

Back to the waves...

Man has numerous needs for his sustained survival, and among these needs is the need to interact with the living environment and the animal species in line with advancing the economy and providing food. Today, the animal species of different regions of the world according to the changes in the earth's climate and lifestyle of humans have undergone huge changes and sometimes they are on the verge of extinction. The Oman Sea, adjacent to the Indian Ocean, is a significant body of water globally affected by environmental changes, and Chabahar Port is one of the important lands and the only port connected to open waters through the Oman Sea is where the predominant occupation of the people of this region is fishing, due to the entry of the industry in the field of fishing and carrying out huge fishing in the Oman Sea by various food companies, the animal species of the Oman Sea face the threat of extinction, and the natives living in the areas adjacent to the sea In addition to losing their jobs, Oman will not be able to provide seafood for their families, or they will be forced to leave Iran's water border and enter the coast of other regions, which will cause conflicts between countries and regions and the involvement of pirates. Therefore, this project aims to offer sustainable solutions for potential future issues with a focus on structural design. In line with the possible future problems of this region, the initial idea of this project is derived from the sea creature Velella from the mermaid family with a collective life. The systems of this project are of the central core type and all loads are determined at the center of the design and are in accordance with the geometric center of the design. Radial components extend up to a distance of 500 meters from the center towards the periphery and horizontal elements with a radius of 10-20 meters above and below the main surface of the central core, create a space along the sky and the sea.

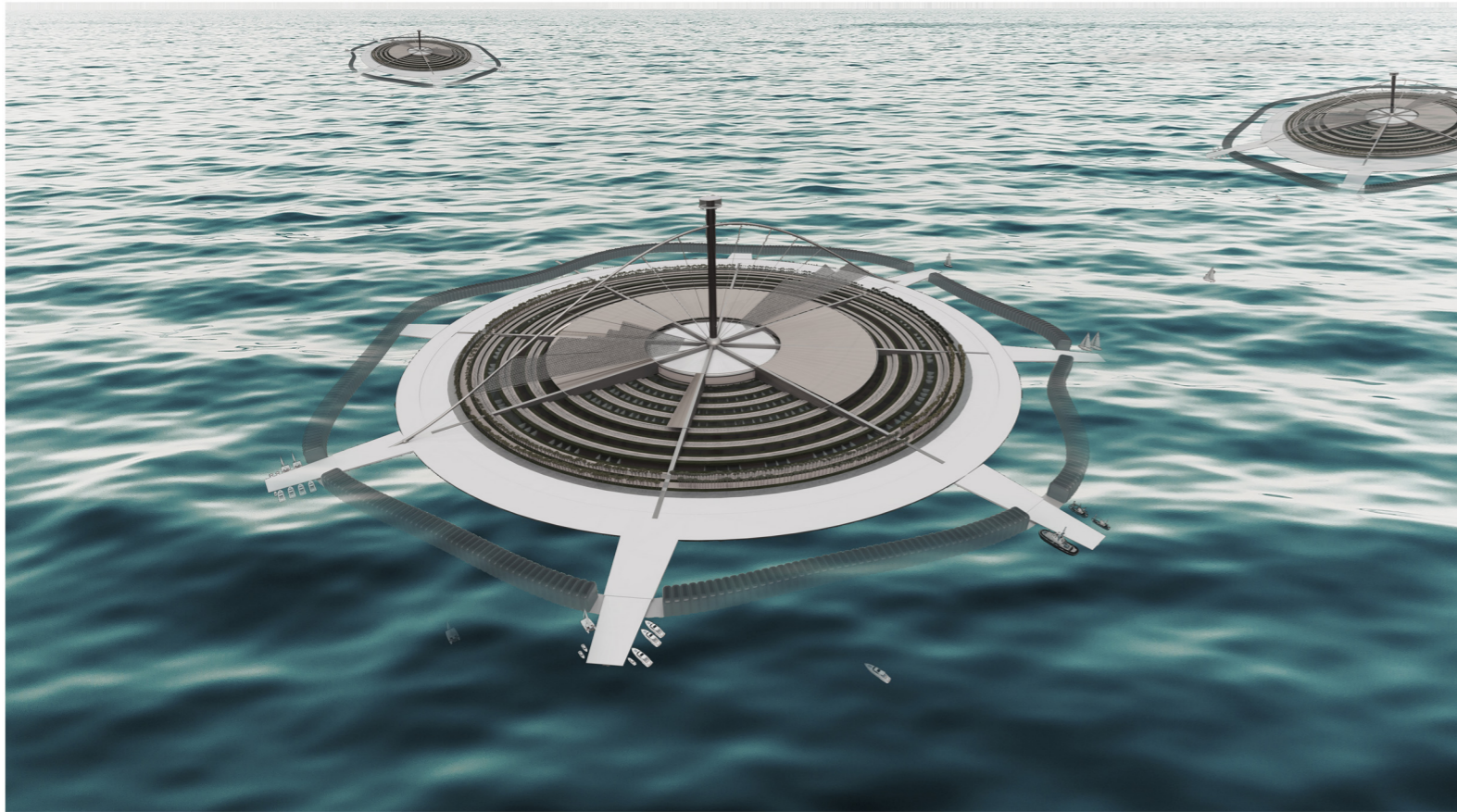


The upper part of the water surface is for the accommodation of the staff, the air traffic control tower and the helicopter station and the lower part as the facilities, the energy of the drinking water purification facilities for the tower. Marine surveillance and submarine station are used and access to them is possible through the central elevator of the structure in the main core. The plan is circular and from the seaside to the center includes compressed air elements, the middle plate of the moving axis, the water gardens of the fish pond, and the central headquarters of the base. The dynamic stability of the structure is calculated based on Archimedes' law and with radial pneumatic elements in the two middle rows. The peripheral region, comprising both above and below-water sections, functions as a breakwater. An elastic state characterizes the compressed air structure surrounding the upper portion of the water, which can undergo height and length alterations under certain conditions. The structure is basically static, but there are fans around and under the structure to move and change the direction of the structure's circulation on the surface. Water is included.

The lower part of the project is made concave with the static geometric structure approach and fans are used for dynamic stability. This part includes a laboratory for research on the specific animal species of the region and improving the habitat of the animals and a central pool and several strip pools whose body is porous and has a net-shaped wall, which facilitates the movement of seawater and reduces the weight of the structure. Radial pools for raising fish and special species and from the central pool for mass fish breeding edibles are used. The project's energy supply is sustainable and is provided by four methods of solar energy: wind, wave, sea, and fuel algae. In fact, a semi-sail is located in the central part of the design and has the ability to rotate in a radius of 360 degrees and adapt to the direction of the sun. The atmosphere gathers around its central radius towards the corners. Along the radical elements of the structure, water turbines have been placed and in some of the existing pools, they have been used to grow biological algae and produce energy from it. The energy produced from these four methods is converted and consumed in the facilities section of the collection structure, and according to the amount of energy collected, it is expected that this energy can also be transferred to the coastal people. The dominant materials in this project are light metal, wood, compressed plastic, and photo-electronic quasi-glass plates, which protect the area's water with the help of nanomaterials.

