

Charging on the Run

New copper technology uses solar energy to let you charge your hi-tech gadgets

Technology has never been so accessible. Smartphones, laptops, e-notebooks and an array of other high-tech devices, have smashed the barriers that used to separate the outdoors from the office environment. You can monitor your stocks before you go white-water rafting. You can check the scores for your favorite football team while sitting around a campfire. You can send that important e-mail to your client while you take a rest from hiking the trails...that is, unless your Blackberry is low on battery power.

Now, a low-battery warning may no longer means the end of your connectivity. The Atlanta-based company [Reware](#) has developed a portable charging system that uses the innovative copper-based CIGS (Copper-Indium-Gallium Sulfide) solar film. Called The Reware Juice Bag, this everyday-like tote bag offers the added benefit of a built-in electronic charging station that can recharge small electronic devices, including satellite and cell phones, GPS units, PDAs, iPods, MP3 players and digital cameras.

The Reware Juice Bag weighs the same as a normal backpack and comes equipped with a built-in universal socket into which devices can be plugged. A light-weight, copper-based solar panel located on the outside of the bag captures the sun's energy and charges the system as you go about your daily activities. The time it takes to charge an electronic device is equivalent to the time it takes using a standard electrical outlet— between two and six hours.

Henry Gentenaar, a managing partner at Reware, said they carry the largest selection of solar bags using CIGS technology and, "Thanks to the sturdy composition of the copper-based solar film, Reware bags are high quality and durable."

The use of CIGS technology in this product not only highlights the progress of solar panel design, but also illustrates the significant role that copper is playing in the advancement of mainstream solar panel usage.

"The great thing about using copper-based panels is that they are very powerful and rugged. We chose copper-based technology because its reliable," Gentenaar added.

For years, copper has been the metal of choice for HVAC, plumbing and building and construction needs because of its durability, [recyclability](#) and thermal conductivity.

"This is really exciting new technology, and it's no surprise that copper is an enabler in it," said Bob Weed, vice president of OEM for the [Copper](#)

[Development Association](#). “In today’s mobile world, a portable electronic charging station is a must have for anyone who wants to stay connected.”

Gentenaar added that the Reware Juice Bags are sold as backpacks, totes and messenger bags, and are convenient for travelers, campers, hikers, fishermen, students and business professionals.

Farhad Moghadam, CEO of *Ascent Solar*, a Colorado-based company which produces copper-based CIGS solar film, said that the copper solar technology’s efficiency makes it ideal for solar backpacks. Moghadam explained that the use of copper cells carries the benefit of weight reduction, which is a big concern for manufacturers of solar back packs. The thin nature of the copper-based material (only a few microns thick) makes them lightweight and portable, and surprisingly durable for outdoor recreational activities.

“Copper’s electrical and thermal conductivity is what makes it so valuable in increasing the efficiency of CIGS solar technology,” said Moghadam.

The copper film can be manufactured at lower temperatures than other materials, decreasing the manufacturing cost. Solar backpacks for consumers would never have been possible without the decrease in cost of manufacturing attributed to copper.

Several companies, including Sunload and Clear Blue Hawaii, are incorporating copper-based solar panels in their own versions of portable electronic charging stations for the consumer. Along with the solar backpack line, *Reware* plans to launch portable charging mats that fold to the size of a magazine and can be unfolded to create a charging station. These are popular in military applications, and will soon be available to the public. Gentenaar plans to have the product launched in early 2010.

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