

In this paper, a hydraulic energy-storage wave energy conversion system is constructed, and a mathematical model of main components is built for analysis. Control strategies of generator-side and grid-side are defined for the system, where a Vienna rectifier is applied to converter of generator-side.

A decentralized variable electric motor and fixed pump (VMFP) system with a four-chamber cylinder is proposed for mobile machinery, such that the energy efficiency can be improved by hydro-pneumatic energy storage, and problems of closed-circuit pump-controlled systems including asymmetrical flow and speed limitation are addressed. One of the ...

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In this paper, the circuit structure of two control modes of a hydraulic control system (valve control system and pump control system) and their related control algorithms (fuzzy PID control, adaptive robust control) for reducing system energy consumption are studied.

In this paper, the circuit structure of two control modes of a hydraulic control ...

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hydraulic energy storage and pressure drop feedback control were presented. In addition, results about physical testing of the constructed IWEG simulator were also presented. The control signal based on a motor pressure drop database was experimentally obtained from the IWEG system. 2 Working principle of the IWEG system To capture wave and current energy, a catamaran-type ...

A decentralized variable electric motor and fixed pump (VMFP) system with a ...

More energy efficient circuits eliminate cylinder control valves altogether, where stored energy is not dissipated into heat. Circuits such as these are denominated pump-controlled actuators [or "hydrostatic actuators" (Costa and Sepehri, 2015)] and are a direct evolution from "hydrostatic transmissions," where a hydraulic motor is directly connected to the pump.

(2) Energy storage stage. Valves 7 and 9 are opened. The remaining power is used to drive the pump to extract water from water tank to high-pressure vessel. When air is compressed, heat is released; therefore, a minute amount of water will be sprayed to the upper section of high-pressure vessel for cooling through the pipe where valve 9 is ...

According to the characteristics of a hydraulic system, a control strategy of a three-position four-way electromagnetic directional valve suitable for adaptive energy storage system is...

Considering the hydraulic system, energy efficiency can be increased by reducing throttling losses and energy storage/re-utilization. There are two ways to store the potential/kinetic energies, including electric and hydraulic energy regeneration systems (EERS and HERS) [3, 4]. The EERS usually contains a hydraulic motor, generator, electric motor, ...

The hydraulic energy-storage devices are more stable, ... The hydraulic autonomous control system switches on hydraulic motor when the pressure of the accumulator rises to a default upper-bound value. The permanent magnet synchronous generator (PMSG) rotates and generates electricity, which is rectified and inverted in turn by feeding into the full ...

Current research on HWTs pays considerable attention to improve the power capture performances and electrical grid connection by applying advanced control strategies. 25-27 Some research are relevant to active power smoothing control by HWT. The 60 L hydraulic accumulator was added to a 50 kW HWT, and a control strategy proposed for the energy ...

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