To provide shade for relaxation and work in the gardens or swimming pools, the center has incorporated canopies that can be closed depending on the time of day. In the water, trees are used to provide natural shade in the movement path. There are local strip ponds for breeding special and endangered marine species. Finally, this project is trying to give an appropriate answer in response to possible problems, in this direction, to provide a space for the mass breeding of fish and their return to the sea in order to balance the amount of fish in the sea, which have been destroyed by the huge industrial companies, and fish rehabilitate endangered species and return them to the sea. In this regard, in addition to conducting specialized research and breeding space fish for repatriation, the task of generating sustainable energy for the base and surrounding areas, as well as establishing an emergency and storm shelter and providing aid, is also created.

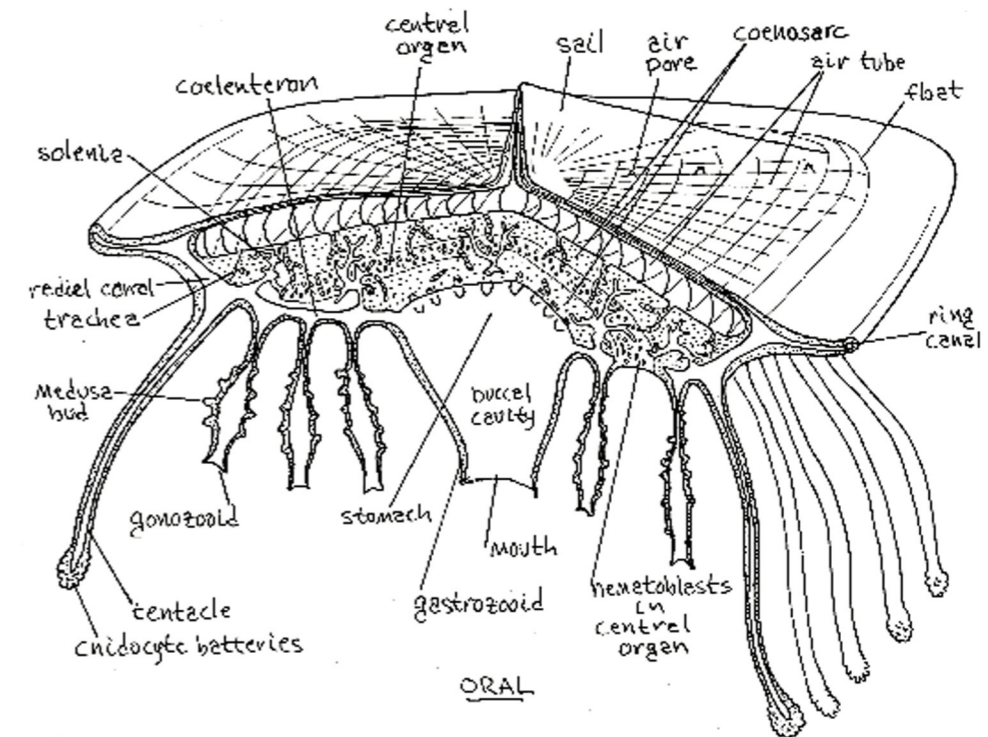
Concept of project



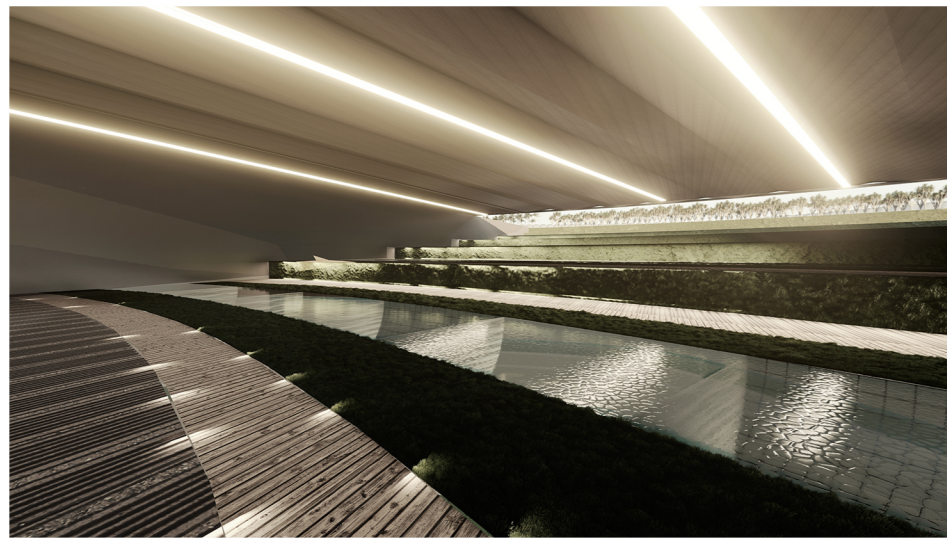
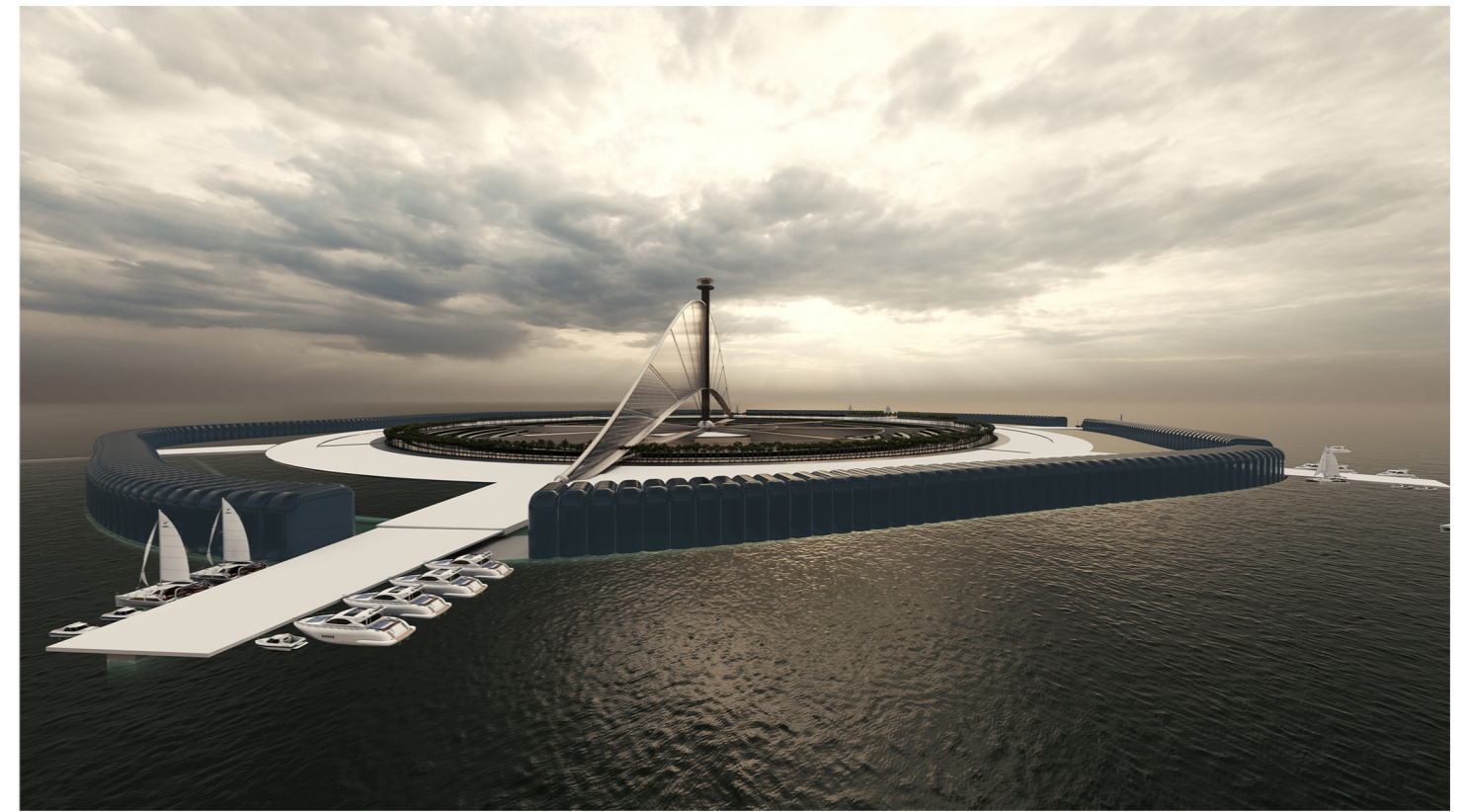
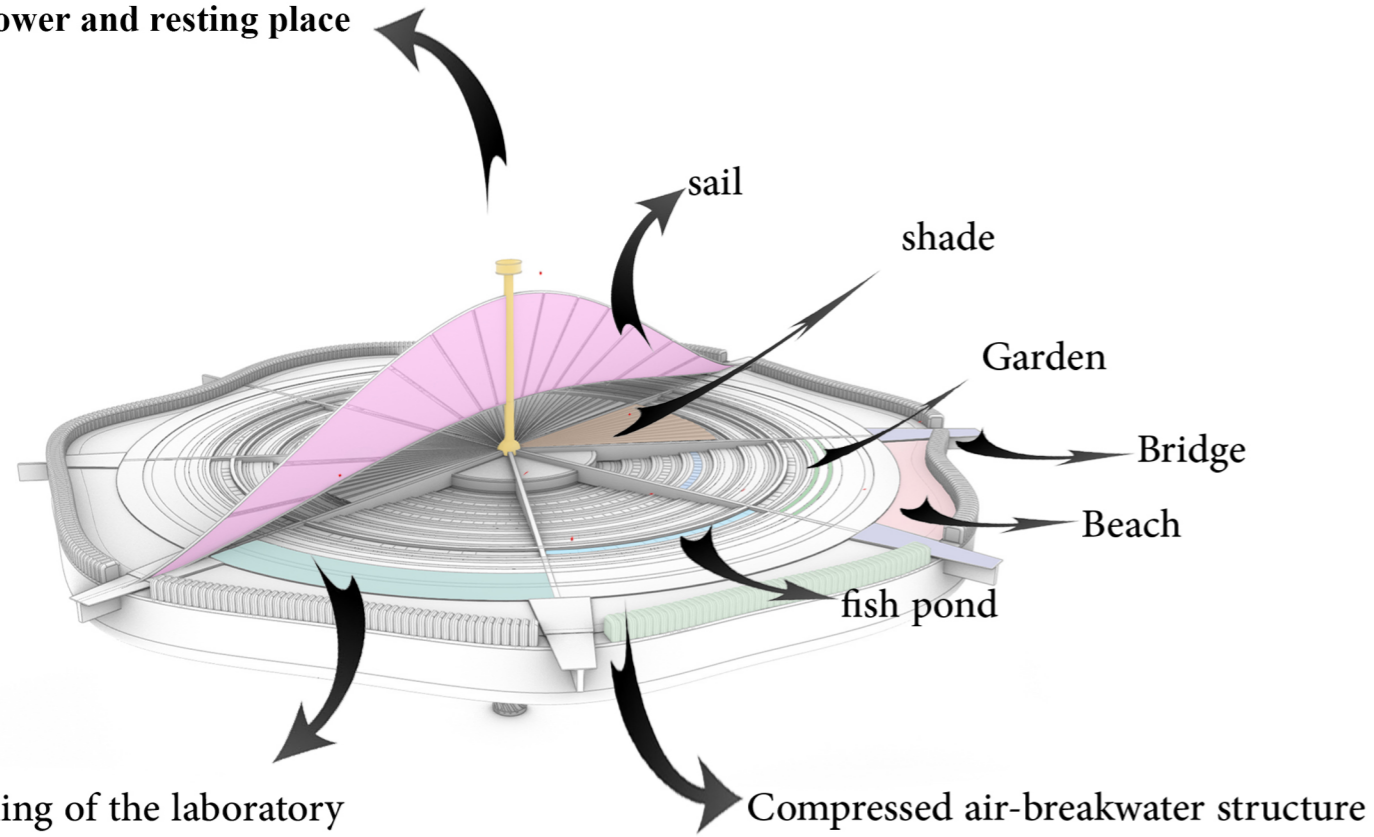
The jellyfish Veella.

Sailing is an ancient enterprise. Humans used the wind to cross the oceans thousands of years ago. Sails, however, existed 350 million years before humans hoisted theirs. The jellyfish Veella, several centimeters long, sails warm oceans to feed upon pelagic organisms which it captures with stinging tentacles a few centimeters long. Fortunately, their nematocysts (see "Garlick's Notebook," Nov. 15, 2007) are usually too short to penetrate human skin. Strong winds from the north often strand millions of these purple mariners on local beaches.

