

Wired thing, you move me – at least, that's the goal

BLEEX – Berkeley Lower Extremities Exoskeleton – made headlines earlier this year after researchers demonstrated the experimental wearable robotic legs designed to lighten the load of soldiers, firefighters or those who could use a muscular boost.

The system consists of mechanical metal leg braces connected to a big backpack-like frame whose base contains a small hybrid combustion engine to deliver hydraulic power for movement and electrical power for computing. More than 40 sensors and actuators function like a human nervous system, constantly providing the computer information so it can adjust the load based on what the wearer is doing.

BLEEX could give military or civilian emergency workers

Photo courtesy of UC Berkeley



the ability to carry heavy loads with minimal physical effort over any terrain for a long time. And the fundamental technology could help people with limited muscle ability. But before any of that is possible, developers say, the 120-pound contraption needs to be quieter, lighter and smaller.

In short, the BLEEX seeks sleek.

"The point really is to make this thing to be transparent to the pilot. Make this machine as small as possible. Make sure everything is integrated and embedded,"

said Homayoon Kazerooni, director of

the Robotics and Human Engineering Laboratory at University of California, Berkeley. "We want to minimize volume, size and the number of components, and MEMS is a natural way of getting the machine size smaller and making sure parts are integrated."

Kazerooni's team, which has been funded by the Defense Advanced Research Projects Agency, is developing a second-generation version expected to be ready by mid-'05 that could contain microsensors to measure pressure, forces and motion. The biggest challenge might come with pressure sensors, which would measure the force on the footpads. That's where the robo meets the road – or rock or ravine. "Forces are unpredictable in terms of size and direction," he said. "The robustness of the sensors is paramount. They may work very well but not be robust in the presence of variations, unwanted forces."

His team plans to work with the Berkeley Sensor and Actuator Center not only on the sensors themselves but also packaging, which plays a key role in their ruggedness. Those and many other issues need to be worked out before the first sale, including what to do if the wearer encounters a water hazard deeper than a puddle.

One thing's certain: They might look like high-tech hip waders, but BLEEX won't come with a rod and tackle box. "You can't go fishing in it," he said. ●

– Jeff Karoub

Cyrano wins a mate by losing the nose

Since launching in 1997, Cyrano Sciences Inc. had a name that stood out, like the prominent proboscis of its literary namesake. Fitting, too, for a company whose first product, the Cyranose 320 handheld "electronic nose," was launched in 2000 for chemical detection and identification.

But alas, not all monikers live happily ever after.

U.K.-based Smiths Group PLC acquired the California startup in March for more

than \$15 million. It now goes by the drab but durable Smiths Detection-Pasadena Inc. "I do find it funny to go from Cyrano to Smiths," said Saskia Feast, marketing manager, who joined Cyrano in 1998.

So why change the name? Well, it just made scents, er, sense. Rather than mourning the loss, she said the company is focusing on what it's keeping, namely its team and location, and gaining: "We celebrated because it's good to have been acquired. It gives us a lot more opportunity. It's a large company, with a lot of experience, and a presence in the market."

The former Cyrano also has been sniffing around new products. It continues to support the 320, but has been working on government contracts to develop even smaller sensing devices for detecting chemical threats from warfare agents and industrial toxins. ●

– Jeff Karoub

Illustration by Mike Mullen

