

U.S. ARMY SIGNS COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT WITH PERMO-DRIVE TECHNOLOGIES LTD.

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and development agreement with the U. S. Army $\hat{A} \square s$ National Automotive Center to evaluate
hybrid-hydraulic driveline systems for military and commercial applications, according to Max
Bosotti, Permo-Drive $\hat{A} \square s$ chief executive officer.

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WASHINGTON, D.C. -- Permo-Drive Technologies Ltd. has signed a cooperative research and development agreement with the U. S. Army $\hat{A} \Box s$ National Automotive Center to evaluate hybrid-hydraulic driveline systems for military and commercial applications, according to Max Bosotti, Permo-Drive $\hat{A} \Box s$ chief executive officer.

Prototype testing on vehicles in the United States and Australia has shown fuel-economy savings of up to 40 percent. Permo-Drive and the U.S. Army $\hat{A} \Box s$ Tank Automotive Research, Development and Engineering Center (TARDEC) in Warren, Mich., will test hybrid-hydraulic technology across a broad range of vehicles.

In addition to improved fuel economy, Bosotti said that Permo-DriveÂ□s regenerative braking and propulsion system has demonstrated an ability to significantly increase brake life and reduce hydrocarbon-and-particulate emissions for all classes of commercial vehicles.

A medium tactical military vehicle equipped with the new hybrid-hydraulic system was shown for the first time by Permo-Drive and the U. S. Army at the Association of the United States Army (AUSA) 2002 Annual Meeting in Washington, D.C. on October 21-23. Actual vehicle tests are slated to begin in 2003.

Permo-Drive expects to have prototype commercial vehicles equipped with hybrid-hydraulic systems available for testing in major North American vehicle fleets as early as next year and plans to introduce the technology commercially in 2004.

$\hat{A} \square$ In our modeling and simulation work to date, parallel hybrid-hydraulic systems show the potential to
provide significant fuel-economy savings for future generations of trucks,Â□ said Dennis J. Wend, executive
director of the U.S. Army National Automotive Center. Â□Additionally, these systems can be retrofitted onto
existing vehicles. $\hat{\mathbf{A}}\Box$

Referred to as a Regenerative Drive System (RDS) by Permo-Drive Technologies, the hybrid-hydraulic system captures previously unused energy generated through a vehicle s braking system, then releases the energy



back into the driveline as power is needed. Key $\hat{A} \square design \hat{A} \square$ features include: An innovative inline driveshaft, Â٠ Energy storage devices that utilize special composite materials, Ultra-light-weight metals, and Advanced hydraulic and electronic engineering. $\hat{A} \square RDS$ technology has the potential to save public and private fleet operators billions of dollars in fuel and maintenance costs,Â□ said Paul Chandler, Permo-Drive vice president of North American Operations. $\hat{A} \square$ The RDS system for new as well as retrofit applications represents a remarkable integration of vehicle dynamics, advanced hydraulics, mechanical engineering, accumulator research, material science, computer telemetry and electronics.Â Wend noted that $\hat{A} \square$ The U.S. Army operates a fleet of nearly 250,000 vehicles and is working to transform our fleet into a lighter, more mobile and more fuel-efficient fleet.Â The National Automotive Center (NAC) is a division of TARDEC and is the Department of Defense and U.S. Army focal point for collaborative research and development with industry, academia and other government agencies. The NACÂ \square s mission is to Â \square accelerate the infusion of commercially viable technology into military land warfare systems.Â□ Permo-Drive Technologies Ltd. is an Australian-based company with North American offices in the Detroit area. More information about the company is available on the Internet at <u>www.permo-drive.com</u>.

Permo-Drive Company Contact

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