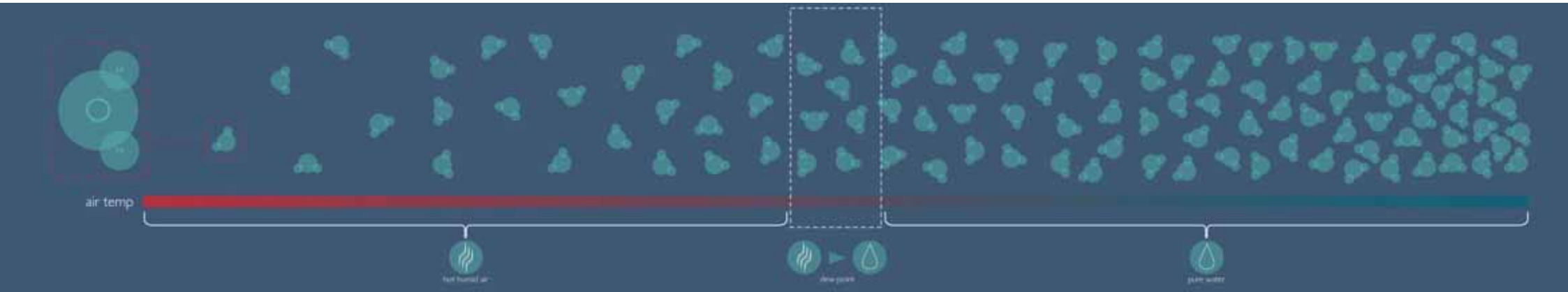
DEW electric

Pure water,

a scarce resource in the UAE, is as precious as gold. It sustains all life, is regenerative, purifying and has within it the power to be a vapor, liquid, or solid. Water scarcity is one of the most pressing problems confronting humankind in the new century. The natural water resources of the UAE will remain by 16 per cent in the next decade, requiring the second-largest build-up of desalination plants in the world. Demand is soaring, with the country expected to increase desalination capacity by 76 per cent by 2018, to 14.7 million cubic metres a day.

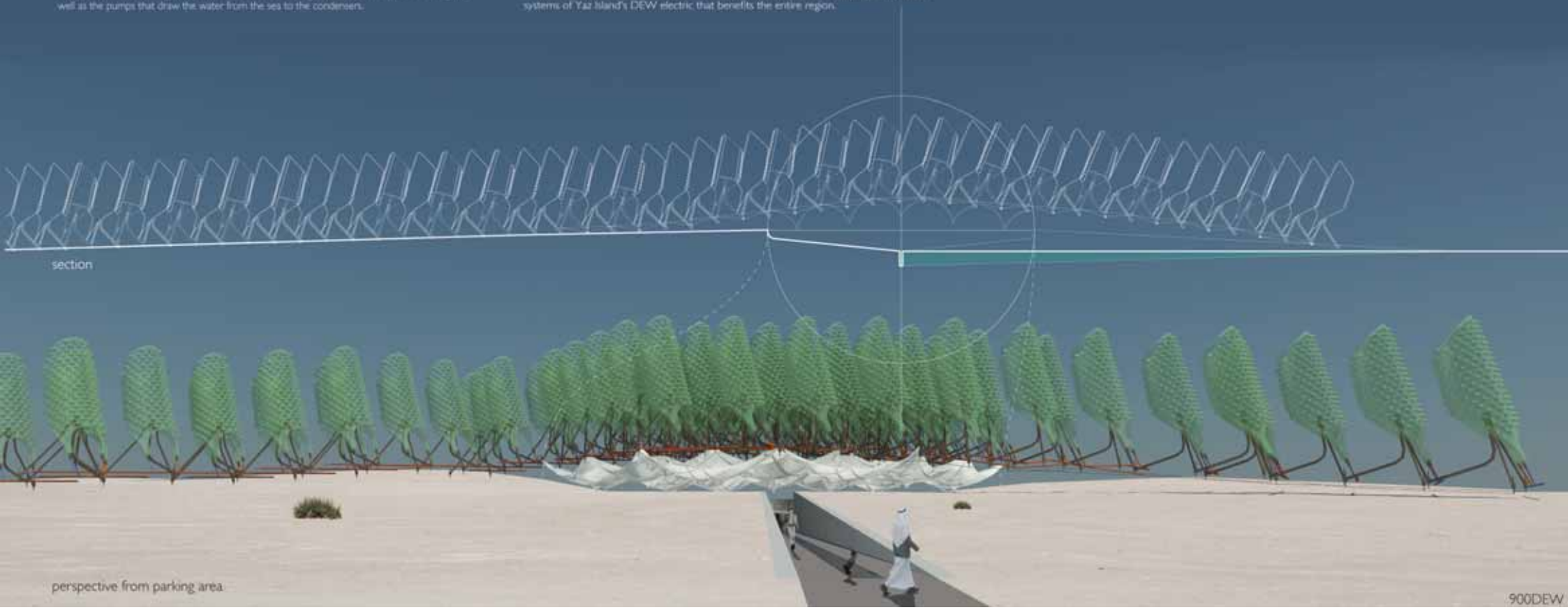
Desalination plants, while solving some problems, create others. Desalination is expensive, energy intensive and emits greenhouse gases. Waste from the process is a highly concentrated brine which can contain biocides, high concentrations of metal, and chlorine. Adequate and safe disposal of the concentrated brine produced by the plant presents a significant environmental challenge. In addition, large marine organisms, such as adult fish, invertebrates, birds, and even mammals, are killed on the intake screen. Decomposition of these organisms can reduce the oxygen content of the water near the discharge point, creating additional stress on the marine environment.

