



ARTWAVE SURF

FORCE OF NATURE





IMPOSSIBLE LOCATION



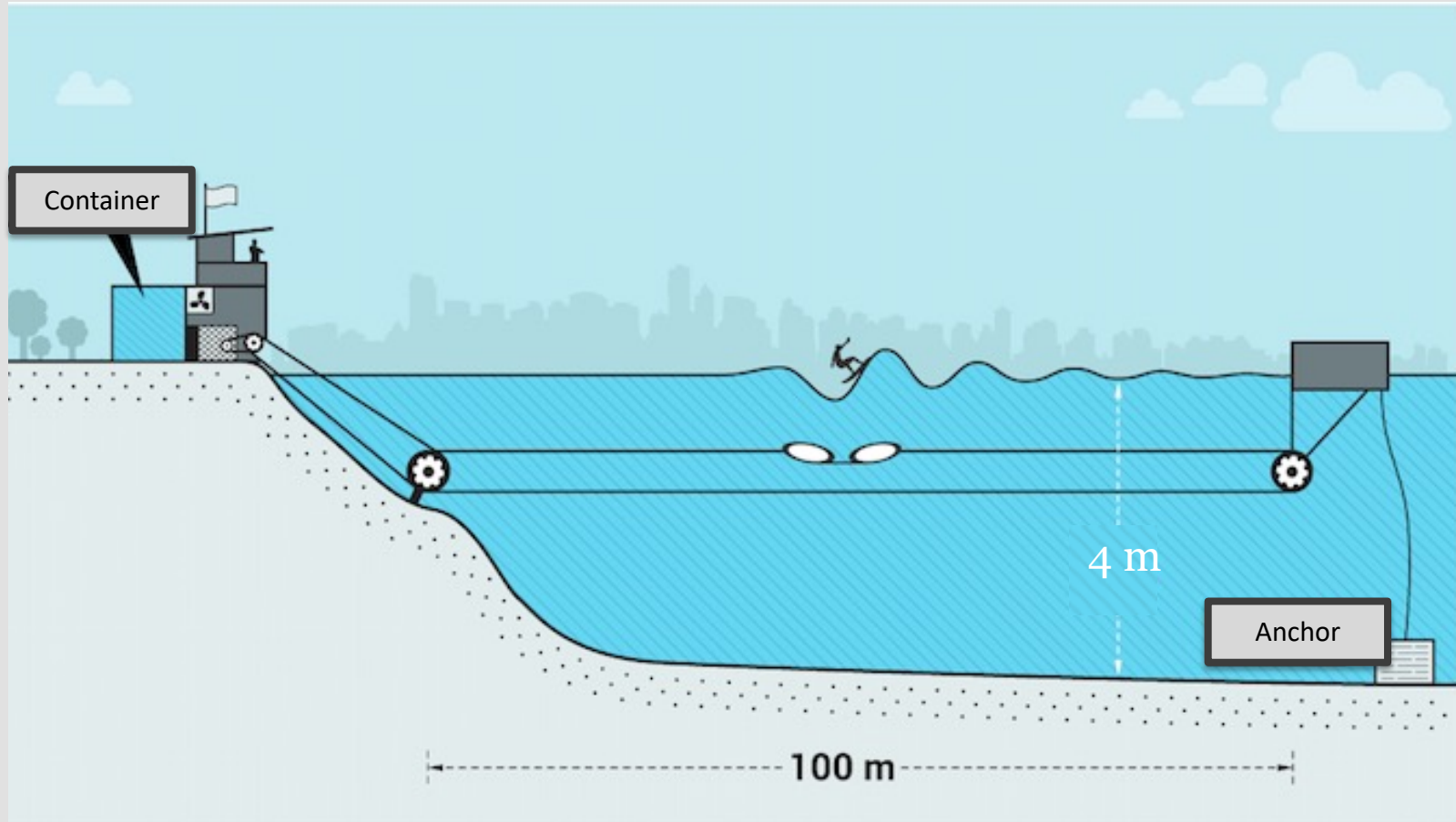


MAN ON ARTWAVE FIRST TIME 2014

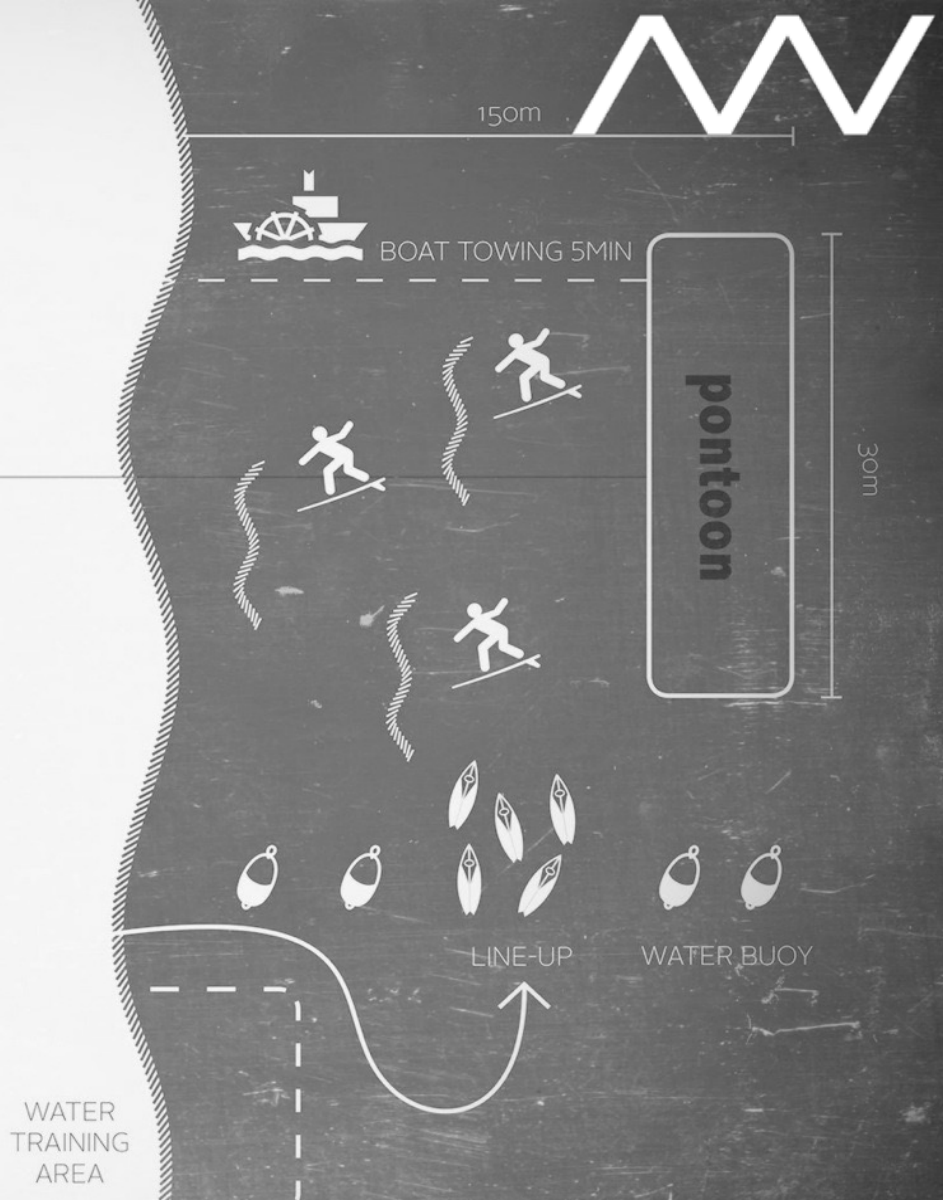




THE SOLUTION



THE AREA SETUP





A TURNKEY DELIVERY

- 3 – 6 feet waves
- 30 – 300 surfs per hour
- Wings (width 27 - 40 feet)
- Ropes
- Electric engine