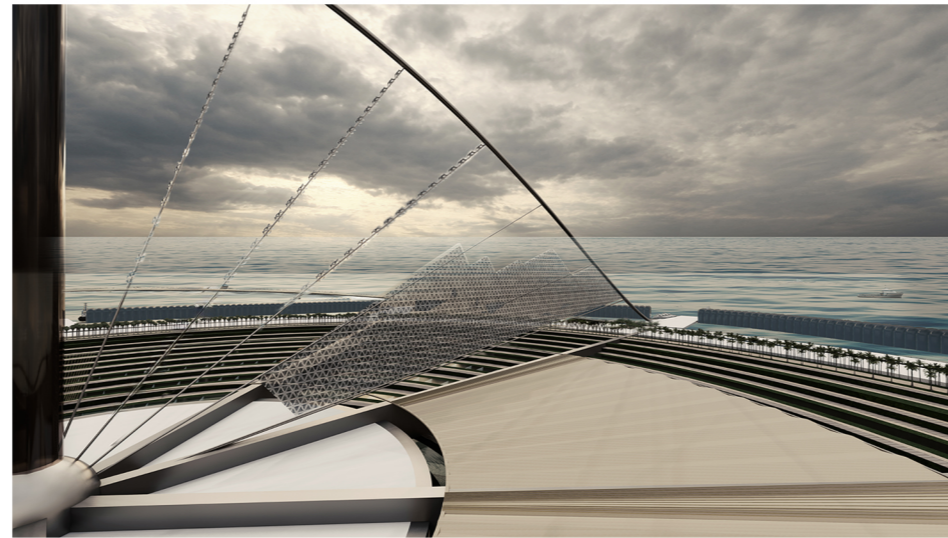
Veella's anatomy is depicted in the cross-section. The photo, courtesy of Curt Beebe, reveals its unique two-fold symmetry (180-degree rotations leave it unchanged). The absence of mirror symmetry means that the animal tends to sail at an angle to the wind because the sail tends to orient perpendicular to the wind. I floated a wood and plastic model, which I defined as left-handed, on a large puddle. It consistently sailed to the left of the downwind direction. For winds from the south, left-handed Veella would safely move away from our coast. I have read that Veellas appearing on Chile's beaches are generally right-handed. This may be the only organism whose chiral anatomy (handedness) is influenced by the Coriolis Effect (see "Garlick's Notebook," Oct. 18, 2008).



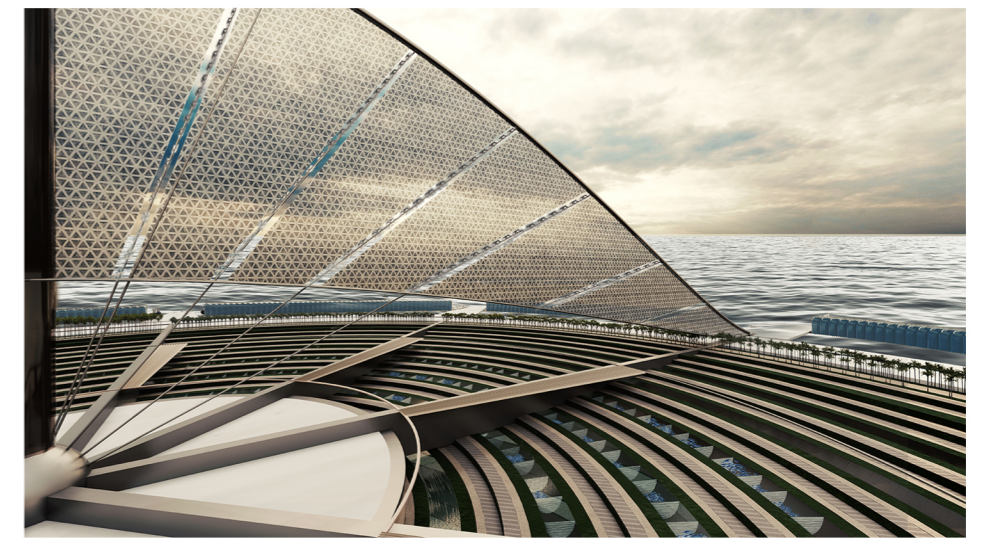
Watch tower and resting place



Closed shades : Interior space under the closed shade / lighted by wind microturbine electricity

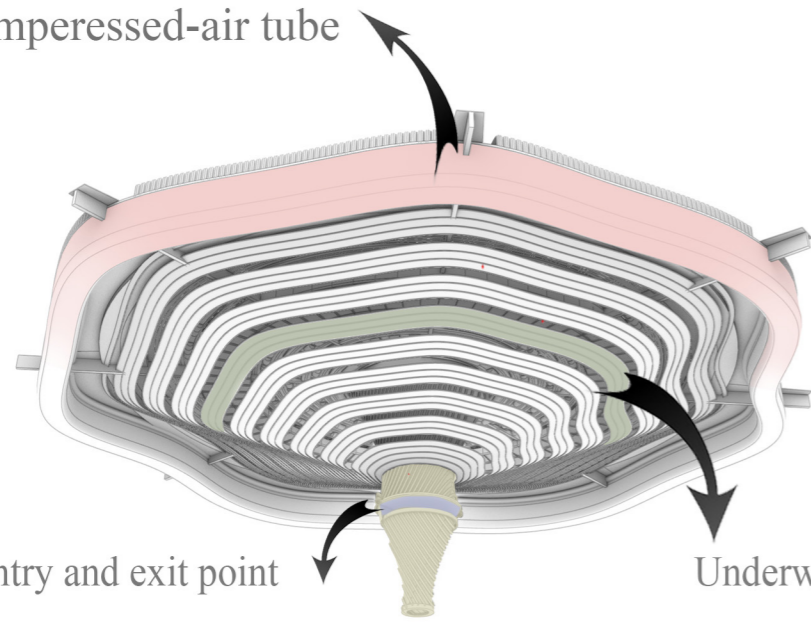


Closed sail : Closing dynamic sail in specific weather conditions such as stormy weather
Opened shades : Dynamic shades to prepare a comfortable area in sunny/rainy days



Opened sail : Absorbing sun lightlight by photovoltaic cells to producing solar energy
Closed shades : Dynamic shades
Micro Wind Turbines : Used to pump water, charge batteries, and provide electrification of project avoiding emissions from dirty diesel generators or kerosene lamps

