

HELIOFLOAT Platform - Light-weight Structure with High Swimming Stability

Light-weight construction | offshore platform system | CSP PV CPV | marine biotech cultures | desalination | floating housing, sports and event locations | anchoring places and heliports

HELIOFLOAT platforms' main features are low cost and high swimming stability. The mechanical action between platform and water waves is minimized by open bottom flexible membrane air cushions. The platform height allows waves to pass beneath the platform at all design conditions, including storms. The system is able to cope with open sea conditions and thus to make full use of the advantages of offshore industrial arrangements: plenty of space, cooling seawater and minimal costs for a maximum of sun exposition or sun tracking.

Background

The need of big surfaces for concentrating solar power plants in densely populated Europe was the challenge for Vienna University of Technology to develop an offshore platform system with the help of the funding programme Research Studio Austria: RSA HELIOFLOAT.

Technology

HELIOFLOAT Platform features are:

- Light-weight top platform constructed from truss or pneumatic structure
- Support by pressurized air chambers in cylindrical flexible membrane skirts
- Blower lifting the platform above sea level (typically 3-15m, depending on design)
- Additional conventional buoys for transport and security
- Additional cost efficient sun tracking system
- Anchoring system

Advantages

- Light-weight (5-50kg/m²) low cost structure
- Minimized bending stress of top platform
- Height compensation through pneumatic support minimizing wave excitation
- Cost efficient system for sun tracking in solar power generation systems
- Easy transportation and assembly

Potential applications

The platform system can be used for solar power generation (CSP, PV, CPV), for marine biotech cultures, desalination plants, offshore

housing, sports and event locations, for floating stages, anchoring places and heliports.

*Fig. 1: HELIOFLOAT Platform 4m*4m model*



State of development

The system is experimentally proven for the full range of possible wave conditions at a scale of 4*4m platforms. Tests done at Vienna Model Basin Ltd. included stormy conditions. Designs up to 300*300m are available.

Options

R&D cooperation: planned pilot project to validate the technology for the scale range between 50*50m and 100*100m.

Inventors

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