LOCATION REQUIREMENTS

Body of water 150m + 50m per one system

Depth of water min 4m

Availability of 400V, 600A electricity

Stable waterline construction for an engine container

No trace principle

- no permanent change to environment

- risk of erosion needs to be considered

- seabed sediment vulnerability needs to be considered

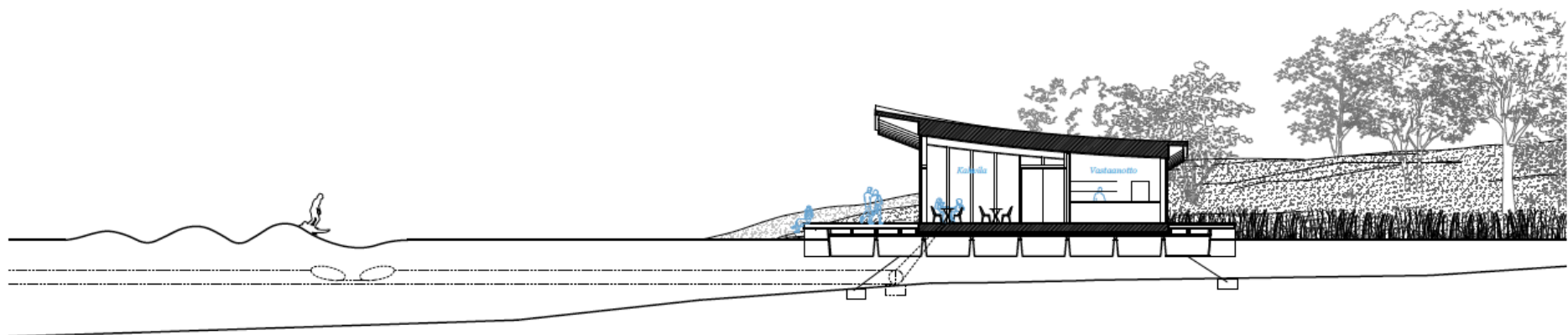


ARTWAVE

- Technology development since 2011
- Aalto University research project 2013-2014
- Prototype 2014: 1st surfed wave in Helsinki dock pool
- Artwave Surf Ltd. established 2014
- Finnish patent 2015
- Australian patent 2016
- Europe patent 2017
- Finnish test-site 2018
- Artwave Aeration 2020
- Artwave RC development begins 2021
- Test site development and production testing 2022-2023