Bottom compressed-air tube



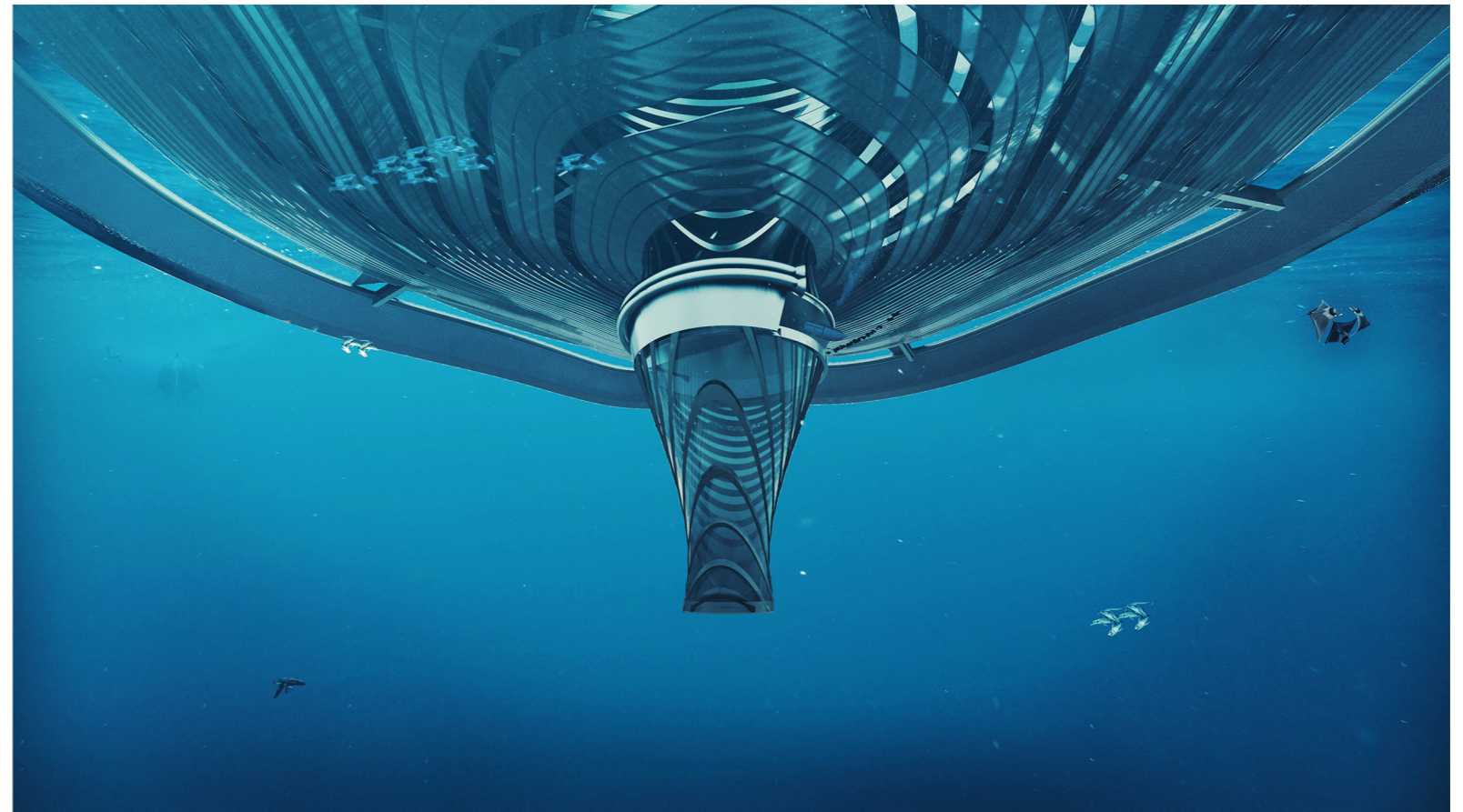
Submarine entry and exit point

Underwater sheets

The lower compressed air is separate from the upper compressed air and is fixed. Its top layer is covered with nano materials to prevent decay and damage by fish and other marine animals

Separate plates for the free entry and exit of marine animals that are attached to the main structure

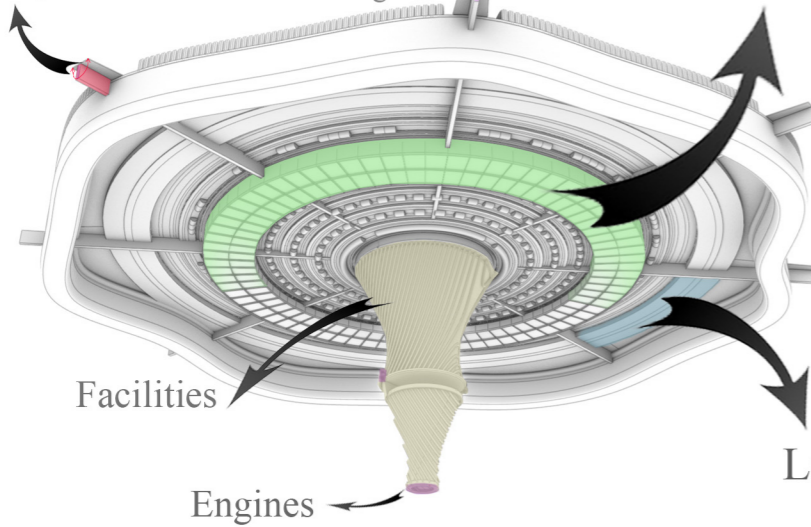
The place intended for the departure and landing of submarines, which leads to the upper parts through the central vertical axis



