**The Unveiled Kinetics of Nature**

Every second of everyday, energy is transferred from molecule-to-molecule, object-to-object, space-to-space. This movement is the direct translation of kinetic energy. It moves the earth around its axis, it pushes the tides in and out. All of these energies have existed since the conception of the earth 4.5 billion years ago, flowing before and throughout existence. What if there was a way to tap into and utilize this kinetic energy? These forces have such power and influence on how we live our life, yet many of which are invisible to the naked eye. The kinetic and potential forms of energy compliment and amplify one another, as seen in symbiotic relationship between water and air in our oceans. Our concept doesn't solely harness the kinetic nature of the wind and tides, it inspires the users the true, clean powers that lay unharnessed, both above and below our ocean’s surface. We want to unveil this kinetic movement and display these untapped potentials for the world to see.

Imagine a sailboat…drifting across a breeze, capturing the shifting forces of the wind to propel itself forward. Imagine a fish…wondering the deepest oceans; its gills taking in water, dissolving it to oxygen, and then releasing it back out. These systems are true testaments to the power and ability for life on this planet to adapt and thrive with our dynamic landscapes, even in the harshest conditions. Imagine an energy production system that mimics these thriving and evolved systems…only to borrow from what already exists and return it back to its natural environment, unaltered and undamaged. *Innatus* shows the possibilities of such a system using Santa Monica Bay’s high tidal movements and shifting wind patterns, capturing their constant motion, then displaying and enhancing nature’s beauty.

Our project is just a stepping stone, a precedent, to what could be a future source of 100% renewable, clean energy for our planet. We picture this system as a potential new foundation for energy production, one that is holistic in nature and beauty. The aesthetic visualization of these natural forces would bring art form back to its most rudimentary form. We imagine the possibilities of this system being scaled and reproduced in coastal hubs throughout the world, where numerous inhabitants can stare in sublime at the continuous influence nature has around us. We envision that these harnessed, sustainable natural forces will have life changing benefits that millions would receive where energy sources are remote, scarce and in crisis. We see this as a turning point on the environmental impact we leave on this planet and experimentation into a reliable, renewable energy source.

**Environmental Impact**

1. **Low Impact; Utilizing Existing Infrastructure**

The existing breakwater at the site was originally intended as a means to make Santa Monica Pier into a commercial yacht harbor. *Innatus* reuses the breakwater as a revamped tidal barrage bringing a new use to aging infrastructure. Due this infrastructure reuse, we also expect to minimize the underwater ecosystem impacts to the sensitive environments of numerous marine life that resides throughout Santa Monica Bay by causing as minor of changes to tidal processes and submarine habitats as possible to the natural processes that occur there currently.

1. **Hidden/Secured Energy Production Components**

All of the energy production and transformation components are hidden and inaccessible to humans as well as bird and marine life. A mesh grate barrier placed at the tidal/wind intake systems prevents any direct contact between wildlife or humans and the turbine systems. Employing sonar and radar pod technologies within our wind and tidal systems will activate emergency shut off procedures when possibilities of hazardous interactions are present.

1. **Use of Salt Water Tolerant Recycled Materials**

*Innatus* has the intention of keeping the material collecting process as simple and economical as possible through the use of local landfill and recycling facilities in Santa Monica and Los Angeles.

Stainless steel framing and structure of wind towers – most durable of available metals, eco-friendly material because it will acquire fewer renovations and have longer lifespan then most salt-water corrosion resistant materials.

Aluminum alloy façade and paneling of wind towers – predominantly aluminum, also consists magnesium, manganese, and chromium. Aluminum is one of the most abundant metals on the planet, an unusual element surplus that embodies the initiative’s intentions. It is flexible, impermeable, lightweight, and is 100% recyclable if paneling is disassembled or replaced.

Composite wind and tidal turbines – 30,000 metric tons of composite materials used worldwide, majority of which end in landfills. *Innatus* stresses that low-energy and locally recycled methods be used to reprocess the composite materials to create the turbines needed for our energy production.

1. **Quick Payback Period**

As a concentrated tidal and wind power technology, *Innatus* should account for a projected annual 40% capacity factor, and with 8 wind turbines with a 6 meter diameter and 24 tidal turbines at 10 meters diameter, the modular installation would concentrate kinetic movement through the turbines to produce 24200MW, which would be enough electricity to power 22,000 homes, 45% of Santa Monica’s residences. Taking into account the cost of materials, construction, and maintenance of *Innatus* with the total residential energy cost per year of the city of Santa Monica, our initiative would recover the funds of the initial investment within 2 years of energy production.