

City Talk



BEIJING SHOWS IT'S GAME ON WITH COOL TECH

The Beijing Winter Olympics 2022 has ended with resounding success.

As part of the bid to reach the national target of achieving carbon neutrality by 2060, the games proved to be an excellent showcase of this commitment.

It is inevitable that iconic events like this use a lot of energy and require a lot of land and resources, but measures were taken to ensure this theme was followed.

Reusing the Bird's Nest stadium for the opening and closing ceremonies, and the conversion of several 2008 Summer Olympics venues such as the Water Cube, the National Indoor Stadium and the Wukesong Sports Centre for curling, ice hockey and other events dispensed with the need to build anew.

This also allows the venues to be converted for use by other sporting and entertainment events afterward.

To achieve this, temporary structures strong enough to take the weight and the impact of skaters but also allow for easy dismantling afterward to restore the facilities to their previous state were built.

The new skiing venues at Zhangjiakou and Yanqing required the conversion of rural natural landscapes into game facilities, but they will be used for future training and other games, fully utilizing the facilities for the use of the citizenry.

To ensure a reliable supply of snow for the games to be held, a specially designed snow generation system was used.

The use of carbon dioxide as the cooling medium reduces the environmental impact of hydrocarbon-based refrigerants, and transcritical cooling technology significantly reduces energy consumption by at least 20 percent.

Together, these innovative technologies helped to maintain temperature of the ice to within 0.5 degrees Celsius to provide a consistent ice surface.

This high accuracy is vital as different games demand different temperatures for the hardness and strength of the surface.



Nuts and bolts

Edmund Leung

Take, for example, figure skating. The surface must allow for a certain suppleness to facilitate acrobatic movements.

But a harder surface is required for speed skating to take the stresses imposed by the sharp skate blades during corners.

Likewise, for curling, the surface must be sprayed with tiny water droplets to form tiny ice pebbles to allow the curling stones to glide and swerve.

The games venues are powered by renewable energy, and this is made possible by building new wind turbines at areas of stable wind sources and by the game sites being fed through a new power network.

They are supplemented by solar power plants built in the vicinity.

Transport to the games site is by high-speed trains for mass transit, and from there people are distributed by coaches.

This high-speed rail system is the first in the world to employ driverless operation and uninterrupted 5G communication facilities.

Hydrogen-powered coaches ensure minimum pollution, as the only effluent is water vapor. The application of such vehicles in the Winter Olympics was another showcase of futuristic technology.

Organizing a world-class event involving hundreds of thousands of overseas visitors demands a reliable, safe and comfortable means of transport.

That requires a lot of planning and execution, employing new technology.

Once again, evolving engineering innovation not only leads our future, but also makes life so convenient and comfortable, even in sports events.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over the use of evolving technologies