Water turbine

Engines

Intermediate compressed-air



Facilities

Engines

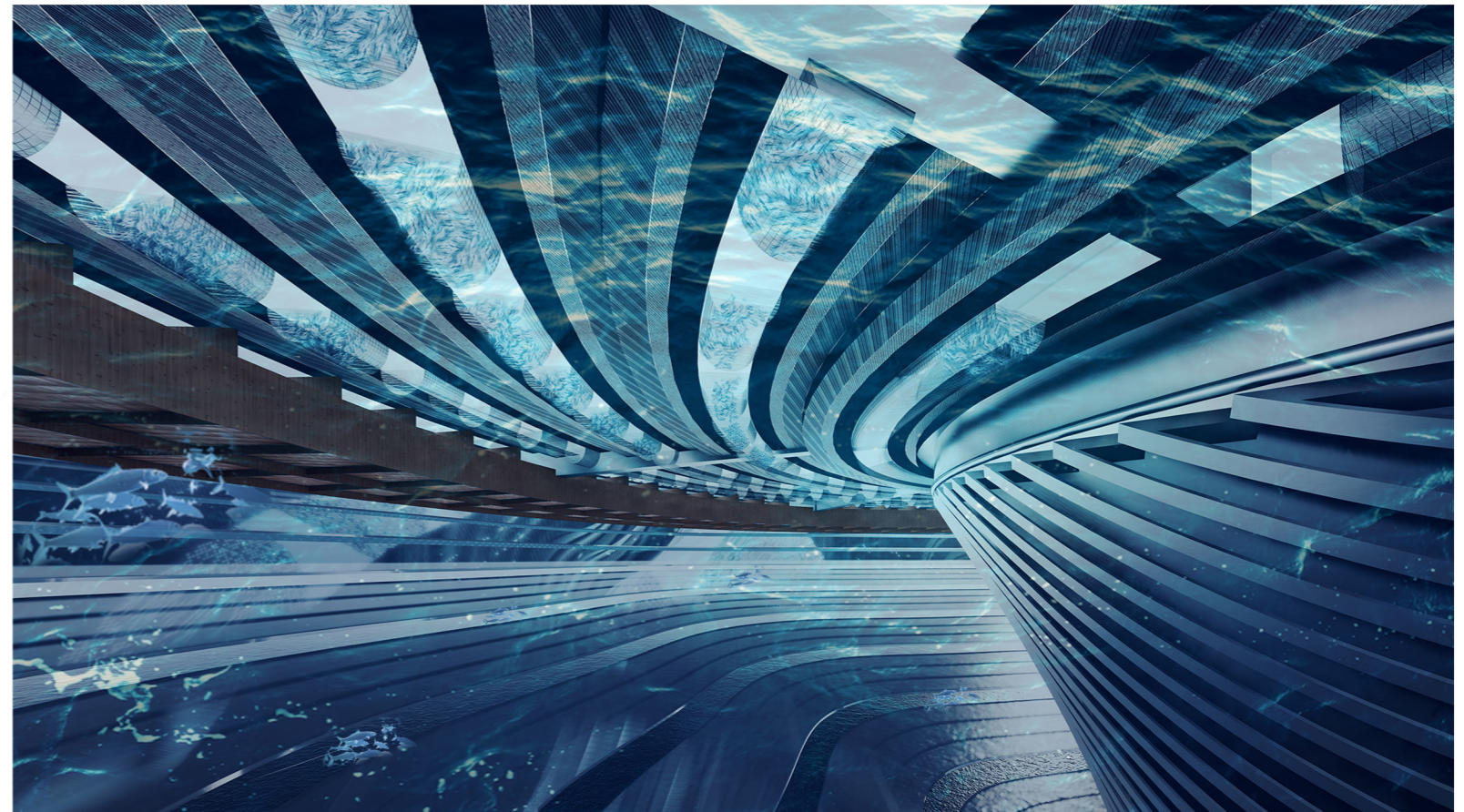
Laboratory

Eight water turbines are used to produce energy by moving in a half-circle path around a centerist axis

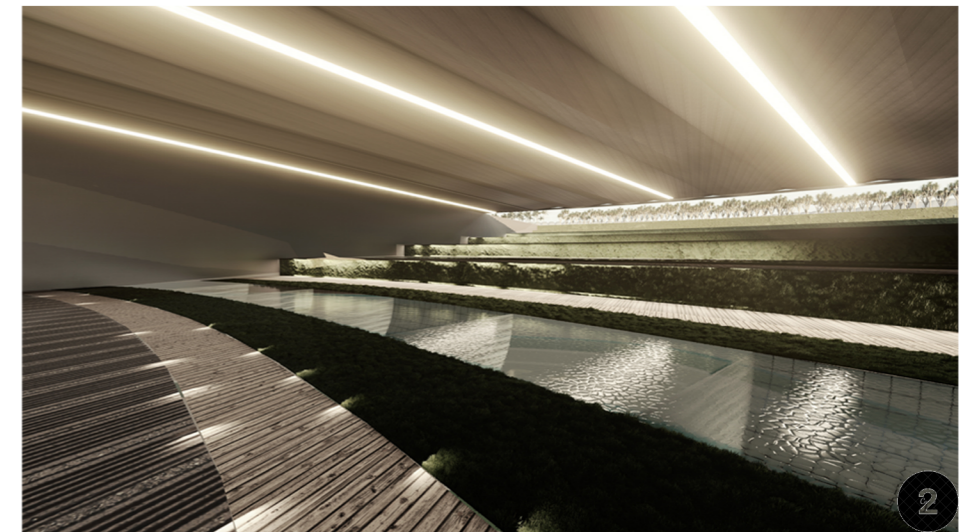
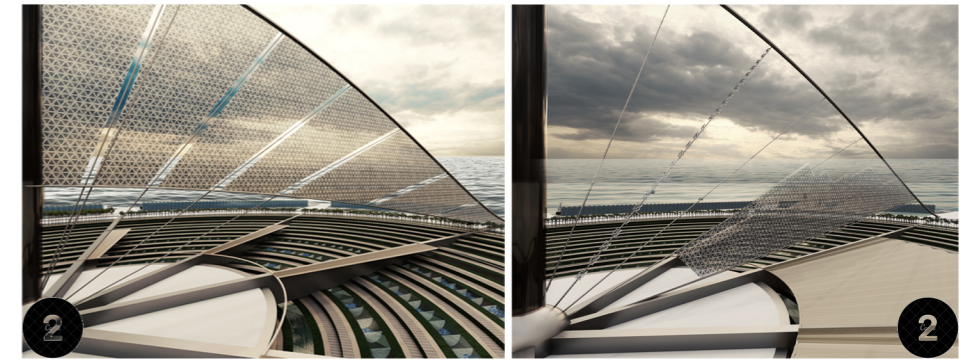
