

## OceanTherm Develops Mobile Bubble Curtain to Lower the Strength of Tropical Storms

Norweigan Company Aims to Decrease the Impact of Devastating Hurricanes Through Temporarily Reducing the Sea Surface Temperature with Mobile and Fixed Systems

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-- Last month, <u>OceanTherm</u> announced its groundbreaking technology that stops the growth of a tropical
storm into a disastrous hurricane as they develop
through large bodies of warm water. Today, OceanTherm
is announcing the development of its mobile systems
that can utilize the same technology as an easier and
more inexpensive approach compared to the previously



announced fixed installation. As far as natural disasters go, hurricanes and tropical storms have shown the world that they are capable of completely ruining communities, homes and hold the potential to take the lives of many.

This is why OceanTherm, a forward-thinking team of scientists from Norway, found several solutions for decreasing the impact of these storms by temporarily reducing the sea surface temperature in large areas before a tropical storm passes through.

It all starts with the bubble curtain. The bubble curtain technology has been used for 50 years in Norway to warm up the sea surface temperature in the winter, to avoid fjords from freezing. Now OceanTherm will use the same technology in a different way to make a bigger impact — to lower the sea surface temperature for a short time to prevent devastating natural disasters. Tropical storms turn into hurricanes when passing through masses of hot and cold air that collide above warm ocean water. The hurricanes obtain their energy from the ocean surface when the surface water temperature is above 80 °F, which is why OceanTherm aims to keep the sea surface below this temperature. The bubble curtains work by lifting colder water from an optimal depth, depending on the temperature, and mixing it with the warm surface water, and thereby reducing the sea surface temperature below 80 °F temporarily. Cooling the surface water would deprive the hurricanes of their energy source, potentially stopping them before they make landfall, or at least stopping them from developing into stronger hurricanes.

How does one lower the temperature of a large body of water? "Bubble curtains" are the answer.

The bubble curtains work by supplying bubbles of compressed air to the deep. When the bubbles rise, they bring the cold deep-sea water to the surface, and this cold water cools the warm ocean surface for a short period of time. For both the fixed installation and the mobile concept, the idea is the same. Bubble curtains will be placed at the right depth in order to bring up colder water to the surface and reduce the sea surface temperature. For the mobile concept, supply ships will be equipped with bubble curtains. These supply ships will be less expensive because they will be rented on a seasonal basis. Behind these ships, the bubble curtains will form approximately 1500m in length, and ships move in formation in order to create an environment where the ocean currents can spread the effect out to the intended area.

While these ships would not be able to go out and cool the ocean in front of an incoming hurricane due to safety concerns, this system could be used as a preventive measure to keep the temperatures in the gulf below dangerous temperature levels. As sea surface temperatures are being monitored continuously, the fleet of "bubble curtain ships" will be called out when temperature levels need to be lowered, thus reducing the risk of intensification of an incoming storm.

Furthermore, it is in both cases the ocean currents that will be the true engine in the system, making sure that the cooling effect will spread out to a larger area. This is necessary in order to have an effect, and really the key to its technology. By placing a fixed system or passing through a body of water with a mobile system in strategic positions, based on research and close monitoring of ocean conditions, the colder water will spread out with the help of the currents and influence a larger area — like the coast of Florida, Louisiana or Texas. The technology OceanTherm developed is proven in a small scale and they aim to demonstrate that it will work at a large scale to temporarily lower the sea surface temperature and thereby reduce and stop the energy source for hurricanes to build up strength. Along with its impact on the forming of tropical storms, the bubble curtain also only changes the water temperature for a short period of time. With further research on climate and ecological impacts after receiving more funding, OceanTherm will be able to make the goal of not resulting in any long-term effects of sea-level temperature changing or the ecosystems that rely on it a reality.

OceanTherm is looking for research partners and business partners in the US, to help take the necessary next steps in order to prove this technology at scale. A five-step research program has been designed to answer all questions related to proving the technology at scale. The research program is estimated to take approximately two years to complete, at a cost of around 4 million USD and will culminate in a large-scale demonstration of the solution in the intended environment. For more information on becoming a partner, visit <a href="https://www.oceantherm.no">www.oceantherm.no</a> and to learn more about its bubble curtain technology, watch the <a href="https://www.oceantherm.no">video demo here</a>.

## About OceanTherm

Headquartered in Norway, OceanTherm is developing a solution to end devastating natural disasters like hurricanes, tropical storms and typhoons. OceanTherm's technology lowers the sea surface temperature by lifting colder water from an optimal depth, depending on the

temperature, and mixing it with the warm surface water, thereby reducing the sea surface below 80 degrees Fahrenheit inspired by Norweigan infrastructure. For more information, or to learn more about OceanTherm, please visit <a href="www.oceantherm.no">www.oceantherm.no</a>. You can also follow OceanTherm on their Facebook and LinkedIn accounts.

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