

New Technology Aims to Lighten the Load for Soldiers

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The high-tech American soldier, equipped with computers, radios and night-vision goggles, has become a familiar image. However, less well known are the physical and logistical burdens associated with carrying all of that electronic equipment. Soldiers are laden with pounds of batteries to provide power for all the electronic devices and weaponry so prominently used on today's battlefield.

At the University of Missouri-Columbia, researchers in the College of Engineering are attempting to lighten that load. Noah Manring, associate dean of research and professor of mechanical and aerospace engineering, and Roger Fales, assistant professor of mechanical and aerospace engineering, are designing a lightweight, highly efficient portable power generator that could replace some battlefield batteries.

They are collaborating with researchers from Vanderbilt University, Tennessee Technological University and the North Carolina-based International Technology Center. Manring and Fales are attempting to develop a vane motor - of the type typically used for pneumatic wrenches - driven by hot gas instead of compressed air.

"Today's vane motor derives its energy from compressed air or pressurized liquid; a hot gas-driven vane motor would get its energy from vaporized jet fuel produced by a chemical reaction," Manring said. "These sources of energy are extremely different, and require different motor designs."

The gas-driven vane motor would essentially do the job of a turbine engine, but provide power more efficiently and weigh less than turbines. Project goals call for a motor that weighs less than 300 grams, or about two-thirds of a pound.

"No one has a portable generator as compact as this will be," Fales said.

A prototype of the new motor should be available by June. Once completed, the new portable generator would provide power for the military's computers, telephones and radios, which would "reduce the need for storing energy in batteries," Fales said.

Source: University of Missouri

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