

# **HURRICANE, TYPHOON, & CYCLONE PREVENTION/WEAKENING**

**By Augusto Verzosa, 11/12/2012**

## **BACKGROUND**

The recent destruction caused by hurricanes in the U.S. and the Philippines requires a pre-emptive solution that will eliminate or minimize the destructive power of hurricanes/typhoons/cyclones. There is an urgent need to develop and implement technology that will achieve this objective in order to save human lives and property.

## **OBJECTIVES**

The objectives of this paper are:

- 1) To identify a potential technological solution that will eliminate or minimize the power of hurricanes, typhoons, and cyclones.
- 2) To develop and present a workable design to cost-effectively implement the solution mentioned.

## **ORIGINS OF HTC's (Hurricanes, Typhoons, or Cyclones)**

Hurricanes, typhoons, or cyclones (HTC for short) are phenomena caused by atmospheric convection - when the temperature on the ocean surface is higher than that of the air above it. The resulting water evaporation from the ocean and condensation in the air transfers heat to the air. This process goes on and becomes self-sustaining when the water temperature reaches 80 degrees Fahrenheit – turning the air convection into an HTC.

## **PREVENTION OF HTC – BASIC APPROACHES**

An HTC can be prevented, weakened, or stopped by disrupting the convection currents between the surface of the ocean and the air above it. Two ways of doing this are:

- 1) Cooling the ocean water
- 2) Disrupting the movement of the air

Disrupting air movement requires significant energy because it is typically possible only when the movement has reached a point where an HTC has been born and is detectable.

Cooling the ocean water, on the other hand, is a more pro-active, pre-emptive approach that prevents the key condition that births an HTC from being realized. This second approach is therefore the approach recommended in this paper.

## **COOLING THE OCEAN WATER**

Cooling the ocean water can require a significant amount of energy if current refrigeration and other traditional technologies are used because of the large surface area of the ocean. Traditional approaches like these will therefore be too energy-hungry and expensive.

The better, much more cost-effective approach is to use a relatively new material – the alloy **Ni45Co5Mn40Sn10** (a multi-ferroic composite of nickel, cobalt, manganese and tin, which can be either non-magnetic and highly magnetic, depending on its temperature). This alloy was recently discovered at the University of Minnesota. This low-hysteresis alloy converts waste heat directly into large amounts of electricity in the presence of a magnet when the temperature of the alloy is raised only by a small amount.

Applying the characteristics of this new alloy to the ocean cooling solution is therefore recommended for the following reasons:

- 1) If deployed along the ocean surface, material made from the alloy will absorb waste heat from the ocean, therefore cooling the ocean surface.
- 2) The cooling process does not require a significant amount of energy. In fact, it generates large amounts of electricity.
- 3) Rather than being an energy drain, the cooling equipment made up of the alloy becomes an energy generator.

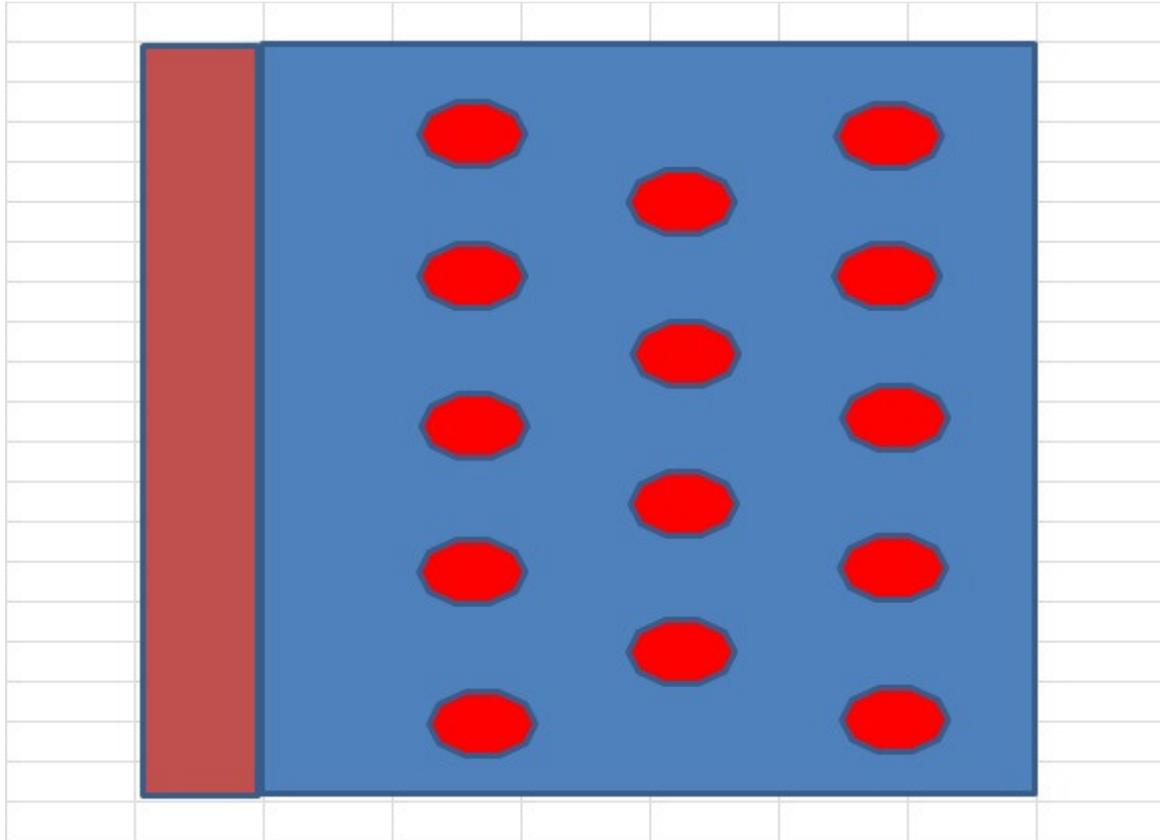
## **THE SOLUTION**

The solution will be to construct a generator, let's call it an **Anti-HTC Generator or AHTCG**, consisting of panels of the alloy in proximity to permanent magnets, and surrounded by coils. Deployed on the ocean surface, this generator will react to an increase in the ocean temperature by creating useful electrical energy. In the process, it absorbs and converts the heat in the ocean surface to electricity – thereby lowering the temperature of the surface of the ocean water where the generator is situated. By lowering the temperature of the ocean surface, the generator prevents the start of the convection process that spawns an HTC in its vicinity. If an HTC already exists and is approaching, it can also weaken an incoming HTC. The bonus is that rather than using energy to prevent or weaken HTC's, you are even generating energy. The significant benefits of this approach are:

- 1) Prevents the birth of HTC's.
- 2) Weakens incoming HTC's.
- 3) Generates useful electricity for consumption from excess ocean heat.
- 4) Reduces global warming overall with the reduction of ocean temperature – with all of the positive effects of this.

## **DEPLOYING THE SOLUTION**

In order to prevent or weaken HTC's, the generators/AHTCG's will have to be deployed in a multi-node array/grid across the ocean surface such as in the graphic below:



In this diagram, the brown area on the left is a land mass, the blue area on the right is the ocean, and the red objects represent the AHTCG's/Anti-HTC Generators deployed on the surface of the ocean. Modern engineering has the capability to implement and deploy this solution in the form of floating power generators on the ocean surface.

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### **SOURCES:**

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