Perancangan dan analisis sistem hidrolik pada controllable pitch propeller = Design and analysis of hydraulic system on controllable pitch propeller

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Abstrak

Mekanisme sistem hidrolik Controllable Pitch Propeller berperan penting dalam mengatur dan mempertahankan sudut pitch, sehingga sistem hidrolik pada CPP penting untuk dipelajari. Namun, masih jarang ditemui literatur atau penelitian yang membahas masalah ini. Penelitian ini akan merancang mekanisme sistem hidrolik CPP serta mensimulasikannya dengan menggunakan MATLAB. Mekanisme sistem hidrolik terdiri dari komponen utama berupa pompa, directional control valve, sistem perpipaan, aktuator dan komponen pendukung berupa pressure reliefe valve dan load sensing. Aktuator pada sistem ini mentransmisikan gerak translasi menjadi rotasi. Hasil simulasi didapatkan karakteristik tekanan diferensial dan pompa, volume, buka-tutup katup dan debit aliran serta gerak aktuator. Sistem hidrolik ini mampu mengubah sudut maksimum 33° dalam waktu 12 detik.

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Mechanism of hydraulic system of Controllable Pitch Propeller had an important role to settle and defend the pitch angle, therefore the hydraulic system on CPP is an important to learn. However, it is still rare literature or research that addresses this issue. This research will design a hydraulic system mechanism CPP and simulating it by using MATLAB. Mechanism hydraulic system consists of the main components in the form of pump, directional control valve, piping systems and actuator, and supporting components form pressure reliefe valve and load sensing. The actuator in this system transmitted the translational motion into rotational motion. The simulation results obtained characteristics of differential pressure and pump, volume, open-close valve, flow and motion actuators. The hydraulic system is capable of changing the angle 33° maximum within 12 seconds.