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College of
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Poster Book

IIIDBEE X 2023
20 JANUARY 2023
*International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023*

**College of Built Environment
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**Unleashing Potentials
Shaping the Future**

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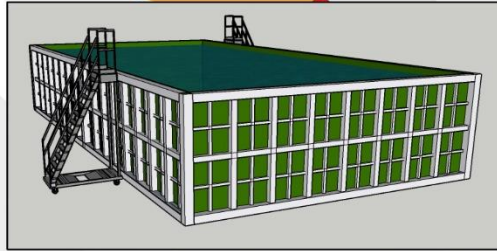
MODULAR MOBILE POOL STRUCTURAL & FILTRATION SYSTEM FOR MILITARY TRAINING & FITNESS TEST

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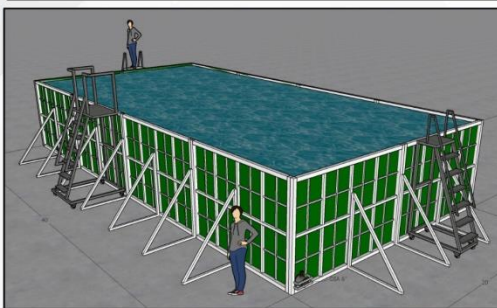
INTRODUCTION

Military training and periodical assessment is important in preparing a well built soldier physically and mentally. Hence, supporting facilities and equipment are necessary in implementing this exercises and tests. The problem in this study is lack of water-pool facilities at medium or small military units in the country. The aim of this research is to design and prototype a modular mobile pool for floating exercise and test for military personnel. The study is conducted in partnership with Kor Kejuruteraan DiRaja in achieving the goals. The objectives of the study is to design, simulate, prototype and built the modular mobile pool for military uses



ISSUES/ PROBLEM STATEMENT

Military training and fitness test is a continuing procedures and routines throughout all three branches of Malaysia Arm Forces. Besides combatant exercises and others military tasking, fitness test is one of the most important measures in assessing level of physical abilities and readiness towards any duty calls while serving. Since training were carried out at bases and remote field, the requirement for water-pool in conducting aquatic-based physical training and testing. The main issue in handling this physical training and test is the limitation of military bases that have water-pool facilities in the country besides main Military Bases. The problems are further supported with the high-cost to build and maintain the water pool, location of the military unit or training ground are remote and far-away from main bases with such facilities and aquatic-based fitness ability test done periodically which not viable to build a permanent pool of such huge cost.



FINDINGS

The project novelty to design and prototype a modular mobile pool for military floating training and fitness testing which can be easily assembled and dismantled, lightweight and sturdy, ease of mobility and storage, and huge cost saving for construction and maintenance expenditure. The second novelty is the attachable filtration system which include, overflow channel, overflow pool, filtration and pump system. Design framework and component blueprint for on-site application and further research commercialization (co-ownership of ipr/patent by UiTM & Kor Kejuruteraan DiRaja)

OBJECTIVES

1. To design + engineering element/system for modular and mobile pool.
2. To simulate & measure efficiency of the design + engineering element/system for modular and mobile pool.
3. To prototype modular mobile pool with structural integrity, material durability and water filtration system.
4. To apply and measure the efficiency of design + engineering design/system on-site (military base)



CONCLUSION

The material and method for this installation is convenient, easily constructed and dismantle, it is also a light weight materials and durable, and low-cost, It does not require advance tools, and can easily transported.

NOVELTY

The novelty of The innovation is to deign and construct the first modular mobile pool for military training and fitness test in Malaysia.

METHODOLOGY

PHASE 1

Content Studies & Design Profiling

- Project briefing & a statement from Kor Kejuruteraan DiRaja
- Study of literature and design methodology for pool structure & filtration system
- Design problem definition and objectives
- Design Ideation
- Conceptual Design of modular mobile pool profile

PHASE 2

Digital Prototyping, Evaluation & Testing

- Digital Prototyping of modular mobile pool
- Structural integrity and material suitability
- structural component & modulation system
- Computational Fluid Dynamic simulation of digital prototype
- Data analysis, validation and conclusion
- Research report & publication

PHASE 3

Content Studies & Design Profiling

- Physical Prototyping of modular mobile pool
- construction method and materials
- water filtration system solution
- modular (construct & deconstruct) + mobile



COMMERCIALIZATION

It is a viable, however the product is under prototyping stage for further development.

CONFERENCES & PUBLICATION



Modular Mobile Pool Structural & Filtration System for Military Training & Fitness Test.

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Abstract

Military training and periodical assessment is important in preparing a well built soldier physically and mentally. Hence, supporting facilities and equipment are necessary in implementing this exercises and tests. The problem in this study is lack of water-pool facilities at medium or small military units in the country. The aim of this research is to design and prototype

RECOGNITIONS