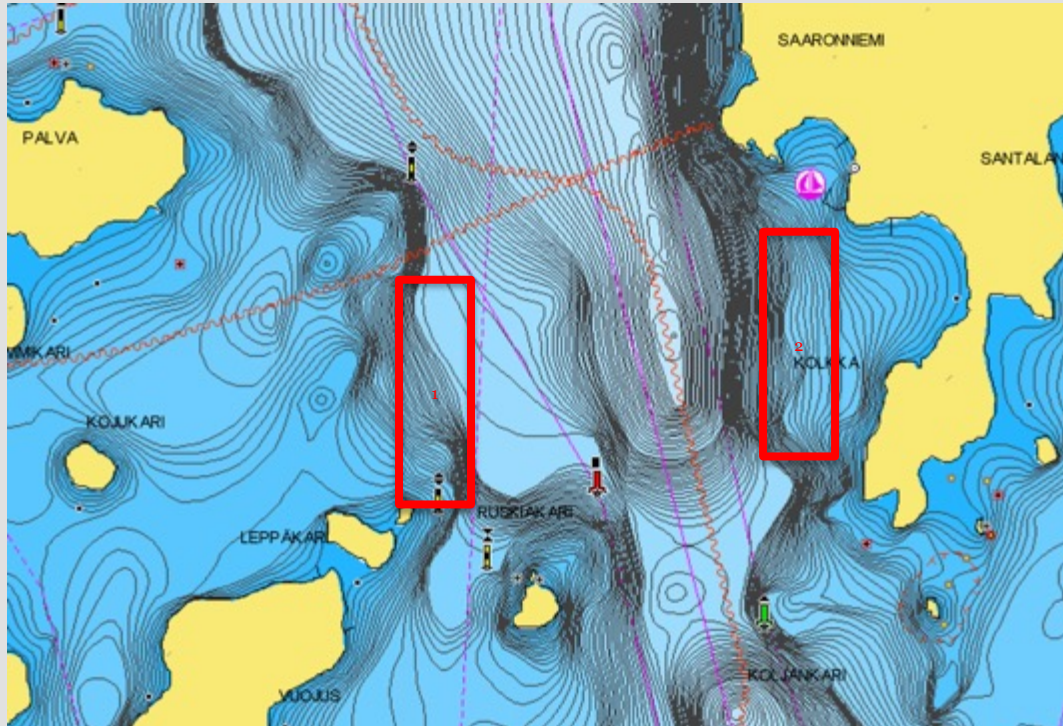


ARCHITECTURAL PLANNING OF FLOATING SITE, HELSINKI 2021-





ARTWAVE AERATION TURKU: PLANNING 2021-



- Turku archipelago water quality is negatively affected by blue-green algae (cyanobacteria ie. sinilevä)
- Basin floor sediment partly oxygen-depleted and polluted
- Water quality and dissolved oxygen levels are low
- Water aeration brings potentially quick improvement



THE ARTWAVE RC SOLUTION DEVELOPMENT BEGINS

- Fully automated system with no fixed construction is in development process
- Technology is based on underwater electric engines and RC control technology
- Development partners



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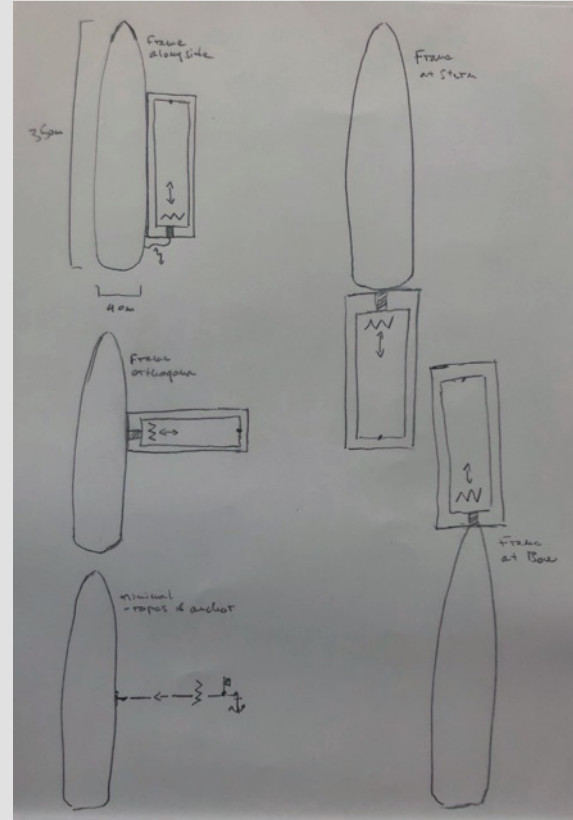


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SHIP APPLICATION

- Floating frame structure
- Even towed application could be considered
- Energy supply from the ship
- Stored in sea containers
- Assembly takes 0,5 day or less





