**THE TRIANGLE ART BRIDGE**

**SUSTAINABILITY MEETS ART**

con·nec·tion: *noun* The act or state of connecting. The state of being connected. Anything that connects; a connecting part; link; bond.

People with different cultural, social, and recreational needs live around St. Kilda, a calm, happy, creative and full of life seaside site in Melbourne Australia that seeks for connection of its most particular sites: The Esplanade, The Slopes, St. Kilda Triangle, The Palais Theatre, Luna Park, the foreshore with The Stokehouse and Life Saving Club, while reaching a goal of Zero emissions in the energy sector for 2050 and preserving the artistic life of the place.

The need for connecting areas around St. Kilda triangle; art and everydayness; pedestrians and cyclists; landscape and renewable energy public spaces, is what brings us to the concept: a beautiful bonding minimalist structure that fulfills these needs and preserve St. Kilda´s social essence.

The Triangle ArtBridge in Melbourne´s playground consists of an x formed renewable energy generator bridge that connects The Palais Theatre with St. Kilda beach and the Slopes and Esplanade with the South Beach Reserve across Jacka Boulevard, while creating interesting public art spaces, and horizon viewpoints of all the area.

The ArtBridge as its name suggests, is a bond for the community to gather around art events. As expressed by St. Kilda´s community, art is a key for Melbourne´s playground, so the bridge brings the opportunity for pedestrians and cyclists to travel from one point to another of the site through an artistic experience. They can either walk by for transfer needs or be part of what´s happening at the Triangle Art Bridge, visiting art events, local pop-up markets, concerts, attending a meeting or gathering with friends and family at the cafe with spectacular views of Port Phillip.

The gallery cafe situated at the joint of the two bridges can be accessed by the 4 entrances at the bridge ends or by elevators situated at both gallery´s ends, which communicate to the art space mountains interiors.

The cafe functions as an observatory of Port Phillip´s Bay, the Esplanade, and The Palais Theatre thanks to its 360º crystal walls as well as a place for gathering while taking a drink or snack and an art exhibition space, where different artistic expressions can tell the Triangle´s story and history of The Palais Theatre and all local symbolic places or show visitors how Victoria is working with renewable energy through ludic art installations.

At the end of the right mountain art space there is a pipe like hole that provides sights to the underground park space. This way we increase green areas for gathering and playing and send the parking spots to belowground. We are also motivating for walking or riding the St. Kilda site rather than car driving by giving locals and tourists a whole experience through mobility.

**POWER BRIDGE**

The Triangle ArtBridge is a light in sight, integrated structure that generates energy and collects water for the site in 3 different ways:

1. Water collector and storage through Fog-harvesting vertical meshes: these meshes travel all the way through the bridge walls, with no need of operation, just some occasionally brushing to remove particles. So nature does the hard work of evaporating water, desalinating it, and condensing in droplets, with zero operation cost. Droplets slide down the wall meshes into a container below the bridge floor.

**Collects 12L /day-m2**

**Bridge 1: 12,480L/day-1,040m2**

**Bridge 2: 7,800L/day-650m2**

**TOTAL= 20,280L/day-1690m2 of mesh**

**7.4 millions L annually**

1. Solar panels: PV panels are installed on the gallery cafe rooftop and the skylight panels at the mountain art space, so that the solar energy captured can power the ArtBridge area: mountain art spaces, gallery cafe, public lighting of the site.

**Generates:**

**Mountain skylight panels: 30 MWh annually**

**Gallery cafe rooftop panels: 42 MWh annually**

**TOTAL= 72 MWh annually**

1. Wind power produced by sailfish like sail segments across the bridge´s width: these sails design concept comes from the aerodynamic natural form of the sailfish fin and are perpendicularly connected to the stereotomy “rails” structure of the mountains art space, they move thanks to pistons in their masts bottoms, forced by the wind coming from the sea at an average speed of 18.33 km/h, generating hydraulic pressure captured inside the structure and later converted into electricity for use in St. Kilda´s site and avoiding the use of wind blades protecting local birds.

**Wind Energy output= 65 MW annually**

**DIMENSIONS AND MATERIALS**

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|  | Materials | Dimensions |
| Bridges | Recycled steel structures with a non corrosive protective cover | 15m tall on its peak. Bridge-1 188.5m long / Bridge-2 304m long. Width 4m and 8m on the bridges joint |
| Mountains art spaces | Recycled steel structure, green rooftop, crystal, pv panels | 22m tall on its peak. 100m width from Bridge 1 to Bridge 2 |
| Gallery Café | Recycled steel structure, crystal, pv panels | 15m tall, 8m width, 80m long |
| Sailfish sails | PET Dacron that has excellent resiliency, high abrasion resistance, high UV resistance, high flex strength, low absorbency (dries quickly) and is low cost. | 20m tall |

**ENVIRONMENTAL IMPACT**

It is not just about a beautiful structure that integrates with a beautiful vivid place, it’s the need for urban regeneration with the superimposition of energy and art.

So its important to highlight the renewable energy it generates meeting the State of Victoria´s Action Plan:

* The Bridge´s structure collects water by fog harvesting coming form the sea and collecting water from rain, thanks to the meshes across the bridges it also desalinates, all of these with zero operation cost.
* With the energy output generated by solar pv panels the structure comes alive and powers up, as well as the surroundings.
* Energy output generated by wind sails also helps to power the site at the same time it provides the scene with a beautiful moving segmented structure that resembles the sailfish fins (perfect for the local ecosystem) and prevents local birds to get caught.
* The Triangle ArtBridge integrates more green spaces and sends parking spots underground. It also has a green rooftop at the left mountain art space that increases building insulation and regulates internal temperature for different kinds of events happening inside.
* Connecting site spots by the Bridge helps the reduction of car driving around, giving locals and visitors a new mobility experience.
* To reduce impact in construction of The Triangle ArtBridge we are using

pre-armed recycled steel structures to be assembled on site by local workforce, which create new job opportunities and economy growth.

SOURCES

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