A Study on Self-Design and building Energy of Small Underwater Vehicle

謝德中、梁卓中

E-mail: 9511389@mail.dyu.edu.tw

ABSTRACT

Taiwan is located at the center of Western Pacific Archipelagos, and it is surrounded by ocean, so the oceanic traffic is very important. In recent years, many shipwrecks and flight crashes have been occurred, and orientation technique is needed to find the survivors. On the other hand, the investigations and developments of undersea oil tubes, undersea oil field, exploration of mineral, scientific research of deep sea, undersea tour, and military uses show the importance of undersea works. Small underwater vehicles are worth applying in the respect of national defense and some commercials. The current elative design and establishing technique of underwater vehicles are in the very begging. In this study, the development history and tendency of underwater vehicle have been collected to be the reference of future development, and the hydrologic environment of Taiwan Strait was discussed to conclude the kind and characteristics of underwater vehicle which is suitable in Taiwan. To make this study more valuable, questionnaire of self-design and establishment of underwater vehicle was designed, and by the method of questionnaire and telephone questioning, scientists in every field were invited to offer their opinions about the design of underwater vehicle, and the estimation of current domestic energy to design and establish underwater vehicle was concluded. Moreover, the items of key techniques were constructed by collecting relative references and arranging the questionnaires. It is hope that this study can offer information to the future design and establish of underwater vehicle.

Keywords : Small underwater vehicle, energy estimation, key technique, self-design and establishment

Table of Contents

REFERENCES

[1] Charles Gorlaud “ The Design, Construction, Testing, and Operation of a Deep-Diving Submersible for Ocean Floor Exploration ” ,1968 [2] Willian Watson., “ The Design, Construction, Testing, and Operation of a Deep-Diving Submersible for Ocean Floor Exploration ” , ” 1971 [3] 錢懷源，譯潛艦過去現在與未來，1976 [4] 張家成、呂學揚編譯.，潛艦設計，台北大直，1989 [5] Douglas.Deans., “ Effect of Opening in Ring-Reinforced Shell ” ,Marine Tech. ,Vol.27,No.1,1990 [6] Eugene Allmendinder, “ Submersible Vehicle System Design, ” pp.221-227,1990 [7] 何小林，潛艦作戰任務與特性，海軍學術月刊，第25 卷，第 8 期，p9-22，1991 [8] 鄧元黎，潛艦建造及其未來發展，海軍學術月刊

，第25 卷， 第8 期，p51-55，1991 [9] 鄭勝文、邱逢琛，譯水下技術概論，台北，1997 [10] 任展勇、梁卓中，單球殼深海載具壓力殼強度探討，第七屆 軍艦工程研討會，pp.167-184，1999 [11]顏君強，潛艦設計發展與建造 ”，中山科學研究院水下工程學 術研討會論文合訂本(第一冊)，1998 [12] 梁卓中，水下載具系統設計之探討，水下工程學術研討會摘 要集，pp3，1998 [13] 梁卓中、任展勇、賴文豪，深海探測及救難潛艦壓力殼之設 計與製造 ”，海軍學術月刊，第33卷，第1期，pp.73-82，1999 [14] 李繼文，我國自製潛艦能力分析，碩士論文，國防大學國防 管理學院戰略班，桃園，1999 [15] C.G.L.Van der Nat.,“ A Knowledge-base CEM for Submarine Design, ” 1999 [16] 陳本民、俞何興、鄭偉力、陳汝勤、宋士國，台灣四週海域 之海底地型及沉積，台灣大學海研所三十週年所紀念專文， 1999 [17]..Stan Zimmerman.,“ Submarine Technology for the 21st Century, ” 2000 [18] 劉復光，雙人潛水載具設計之研究，海洋技術季刊，第11卷，第4 期 [19] 沈士均，潛艦設計系統與其關鍵性技術之探討，碩士論文， 國防大學中正理工學院，桃園，2001 [20] 徐大成，我國中型造船廠之發展，碩士論文，國立成功大學， 台南，2001 [21] 梁卓中，台灣之造艦工業能量，國防政策評論，第2 卷，第 2 期，2001 [22] 林武文，無人水下載具發展趨勢及軍事之運用，海下技術季 刊，第36卷，第7期，pp.43-48 [23]..詹森、王玉懷、邱朝聰“ 台灣海峽短期預報系統之發展 ”，海 洋數值模式研討會，2001 [24] 邱逢琛，自主性水下載具的時代已經來臨了，海下技術季刊， 第12卷，第3期，pp.30-32 [25] 戈思敬，潛艦救難設備，2002 [26] 陳生平，潛艦外型演進與設計能力提升，第十屆軍艦工程研 討會，2002 [27] 林建璋，小型水下載具外型規畫研製之研究，2002 [28] 國防工業發展基金會委託學術機構-小型水下載自行研製之 可行性評估研究計畫-總計畫，2002 [29] 毛正氣，濱海環境參數與戰場環境及時遇報模式，海軍學術 月刊，第37卷，第2期 pp60-66 [30] 國防工業發展基金會委託學術機構-小型水下載自行研製之 可行性評估研究計畫期中成果報告，2004 [31] 高其翰，軍用無人水下載具之現況與未來發展趨.勢 ” 海洋技 術季刊第十三卷第三期 pp10-14 [32]. Pascal Mauron.,“ A small history of submarine, ” 2005 [33].夏曉文、林良全、任展勇，建構潛艦概念設計階段分析模式 之研究 ” 海軍學術月刊，第39卷，第五期，pp90-99 [34] 陳彥豪、陳彥豪、馬仁宏、王靜音、許家豪、黃思源、張國 城“ 國造小型潛艦之策略建議 ”，2005 [35] 第六屆水下工程學術研討會論文集，台北，2005 [36].國防工業發展基金會委託研究計畫-小型水下載自行研製之可 行性評估研究計畫期末成果報告 [37] . http://www.kepu.net.cn/gb/technology/robot/index.h.tml [38].. http://www.rov.org/Industry.cfm [39].. http://www.ncor.ntu.edu.tw/ODBS/Achievement/atlas/page1.htm [40].. http://www.defenseindustrydaily.com/2005/12/uuv-swarms-to-fi [41].. http://www.chinataiwan.org/web/webportal/W4697494/Uyyping [42]. http://www.csbcnet.com.tw/csbc/ [43] . http://www.submarine-history.com/NOVAfour.htm [44] . http://www.ise.bc.ca/WADEwhatisan [45] . http://dir.pchome.com.tw/science/datadase/agriculture/ [46] .. http://140.116.40.9/lab/Lab3/lab1.htm