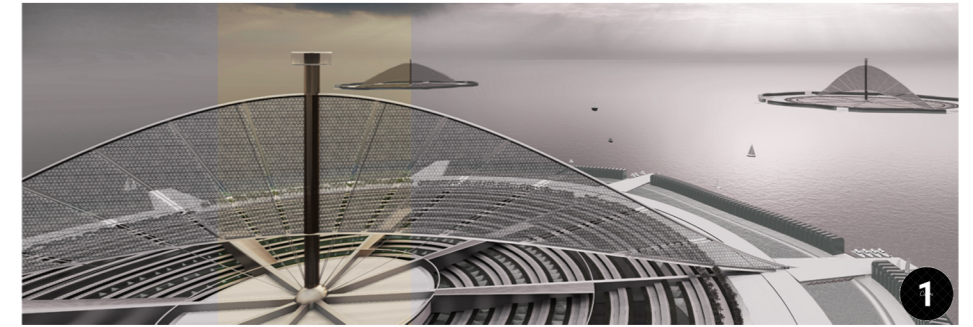
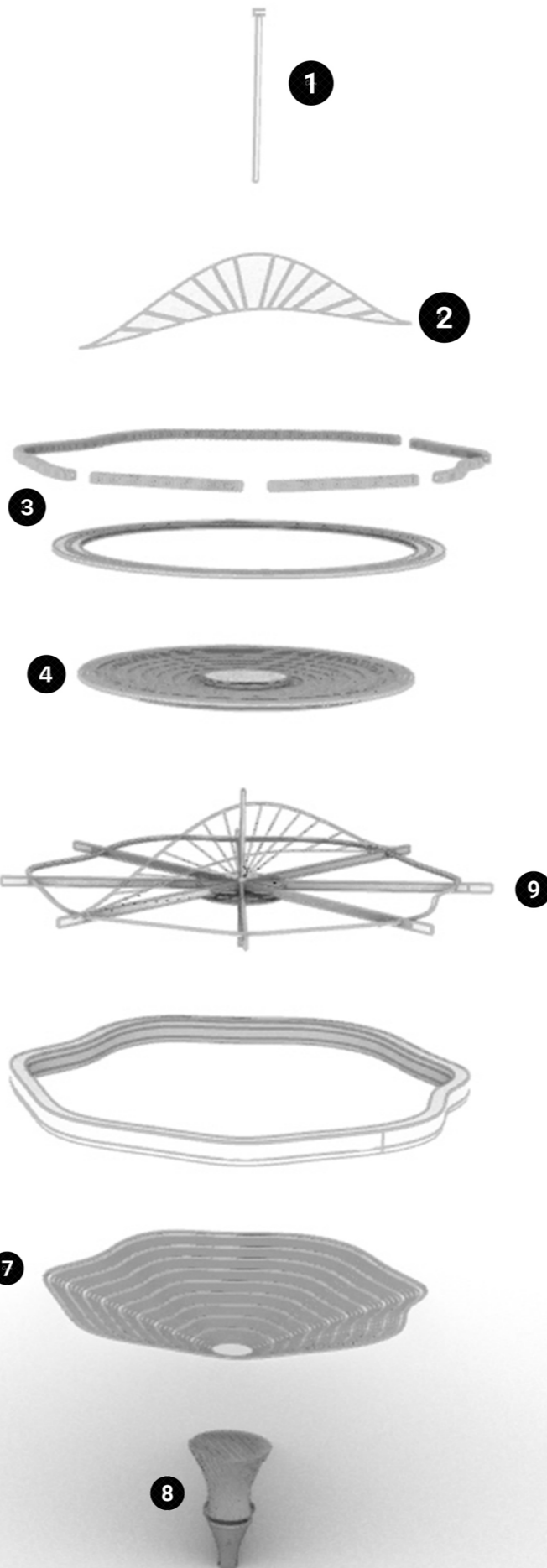
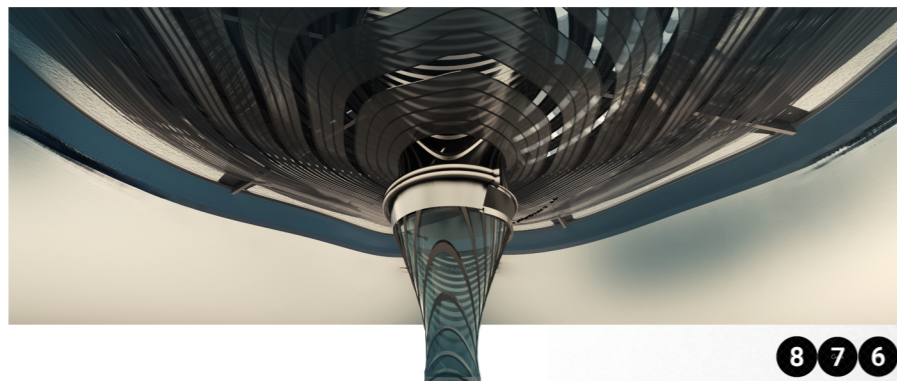
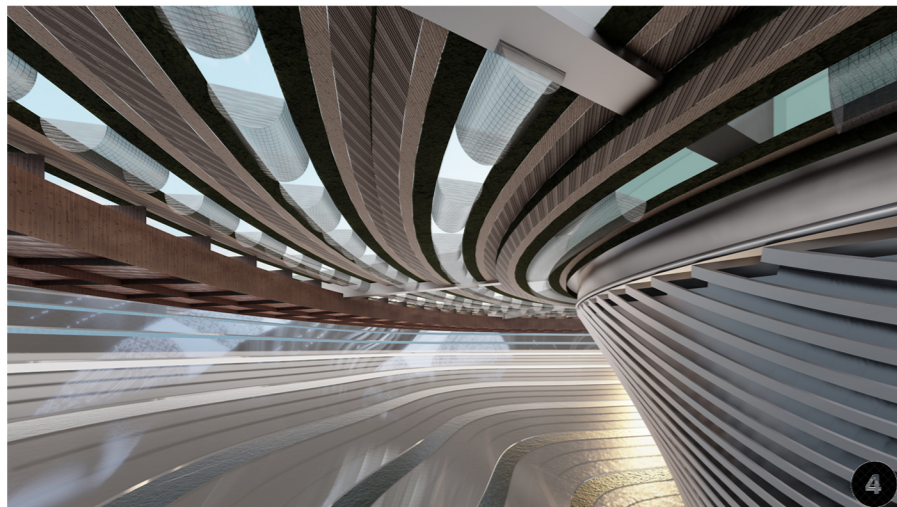
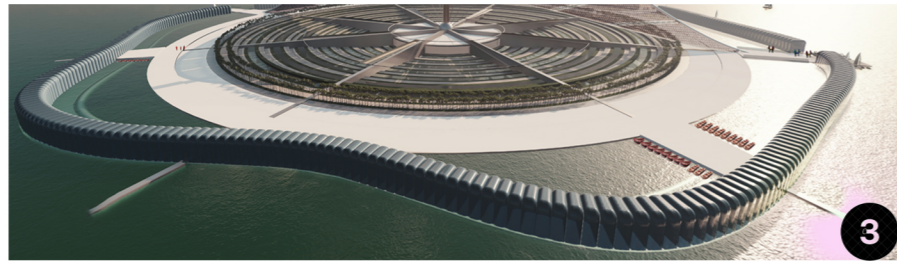
Intermediate compressed-air is placed to assist balancing the whole structure and it's made by recycled plastic