Our artwork, Dew Electric, demonstrates the potential for creating efficient and clean electrical powers, while simultaneously generating "fresh water". Dew Electric combines beauty, simplicity and function into responsible energy production through biomimicry.



Mimicking the Namib Beetle, each pneumatic condenser in DEW electric is designed to draw water out of the air while simultaneously generating electricity and providing both fresh water and power to the region. Each condenser is constructed from a pneumatic tube that circulates cool seawater. When the warm moist air reaches the surface of the tubes, water vapor condenses on the colder surface of the tower that is textured much like the beetle's hydrophilic shell. The water is then returned to the sea in a closed loop system to be re-chilled by the sea. The delta in temperature around the chilled water stock towers creates a negative pressure that draws air down the column spinning a 7.5 kilowatt wind turbine that generates electricity to feed the grid as well as the pumps that draw the water from the sea to the condensers.

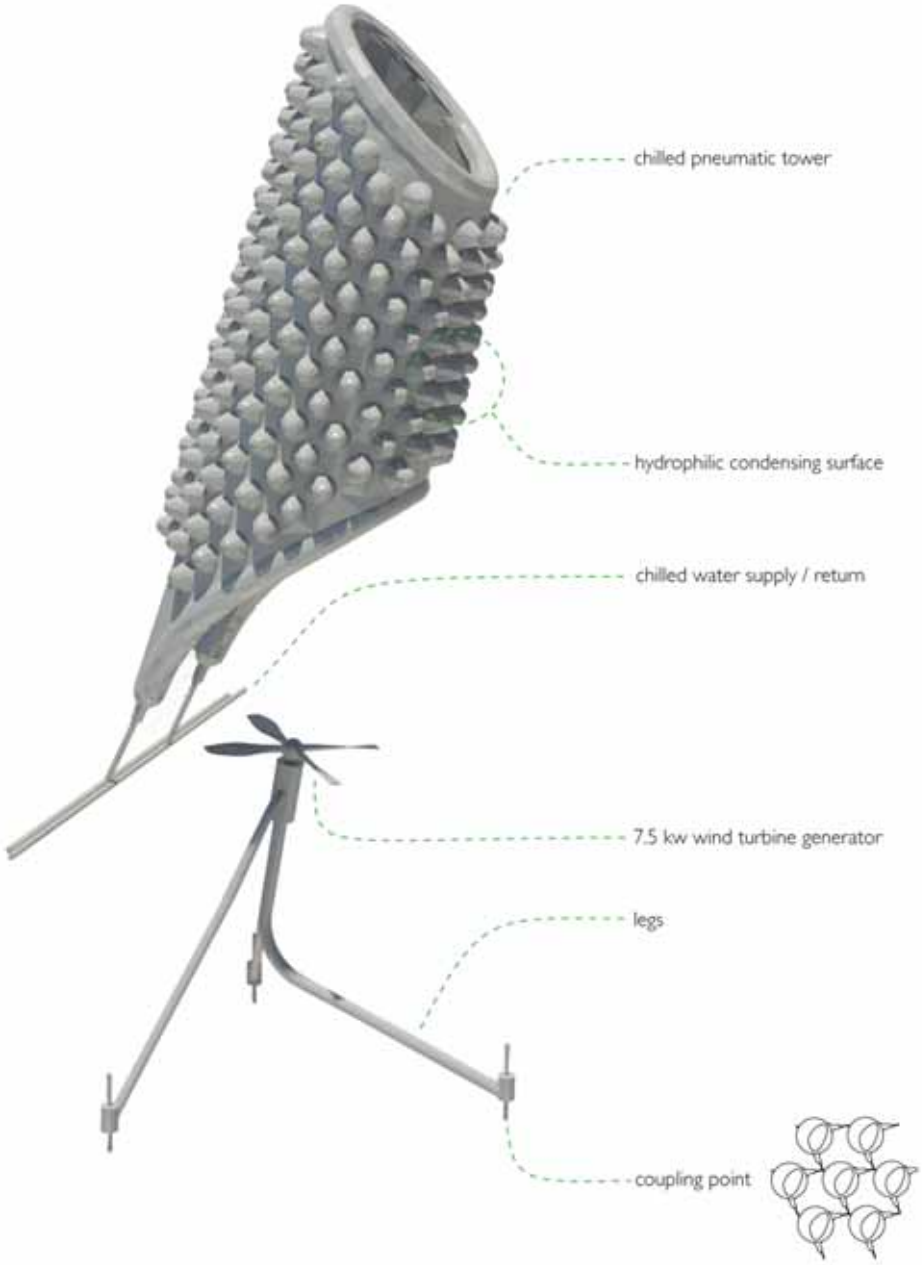
The towers are distributed in a semi-random array that extends throughout the site in a pattern that resembles the natural flow of water to or from a single source. Supported on tripod legs that interlock together to add an organic quality to the repetitive tower elements and supports, they tread lightly on the land in order to reduce its impact to the site. These support legs become a tensegrity structural system enhanced by a protective shade covering device that collects and funnels water over the bowl shaped 'rain space' gathering area. The cooling effects of the tower clusters and shading devices creates comfortable places and subtle climatic shifts for people to gather and explore the passive systems of Yaz Island's DEW electric that benefits the entire region.

