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# Compact Electro-Hydraulic Actuator

**A compact electro-hydraulic actuator (EHA) utilizing a fixed displacement gear pump and unique valve system offers improved performance, weight/cost savings, and the ability to hold a fixed position regardless of external load.**

Electro-hydraulic actuators (EHAs) are well known for their uses in many applications and offer several advantages such as compactness, versatility, and weight reductions. Current EHAs using gear pumps are easy to manufacture, but have lower efficiency than other EHAs. Prior EHA systems do not guarantee the actuator speed control or the load hold.

Researchers at Purdue University have developed a compact EHA that is fully contained within an enclosed housing and offers improved performance compared to current devices. The EHA uses a fixed displacement gear pump, which ensures proper gear meshing and allows the actuator to be held in place regardless of external loading. The design also uses a unique valve system to save both weight and cost when compared to existing products. This EHA utilizes an external reservoir for easier maintenance of the system and manual safety valves that guarantee better release of the actuator in case of flow generation unit failure.

**Advantages**:

-Saves weight and cost

-Actuator can be held in a fixed position regardless of the load

-Easier maintenance for the system

Potential Applications:

-Aircraft

-Cargo and vehicle doors

-Hatches and landing gears

**TRL:** 6

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Robotics & Automation/Automation & Control

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**Intellectual Property:**

Provisional-Patent, 2013-08-19, United States | PCT-Patent, 2014-08-19, WO | NATL-Patent, 2016-02-18, United States | NATL-Patent, 2016-03-18, European Patent | CON-Patent, 2018-11-26, United States

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