Fishes are farmed and geneticaly modified in laboratory to returned to the sea

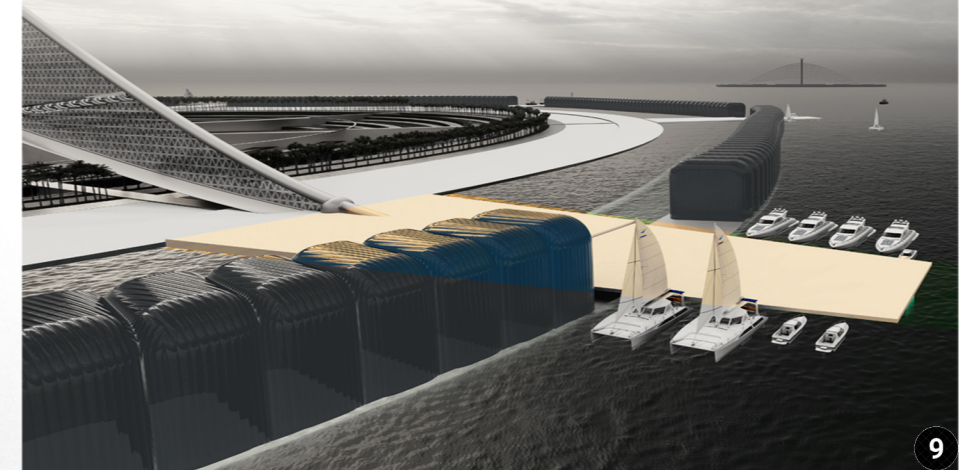
Strong engines are considered in three diffrent parts, first in bottom of eight centerist axis, seconed around the top of submarine station and the lowest level of the structure



