JellyEnergy, floats gently above the Santa Monica pier, ‘metabolising’ fresh water, producing energy, and providing an exciting new view point for people to appreciate the Santa Monica Coast.

With a nod to Los Angeles’ celebration of pop-culture, and center for entertainment, Jell-nergy looks like a dancing Jellyfish bobbing on the Pacific breeze. But a further look unsettles us. Is this friend or foe? California may be described by Wikipedia as a ‘paradise of good weather’ but it is also the extreme of climate problems, which have never been more obvious. The form of the Jelly Fish reminds us of the near-future where rising sea temperatures mean this invertebrate will be one of the strongest life-forms in the ocean. Soon Jellyfish may be all we find in our tides. The Jellyfish is the symbol of survival.

 But rather than being a monstrous personification of doom, JellyEnergy are actively working with humans as a clean desalination plant, and harnessing energy from the wind and tide. Like a pet JellyEnergy responds to the people that are using it. Using Pavegen energy-harvesting paving tiles to turn kenetic energy into electricity, JellyEnergy glows with pleasure when visitors pound up the staircase (lift also provided) to the viewing platform 65M above the sea, proving incredible views of the pier and back towards Santa Monica. Mimicking the bioluminescence lighting of the Jellyfish in the water, exploding magenta rays of LED strips twinkle in the twilight like the merry-go-round of the pier below.

Water Desalination

The water desalination plant works like a 3rd grade science experiment. It is *not the most efficient* desalination system, but it *is the most visible*, allowing visitors, and Santa Monica City to visualize the energetic use of the sun, evaporating salt water from the Jelly’s belly, and capturing the fresh water along the edges of the its hood (or bell). We estimate we will be able to create 2828 litres of water per day per JellyEnergy. We have 4 Jellys boobing in the surf, so we should be able to create 11,312 liters of fresh water. This will create only brine as a waste product: we estimate 24 grams of brine per Jelly per day. This brine from the evaporated salt water is collected at the end of each day, swept into a pipe, collected by truck and sold to GrowEnergy: Algae growers in San Diego (the algae capital of the world) who can further turn this wastewater into biofuel energy. After Algae growth the brine is further used for road or water softening salt.

Energy

JellyEnergy’s fresh water is funneled down 12 long tentacle pipes that hang from its ‘bell’ structure. These curving tentacles are stable but hold vertical axis wind turbines, that shimmer in the wind, giving the tentacles a life-like quality and creating more energy. This energy is stored in water-secure batteries located below the wave pier that leads to the Jellys.

Materials

JellyEnergy’s bell is made of large glass panels, that are held in place by a prefabricated cross-laminated timber (CLT) grid frame, which also makes up the tower central structure. Timber is the only renewable building material. JellyEnergy will be computer designed, and the CLT can be machined to high tolerances, so this prefabrication technique fits it very well. While CLT had not previously often been used for tall buildings, recent advances, such as Over Arup’s lifecycle tower prove this methodology for high-rise construction. The timber locks up carbon for the life of the building, while also being strong and light, so easy to transport and erect. Using a CLT sturcutre, coupled with the energy producing effects of the piezoelectric Pavegen tiles and with the vertical axis wind turbines, will make these towers carbon neutral over their lifetime.