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Hydro-Mechanical Actuator with Energy Recuperation Capability

Recuperative hydro-mechanical linear actuator recovers work to cut energy use, emissions, and onboard storage in mobile/industrial systems.

Linear actuators have broad applications in equipment across construction and industrial manufacturing. Despite this wide application, many conventional electromechanical actuators currently available are relatively energy inefficient. In response to this market need, researchers at Purdue University have developed a linear hydro-mechanical actuator that can recuperate energy. Over the lifespan of the actuator, this reduces total cost of ownership via reduced energy consumption, reduces greenhouse gas emissions, and minimizes the need for onboard energy storage. This technology can be integrated into existing vehicles to improve their economic and environmental viability for businesses in the industrial, aerospace, and automotive sectors, among others.

Advantages

-Reduced cost of ownership through greater efficiency

-Minimizes greenhouse gas emissions

-Reduces requirement for onboard energy storage

Applications

-Automotive

-Aerospace

-Industrial

Technology Validation:

This technology has been validated through an analytical assessment of the proposed technology. When used in a front-wheel loader, it is estimated that a 30% reduction in input power can be achieved.

Technology ID
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Category
Aerospace & National Security/Hypersonics & Propulsion Systems
Energy & Power Systems/Energy Storage
Automotive & Mobility Tech/Micromobility & Smart Urban Infrastructure

Authors
Lizhi Shang
Andrea Vacca

Further information
Parag Vasekar
psvasekar@prf.org

View online

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