SUSTAINABILITY: THE KEY DIFFERENCE TO WAVEPOOLS

NO POOL CONSTRUCTION
no concrete needed

NO WATER PURIFICATION
no purification chemicals and
systems

**NO WATER SUPPLY NEEDED TO
COMPENSATE EVAPORATION**

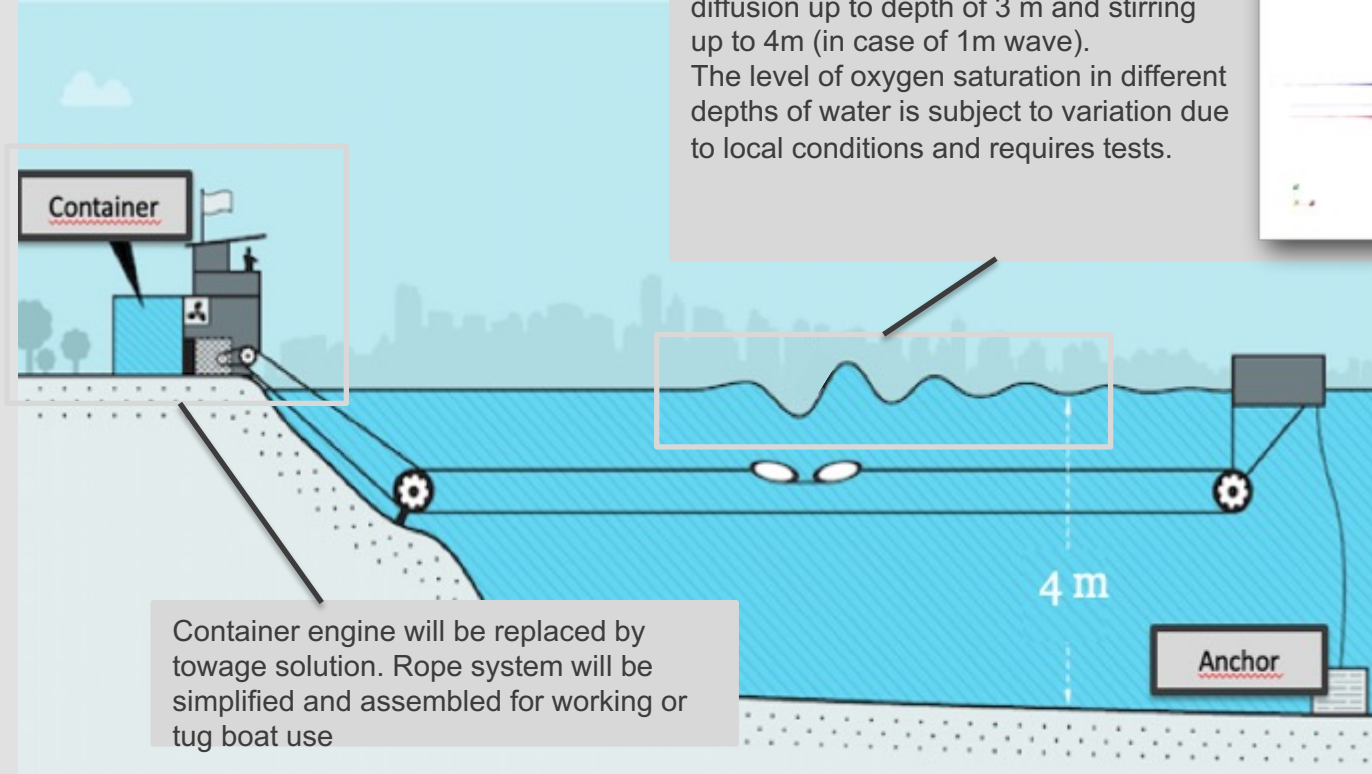
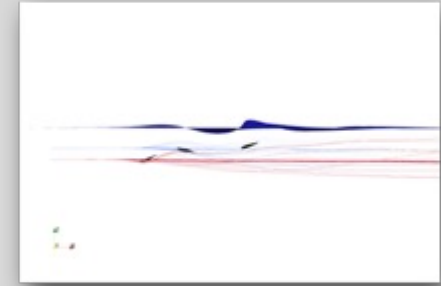
NO FACILITIES NEEDED
if ship facilities available





ARTWAVE AERATION: IT IS ACTUALLY GOOD FOR WATER

Wings create natural waves and oxygen diffusion up to depth of 3 m and stirring up to 4 m (in case of 1m wave). The level of oxygen saturation in different depths of water is subject to variation due to local conditions and requires tests.



Container engine will be replaced by towage solution. Rope system will be simplified and assembled for working or tug boat use



HOW TO PROCEED

NDA for detailed discussions

Memorandum for Understanding (MoU) for commitment

Roles for a local operator team

- project management

- permissions

- operation and services

- case development in co-operation with local authorities and Artwave

- Surf

- funding solution

Agreement

Detailed planning

Delivery

Pilot use

Launch



SEE YOU AT THE LOCAL WAVES