



### Piezo Technology

“Wind is the hidden energy”. The form takes advantage of the wind strength where the longitudinal side of the sculpture faces the beachside. With wind breezing into the sculpture, the suspended nets are freely oscillating to gain the maximum momentum. At the both end of the cables, customized piezo actuators transfer the motion into electrical energy. This custom system consists of a disk bimorph actuator and flexure actuator with multi-axis motion, which allows the actuator to consume the motion from three-axis, in three-dimensionally known as X, Y, and Z axis. They are located around the main structural cable of the 4 major sculptural layer and transduce the electricity to the storage. The proposed internal net will be Spectra® Fibre high tenacity polyester fibre, which is light-weight, high strength, and a durable string that is able to sustain all kinds of weather condition. As the piezo-electrical system convert wind motion to electrical power, the supporting electrical cables will deliver the energy to underground, where a large battery/energy storage can be built with the car park structure. Finally, this system will be able to generate approximately 374,000 KWh/year and 1,024 KWh/day.

$P = 0.613 \times V^2 = 18.95$	$N = P \times A = 7693$	$W = N \times V = 42,777 \text{ Whr}$	$\text{kWhr/year} = 374,000$
Wind pressure	5.56m/s Average St Kilda Wind Speed	18.95 Wind Force	7693 Wind Force
		406m <sup>2</sup> Contact Area	5.56m/s Average St Kilda Wind Speed
			Watt (Power)

