



## THE TECHNOLOGIES

The extension of the pier is a combination of **600 Aluminium poles** reaching **60m** in height placed in a modular grid of **10m x 10m** allowing frequency, density and spacing to be set to achieve maximum energy efficiency. Electromagnetic induction is used in the oscillating aluminium poles in order to create a current that can be used to produce energy. Electromagnetic induction is the induction of an electromotive force by the motion of a conductor across a magnetic field or through a change in magnetic flux in a magnetic field. The reinforcement of the poles is embedded into the sea bed with pile foundations, allowing the oscillating poles to move as each wave passes.

The individual poles are constructed with 3 main components, an Air-core hollow coil, a magnet and a floatation device, as the wave passes the pole it will cause the pole to move the magnet up and down through the air-core hollow coil changing the magnetic flux which induces a current. This allows the wave and tide energy to become a renewable source of energy that can be transferred back to Santa Monica. Through the calculation of electromagnetic induction of each pole, one pole produces 49.3 micro henries per movement. Allowing the estimate per year of all **600 poles** to be **3 885 MW/h**.

The ribbon components that are connected to the oscillating poles produce energy through a thin- film **flexible and lightweight photovoltaic skin**. This versatile skin allows the formation to mimic the waves as it moves with the oscillating poles. These flexible solar cells only utilize on average a 1-4 micrometer layer of semiconducting material to produce electricity, thus requiring less processing and fewer materials. The extension of the pier consist of **27 376m² of flexible photovoltaic panels** on average these panels can produce 150W per hour of sunlight providing an estimated **annual capacity of 1787 MW/h**.