LAND FORCES

Load-carrying 'Exoskeleton' leaves the laboratory

US military research into how to enable soldiers to carry extremely heavy loads great distances is set to leave the laboratory and could be available for use by the end of the decade.

The system, under development at the Defense Advanced Research Projects Agency (DARPA), is a frame that will strap onto a soldier's back and fit around the lower body, enabling him to "carry a couple of hundred pounds for hours at a time" without getting exhausted, according to Dr John Main, DARPA's programme manager for the project.

If all goes well with the Exoskeleton programme, Main said, soldiers will have a tool that allows them to carry much more body armour, weaponry or other equipment than is currently possible, all without the strains of current loads that can often exceed 55kg. The extra weight could, in turn, allow special operations forces to carry more than 100kg of weapons and equipment into mountainous terrain not accessible by military vehicles, or it could allow marines fighting in cities to wear extra-thick body armour for greatly improved protection. Neither are possible today due to the weight constraints over-burdened soldiers are already subject to.

Researchers from the University of California (UC) at Berkeley in November took a prototype of their Exoskeleton's supporting tether and tested it without machine support. Full prototypes of the UC Berkeley effort and that of Sarcos – a second contractor on the programme based in Salt Lake City, Utah – will begin field testing in mid-2005. By the end of that year, Main said, selection of a single contractor is expected and a system could be ready for fielding in as little as five years.

Yet for all the science-fiction images the Exoskeleton programme conjures up, Main insists it is not intended to create superhuman killing machines. "The only superhuman thing they are trying to achieve is carrying weight," he said, explaining that the system "is essentially a robot" that reacts to the wearer. It straps on the wearer's back and around the lower body, using sensors in a plate under the foot and other locations to detect the user's motion. "If you are balanced, it will be balanced," Main said, noting the Exoskeleton reacts to what the wearer is doing.

Advances in digital networks and computing systems have been important technical breakthroughs in making Exoskeletons now possible as, unlike in the past, they are able to handle real-time motion control. The development of smaller power supplies is also an important technology.

Sarcos is developing a power supply under a separate effort, with the goal of being able to power the Exoskeleton for 24 hours on one tank of fuel. It would initially burn propane or gasoline but DARPA is working on using JP-8 aviation fuel.

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Soucy grips more of the Alvis range

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London

Canadian company Soucy International has signed a long-term exclusive agreement with Sweden's Alvis Hägglunds to supply the Soucy rubber track system for the Bv 206 all-terrain tracked vehicle.

Alvis Hägglunds has built more than 11,000 Bv 206s for the home and export markets and all future production vehicles will be fitted with the Soucy system.

Soucy International is already supplying its rubber tracks for the Alvis Hägglunds BvS 10 vehicle, which is in quantity production for the UK Royal Marines to meet its requirement for an All-Terrain Vehicle (Protected). The UK has ordered 108 vehicles, the first of which were delivered last year.

The Singapore Technologies Kinetics Bronco all-terrain tracked armoured carrier also uses a Soucy rubber track system. The Finnish Defence Force is currently evaluating the BvS 10 and the Bronco for a major contract.

Rubber track systems for the US United Defense M113 series were originally developed under contract to the US Army Tank-automotive and Armaments Command.

The first production batch of rubber track systems for the M113A2 armoured personnel carrier (APC) has been completed and trials with the system installed on the M113A3 APC are continuing. For the US market, Soucy has signed a marketing agreement with United Defense.

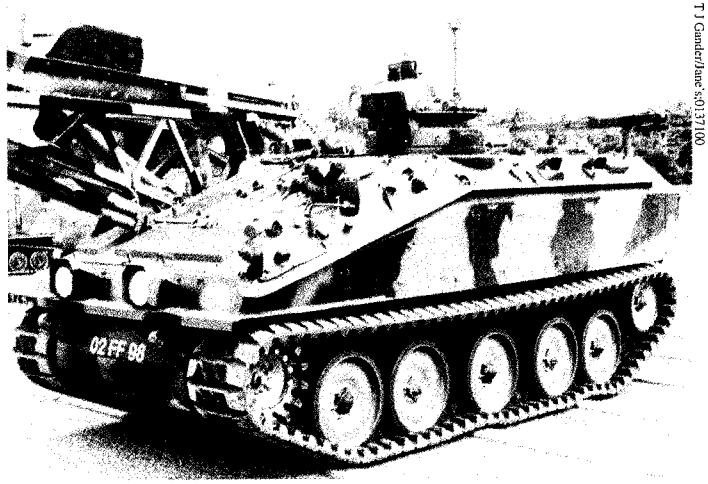
Full-tracked armoured vehicles normally have steel tracks with rubber pads, but it is claimed that rubber tracks offer a number of advantages, including lighter weight, longer life, less maintenance and a significant reduction in noise and vibration.

Rubber tracks have also been tested on many other vehicles, including the UK Alvis Vickers Spartan, a member of the widely deployed Combat Vehicle Reconnaissance (Tracked) light armoured vehicles family.

The Canadian company also supplied the rubber tracks fitted on the prototypes of the Sika and Lancer Tactical Reconnaissance Armoured Combat Equipment Requirement/Future Scout Cavalry System (TRACER/FSCS), the programme for which was cancelled.

Soucy has proposed its tracks for a number of new programmes such as the US Army's Future Combat Systems (FCS) and the UK's Future Rapid Effects System (FRES).

Rubber tracks have also been developed for heavier vehicles such as the United Defense Bradley infantry fighting vehicle. The Norwegian Army is testing the system on an Alvis Hägglunds CV 9030.



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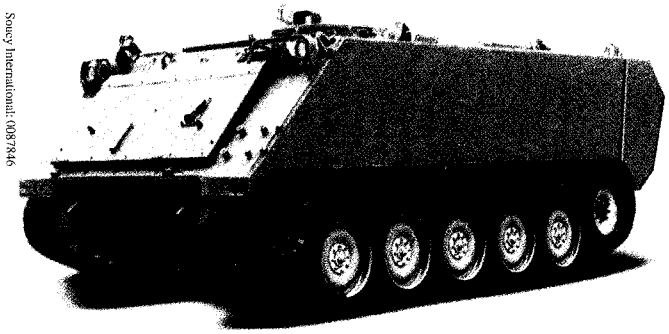
Alvis Vickers Spartan armoured personnel carrier **fitted with Soucy rubber tracks**



Soucy International: 0087846

United Defense M113-series APC fitted with **Soucy rubber tracks**