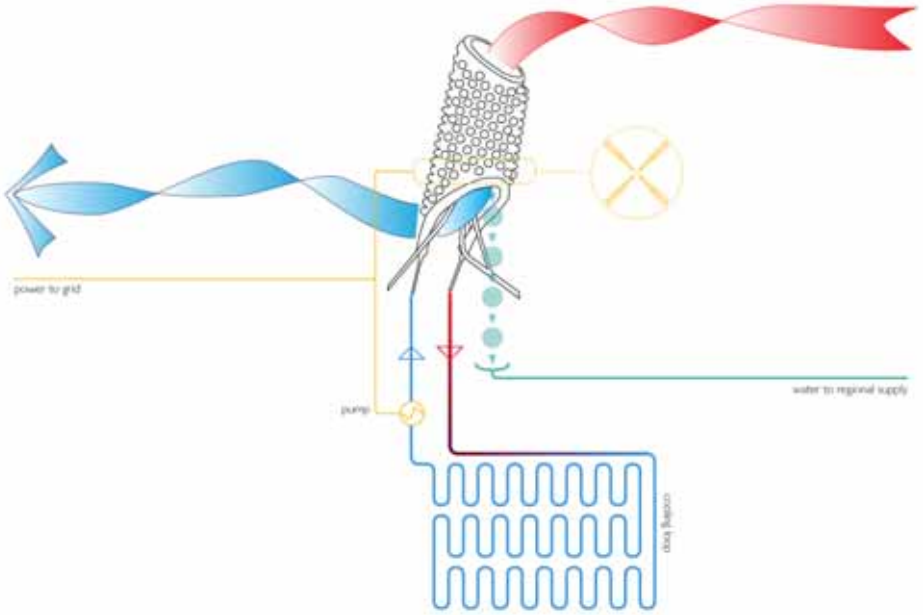


perspective of RainSpace

RainSpace is an all-encompassing experience of water. As one enters the shaded water chamber, the effect of the overhead condensers and the canopy of collectors provides a significantly cooler environment than the surrounding desert setting. RainSpace provides a communal gathering place where viewers experience a continuously live event of 'raining' water. Water falls from above into a 'carpet' of inlaid channels that create an overall pattern inspired by the natural world. Referencing the inherent beauty of Islamic patterns, the continuous flow of water both above and below expresses infinity, unity, harmony and balance. Similarly, at first glance the process may appear extremely complex, yet the simple elegance of the system is revealed and immediately understandable to the viewer. The ordered repetition of the overall system, both above and below symbolizes a well-balanced whole. RainSpace creates a and sensory experience that celebrates and honors the value of water in our lives.

plan of RainSpace





Total DEWelectric Power and Water output generation

- Electricity: 180 kWh per day per tower or 85,500 kWh per day total (before seawater pump correction)
- Water: 1,354 liters per day per tower or 643,520 Liters per day total
- Water production is equivalent to 3,217,600 kWh reduced energy consumption from the grid (based conservative estimate for state of the art desalinization water generation)