

## A STUDY ON FLOATING BUILDING

<sup>1</sup>Dr. K.Chandramouli, <sup>2</sup>J.Sree Naga Chaitanya, <sup>3</sup>M.Chaitanya Nava Kumar, <sup>4</sup>Jaladi Ammulus

<sup>1</sup>Professor & HOD, <sup>2&3</sup> Assistant Professor, <sup>4</sup>B.Tech Scholar

Department of Civil Engineering, NRI Institute of Technology, Visadala (V), Medikonduru (M), Guntur, Andhra Pradesh, INDIA

### ABSTRACT—

The main objective of the present study was to provide an overview on a floating house to make it an energy-efficient performance. As it is known, environmental issues such as rapid increase of human population, exhaustion energy resources, global warming and rising sea levels have influenced the ecosystem and biodiversity. This paper presents technical opportunities and ways which should be considered during the design process and innovative arrangements. The floating concept behind floating houses allows them to be constructed without requiring a foundation. Because, these are also known as buoyantly houses.

**KEYWORDS:** Floating building, Ecosystem, Energy efficient, floating architecture, Floating houses, Buoyant houses

### I. INTRODUCTION

Floating architecture is a new type of construction that utilizes water instead of land. It is a unique architectural style that allows people to live on water without having to build on land. The idea behind floating architecture is to provide an alternative living environment for those who do not want to live on land.

In foundation engineering the word "floating" is used when the load applied to the structure is less than the weight of the soil displaced by the footings so that the soil does not experience any additional loading. A floating building is an immobile structure that can only be found in one place and cannot be moved.

Floating buildings are considered environmentally friendly since they do not affect the sea floor or other marine life.



**Fig-1: Floating house**

Floating houses or buildings is like conventional houses and are often characterized as houses built on water in such a manner that the structure's weight is equal to or less than that of the water, allowing them to float in water.

**The floating houses are classified into two different types. They are:**

- a. Houses that permanently float
- b. Houses that float during floods

#### **a. Houses that permanently float:**

#### **Construction:**

This floating house must be built using a technology that ensures their ability to float even in the absence of support. Since it's a relatively new technique, the building's construction costs will go up as a result.

The house is situated inside a wet dock made up of base slabs and retaining walls. The dock fills with water when there is flooding, and the home rises in response. Similar to how when water recedes, buildings collapse. Such "amphibious" residences have flexible water, gas, electricity, and sewage disposal pipes, ducts, and wires that are created to continue working even when the house is raised several meters above its normal position.

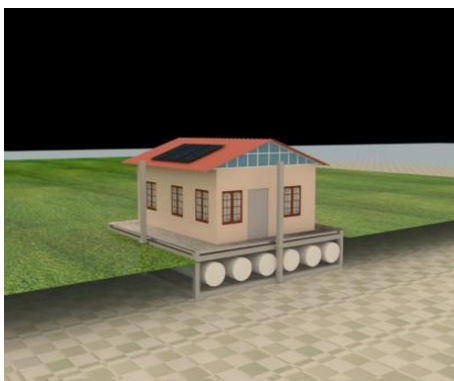


**Fig-2: Amphibious houses & views**

**b. Houses that float during flood or Moving houses:**

**Construction:**

Building mobile houses is a relatively simple process. In one case, the envelope of the floating house was constructed at the fabrication yard, towed on the lake for about 80 km, and then anchored. As a result, the exterior of the house can be created, shown to the client, and towed to the construction site. It will be necessary to secure the entire construction to the ground. If the home owner decides to move in the future, it can be taken apart and reinstalled elsewhere. Through the use of modular components like kitchens, bathrooms, and bedrooms, interiors can be arranged to meet specific needs. Such houses might succeed in small towns or even cities when one has the means. The joining of such structures is likewise simple.



**Fig-3: houses that float during flood or Moving houses**

**II. DESIGN CONSTRAINTS:**

Constraint	Max	Min	Average
Wind speed	45Kn	-	7 to 22Kn
Air temperature	22 <sup>0</sup> C	5 <sup>0</sup> C	10 to 19 <sup>0</sup> C
Sea temperature	21 <sup>0</sup> C	10 <sup>0</sup> C	11.5 to 19.5 <sup>0</sup> C
Wave height	14m	-	2.5 to 5.5m
Wave period	15.5sec	-	5.5 to 9.5sec

The above table shows that: the parameters can be considered in the design of superstructure.

**III. ADVANTAGES OF FLOATING BUILDINGS:**

The advantages of floating buildings are:

- Moving floating structures from one area of a water body to another area of the same water body is relatively simple and affordable.
- In addition to steel and wood, the majority of the components of floating constructions are manufactured utilizing prefabricated technologies.
- Construction of floating structures takes about half as long as that of conventional buildings.
- The cost of floating buildings or constructions is often 20–30% less than that of conventional ones.
- The rate of deforestation is decreased overall when water space is utilized instead of land space.

**IV. CONCLUSION:**

There is a conflicting worldwide situation going on right now. Social and climatic changes are developing.

In order to meet the challenge of the future, academics, architects, and engineers must be able to design and build floating houses for India's future coastal and flood-prone

areas. It would also be a good idea to develop the concept of transportable ready-made houses, particularly for row houses and government-funded programs because they would prove to be high-quality expandable houses and could be built fast depending on the money available.

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