event was a presentation by EMAT staff on environmental controls.

"Our presentation was an overview of simple commercial ways to give people control of lights, televisions, door locks, phones and other necessities of life, including the EMAT ZISKA Environmental Control which can operate a wide variety of devices and appliances," says Brereton, adding access to EMAT services was also discussed.

The exchange of ideas and information at both forums is already proving valuable in EMAT's work of helping people to help themselves.



a user to dial a full seven-digit phone number by scanning the numbers.

There is no charge for operator-assisted calls for registered users, and EMAT will continue to help clients register with MTS for this service.

The GE speakerphone is currently available to individual clients for \$40, including the power supply. An access switch can be adapted to the specific needs of the individual user. The new speakerphone can also be used with EMAT's environmental control systems.

Rocking Technology on a Roll

When occupational therapist Jane Lawler needed someone to create a switch-operated motorized rocking chair, she knew just who to call.

"I always think of EMAT first as they have been very helpful to me in my 13 years at St. Amant Centre," says Lawler. "They can make things that are not commercially available and always customized to suit individual needs."

Lawler asked the EMAT team to adapt a glider-rocker to enable a young resident with limited mobility in her legs to operate the chair via a single switch. The result was the addition of an adjustable speed motor to power the rocking motion, and the inclusion of a large button that enables even people with extremely limited mobility to operate the chair.

With an on/off switch on the chair back, the rocker also features a timer device so it can be pre-programmed to stop rocking after a specified duration.

"For some people, rocking has a very soothing effect," says Lawler. "It is important, particularly for non-verbal people, to have some control over their own environments. EMAT's adaptation has given a simple pleasure back to people who would otherwise need someone else to rock them."

The original prototype of the rocker has been modified further to meet specific client needs, work that Lawler says EMAT is always willing to do. Lawler says one client became so accustomed to the one-button convenience that she looked for the same feature on many other chairs.

"It was a great thing to see her push the button herself the first few times," says Lawler. "As a therapist, it was very satisfying."

