



潛艦教練儀

Submarine Operational Simulator



主要特色：

- 浮航操作訓練。
- 呼吸管航行操作訓練。
- 潛航操作訓練。
- 緊急上浮/下潛操作訓練。
- 平衡分析訓練。
- 故障排除訓練。
- 潛航性能擬真與實艦相近。
- 採用電路訊號轉換系統，可讓訓練艙快速切換不同輸出入介面。
- 研發商規同步複示器，裝備維持與零備件籌補無虞。
- 系統操作自動化，三分鐘內完成系統開關機。
- 系統軟體採分散式雲端設計，取代傳統網路連網功能。
- 具備液壓系統以提供艦身角動態模擬。
- 強化聲納聽音能力。

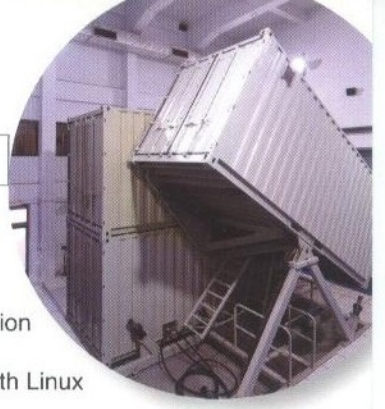
Key Features

- Operational Training for the complete surfaced behavior of the submarine.
- Operational Training for the complete snorkeling behavior of the submarine.
- Operational Training for the complete diving behavior of the submarine.
- Operational Training for the complete emergency surfacing/diving behavior of the submarine.
- Trim analysis.
- Malfunction training.
- Accurate steering training.
- Adaptive designing for the I/O subsystem of the simulator, so that the trainer cabin can be interfaced with various I/O subsystems rapidly.
- New designing for Repeater, maximum use of Commercial Off-The-Shelf (COTS) hardware and software.
- Totally automation for System Power on and Power off.
- Clouding computation designing for system software.
- Supporting a hydraulic system to realize the pitch motions of the moving base.
- Enhancing the capabilities for the sonar of man-training and hydrographic analysis.



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主電腦系統

- 負責舵翼操控軟體即時運算。
- 四核心硬體架構具Linux開放式作業系統。
- 連網採雲端設計。

音效系統

- 負責環境音效模擬。
- 採用自由軟體OpenAL開發設計，可適用微軟XP及Linux作業系統。

教官台系統

- 全系統之控制中心，提供艙體面板測試、模擬啟停、課後評估及全系統開關機等功能。
- 提供模擬進行中，各操控台重要參數監控顯示。
- 具觸控液晶顯示器。
- 中英文操作及顯示。
- 提供兩位教官可同時操作。

輸出入界面系統

- 4U工業電腦，PCI多插卡式架構。
- 提供訊號接頭轉換電路卡，可讓原艙體硬體功能不經任何修改，就能快速地與輸出入介面系統整合。
- 提供離線及上線偵錯功能。
- 軟體可提供虛擬與真實艙體同時操作。
- 軟體以服務(Service)隨機啟動。

液壓系統

- 真實反應潛艦動態模擬之艦身角。
- PLC控制軟體並具安全保護機制。

聲納聽音教室

- 具備良好的隔音效果。
- 可容納15名(含)以上受訓學員，且每位學員皆具獨立的空間與獨立的聽音設備。
- 室內採階梯教室設計並具視聽功能。
- 提供聲音編輯及頻譜分析設備。

Host Computer System

- The host computer is responsible for real-time executing steering simulation model.
- Quad cores architected with Linux Kernel.
- Cloud computation for networking.

Sound system

- The sound system is responsible for generating environmental sounds generating and simulation.
- Sound development environment adopts OpenAL freeware, it can be available for Microsoft XP and Linux.

Instructor Operating System

- Providing the totally system control capabilities, such as Panel testing, simulation start/stop, simulation evaluation and system power on/power off, etc.
- Provide the real-time monitoring capability for important parameters of control panels while simulation is in progress.
- Support two touch LCD displays.
- Support Chinese/English language display.
- Provide the synchronization mechanism for two instructors operating simultaneously.

I/O System

- Two of 4U Industrial computers associated with multiple PCI-slots and I/O controller cards, such as DI, DO, RI and RO, etc.
- Provide an adaptive patch panel converter so that the training cabin can be interfaced with various I/O computers rapidly, reducing the risk and minimizing the cost of I/O system upgrade.
- Support a graceful debugging tool while working is on-line and offline.
- I/O control software can work for virtual and physical panels existing simultaneously.
- I/O control software is designed to a service, starting up automatically when computer powers on.

Hydraulic System

- Realize the pitching motions of the moving base while simulation is in progress.
- Associated with PLC control software, and provides the rigorous safe protection mechanism.

Sonar Man-training & Hydrographic Analysis Center

- Provide valid sound insulation effect.
- The classroom can accommodate at least of 15 trained students, and each student has individual equipment.
- Indoor adopts the design of a lecture theater, associated with the audio-visual functions.
- Support the device and tool for audio editing and sound spectral analysis.



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