

# Design and Study of the Experiment Platform of Series Hydraulic Hybrid System

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## ABSTRACT

This thesis aims to design a series hydraulic hybrid system platform for testing the hydraulic hybrid vehicle by using the existing hydraulic components on the platform. The platform can simulate real driving conditions by the mode setting for real driving situations. The experimental data of energy recovery in driving mode are discussed in order to develop hydraulic hybrid system in a real vehicle. At first, the hydraulic circuit for the series hydraulic hybrid system is designed, then Matlab/Simulink is used to build the model of the platform. In the simulation platform, we define the steps for real operations. The data from the simulation are recorded and compared for discussion of the efficiency. Then, the CAD software, SolidWorks, is used to build 3D models of components of the test platform and the real hydraulic components are integrated into it to achieve the desired operation modes. In the platform, the pressure sensors and encoder are used to measure the pressure signals of accumulators and the rotational speed of flying wheel respectively. After building the hydraulic hybrid system platform, PLCs are used to control the platform and an AD/DA card installed in a PC controller with Matlab/Real-time Window Target as the real-time OS. The data recorded from the platform are verified and compares with simulation results.

Keywords : hydraulic system, series system, energy recovery, hybrid vehicle

## Table of Contents

第一章 緒論	1
1.1 前言	1
1.2 文獻回顧	5
1.3 研究目的	7
1.4 本文架構	9
第二章 液壓混合動力系統介紹	11
2.1 液壓混合動力系統種類介紹	12
2.1.1 並聯式液壓混合動力系統	12
2.1.2 串聯式液壓混合動力系統	14
2.2 液壓混合動力系統元件介紹	16
2.2.1 液壓幫浦馬達種類	16
2.2.2 液壓蓄壓器種類	18
2.3 液壓混合動力系統能量儲存特性	20
第三章 液壓混合動力平台規劃與設計	25
3.1 液壓混合動力系統平台規劃	25
3.2 液壓實驗平台作動流程與模擬	31
3.2.1 平台作動流程介紹	32
3.2.2 平台系統迴路模擬分析	36
3.3 液壓混合動力平台設計	48
第四章 平台操控及硬體迴路建構	54
4.1 實驗平台硬體設備說明	55
4.1.1 平台初始端	55
4.1.2 平台蓄壓端	57
4.1.3 平台驅動端	58
4.1.4 平台飛輪端	60
4.2 實驗平台控制架構	61
4.3 實驗平台作動測試	69
4.3.1 作動盒測試平台作動	69
4.3.2 電腦測試平台作動	71
第五章 液壓混合動力系統實驗與分析	74
5.1 平台之FCV控制與飛輪轉速開迴路實驗	75
5.2 平台之高壓蓄壓器A1儲能開迴路實驗	80
5.2.1 A1蓄壓器與飛輪之轉速及壓力響應實驗	80
5.2.2 A1蓄壓器之儲能計算	89
5.2.3 A1蓄能效率實驗結果與模擬之比較	93
第六章 結論	100
6.1 實驗結論	100
6.2 未來展望	102
參考文獻	104

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