Detail Diagram of project

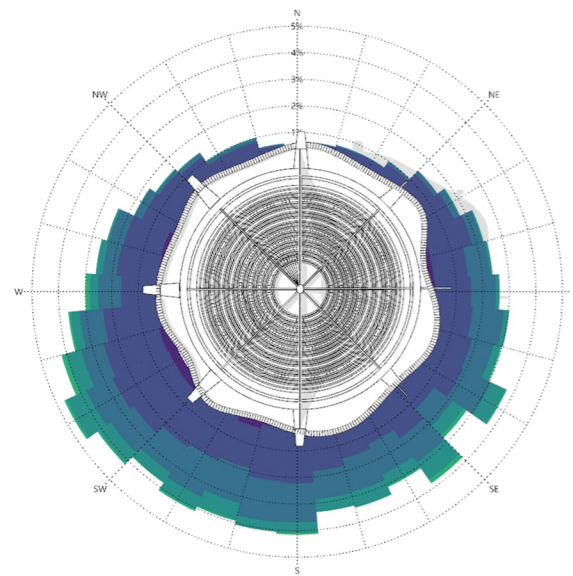


Dynamic port (bridge) with the ability to fold the plates in a sliding manner

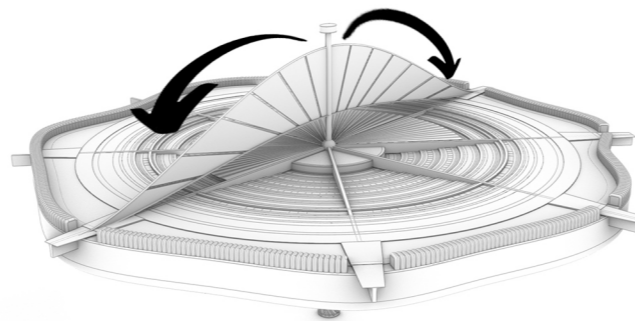


Analysis of weather conditions in Chabahar

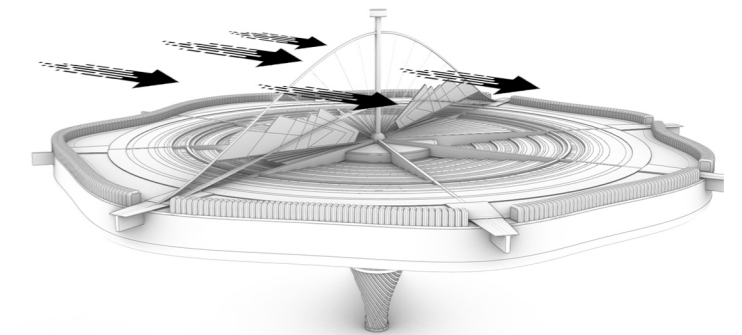
A sail is located in the central part of the design and has the ability to rotate in a radius of 360 degrees and adapt to the direction of the sun. And during strong winds and storms, they gather around its central radius towards the corners to allow the wind to pass through the sail structure. This will help to maintain the balance of the main structure in times of crisis



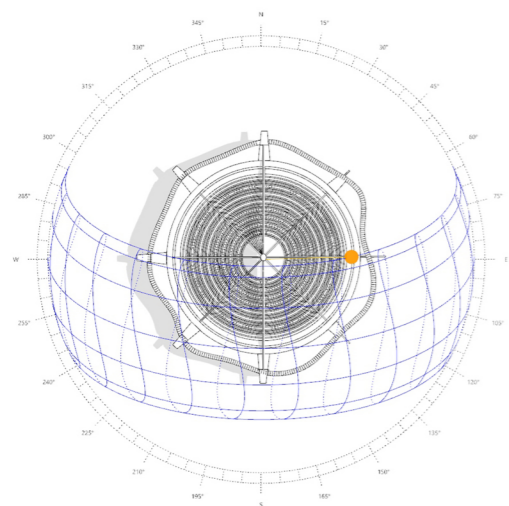
Annual rose wind of chabahar



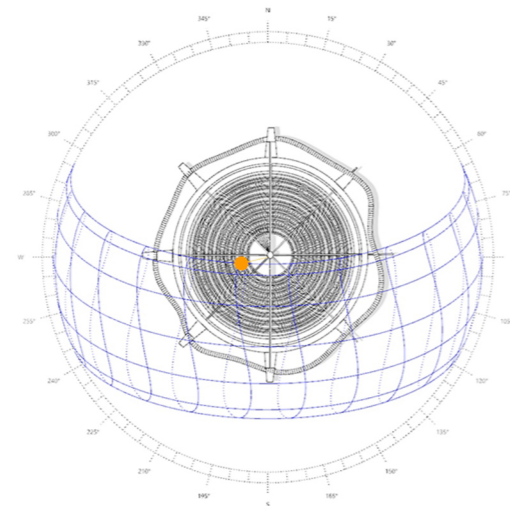
Opening and closing the sail



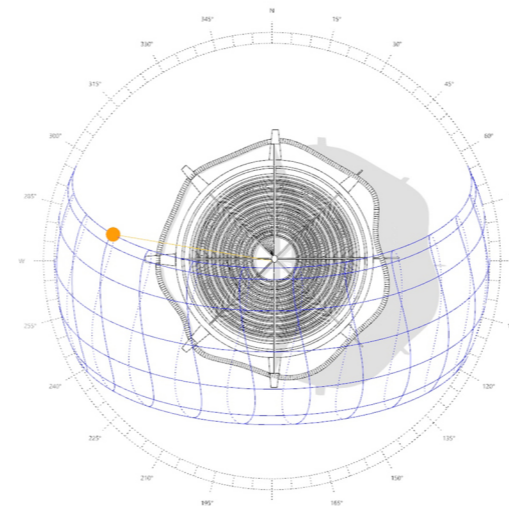
crossing the wind



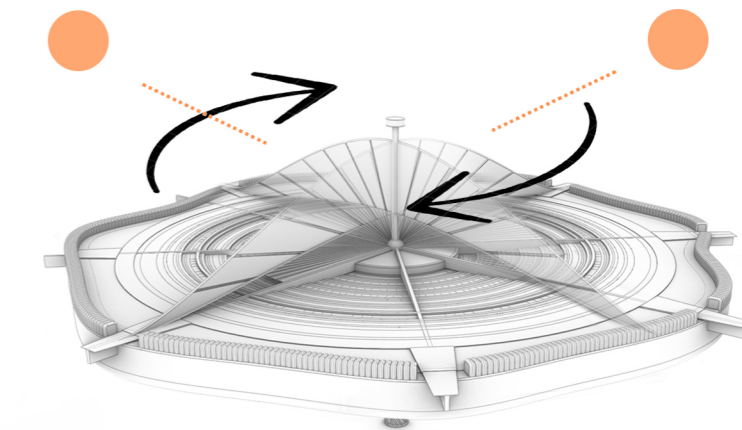
sun pass and shade orientation at 9 am



sun pass and shade orientation at 12 am



sun pass and shade orientation at 9 pm



rotate in a radius of 360 degrees

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