



Hydraulic Energy Storage Systems

IP Status: Issued US Patent; **Application #:** 12/445,176

Hydraulic Energy Storage System

Hydraulic energy storage systems store energy by compressing air similar to a battery storing energy in an electric circuit. Existing hydraulic accumulator designs are large and heavy due to the need for two storage tanks and do not have the high energy density needed for many applications.

The need for two storage tanks and two accumulators can be eliminated and the entire hydraulic energy storage system is an open loop. The storage requirement is smaller because depressurized air is not stored. The hydraulic open loop accumulator works by drawing air in from the atmosphere and expelling air into the atmosphere. A separate hydraulic pump maintains the pressure balance of the air by increasing the amount of hydraulic fluid in the system. This results in a steady pressure of air and up to 24 times the energy density of a standard hydraulic accumulator.

This hydraulic energy storage system has applications in energy storage for wind turbines, regenerative braking systems for hybrid cars that could partially power the car, and energy storage for power construction equipment.

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Technology ID

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Category

Engineering & Physical
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FEATURES AND BENEFITS OF THE OPEN ACCUMULATOR:

- Requires up to 25 times less air which means less weight, and greater energy storage potential compared to traditional systems
- Lower capital equipment cost due to its smaller size and lighter weight
- Up to 24 times the energy density of comparable standard accumulators

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