



The first ever sports facility powered by green energy is close - Getty Images Sport

PLANS ON ICE

The 2018 Winter Olympics in PyeongChang could see a breakthrough in eco-friendly sports facilities, with organisers waiting for the green light to heat and cool an Olympic ice rink using just sea water.

IN AN INDUSTRY under greater pressure than ever before to be seen as environmentally-friendly, having a 'green' initiative associated with any sporting new-build is now the norm.

However, a project spearheaded by South Korean government officials and organisers of the 2018 Winter Olympics in PyeongChang could set a new benchmark in a sector already bursting with technological innovation.

Pending the results of a feasibility study, the ice rink for 2018 - situated at the central hub of the Games in Gangneung - will have its temperature controlled by a natural source: deep sea water.

It is thought that the project will require an up-front investment of \$9.3 million and initially cost around \$6 million more than conventional cooling methods.

Government officials have indicated the facility would bring a 63.8 per cent drop in emissions of CO2 greenhouse gases every year from the facility, reducing the tonnes of pollutants from 2,581 to 936.

The Ministry of Land, Transport and Maritime Affairs (MLTM) has been a key driver in the project as part of a wider commitment to protecting the environment, and PyeongChang 2018 will provide a platform to illustrate ambitions in this area.

"The Korean government, through the MLTM, has been carrying forward new and renewable energy technology development projects using sea water since 2010," Hyun Taek Lim, director of the MLTM's Marine Policy Bureau and Marine Territory and Development Division, told *SportBusiness International*.

"After PyeongChang was selected as the host city of the 2018 Winter Games, the Ministry came up with the idea of applying the

technology to one of the PyeongChang venues since the technology could fit in well and support the commitment to stage an eco-friendly Olympic and Paralympic Games."

In July 2011, the month that brought PyeongChang's comprehensive victory over rival bidders Munich and Annecy at the award of the 2018 Games, the Korea Ocean Research and Development Institute applied for a patent for a refrigerated and air-conditioned system for ice rinks using deep sea water.

Six months later, the ongoing feasibility study is not focusing on the viability of the technology itself, but instead whether the technology can be applied to this particular facility, with the 3,500-capacity competition venue having been built 14 years ago.

The water used to maintain a consistently low temperature will be sourced from 200 metres below the surface of the sea, where it is beyond the reach of sunlight and has a temperature of less than two degrees celsius.

High-intensity polyethylene pipes measuring 50 centimetres in diameter will be used to pump the water to the ice rink from a spot just over five kilometres off the coast of Gangneung. About 6,300 tonnes of water will pass through the network of pipes every day.

A cooling system at the rink will then keep the temperature of the surface at 15 degrees below zero through coils situated underneath the ice. The deep sea water will be evaporated and condensed with water sourced from hot springs, and the resulting reaction will power a generator.

The technology is already in use at a number of hotéis in Hawaii and Guam, as well as residential complexes in Okinawa, Japan. If it is approved PyeongChang 2018 will have the first ever sports facility powered by green energy.