



INTERNATIONAL
OLYMPIC
COMMITTEE

IF Sustainability Project
**ICE RINK ENERGY
& WATER SAVINGS**





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The world faces important challenges across a wide spectrum of economic, social and environmental issues, and the sport community is not immune from their impacts. The Olympic Movement has both an opportunity and a duty to actively contribute to the global sustainability debate in line with its vision of “Building a better world through sport”.

With this in mind, and in response to recommendation 5 of Olympic Agenda 2020 (“Include sustainability within the Olympic Movement’s daily operations”), the IOC conducted the International Federation (IF) Sustainability Project throughout 2016. The IOC carried out the project with three objectives: obtaining an overview of IFs’ sustainability initiatives; identifying common topics, good practices and shared challenges; and sharing information among the IFs. As part of this project, the IOC collaborated with the IFs to compile a series of case studies reflecting how IFs are contributing towards a more sustainable world.

Each case study is aligned with one or more of the IOC’s five sustainability focus areas: infrastructure & natural sites;

sourcing & resource management; mobility; workforce; and climate. These focus areas were selected through an extensive stakeholder engagement process, taking into consideration today’s key sustainability challenges and the manner in which the IOC believes the Olympic Movement can most significantly contribute to addressing them.

The case studies are also aligned with the United Nations’ (UN) framework of 17 Sustainable Development Goals (SDGs). This framework is pivotal for the Olympic Movement: in September 2015, the UN General Assembly confirmed the important role that sport can play in supporting the UN’s 2030 Agenda for Sustainable Development and its SDGs.

“Sport is also an important enabler of sustainable development. We recognise the growing contribution of sport to the realisation of development and peace in its promotion of tolerance and respect and the contributions it makes to the empowerment of women and of young people, individuals and communities as well as to health, education and social inclusion objectives.”
Paragraph 37, UN 2030 Agenda for Sustainable Development



A SKATING FACILITY IN GERMANY HAS INSTALLED NEW TECHNOLOGY TO SAVE ENERGY AND REDUCE WATER CONSUMPTION.



The Eissportzentrum Oberstdorf is the national training centre for figure skating in Germany, supported financially by the German and Bavarian state governments and owned by the community of Oberstdorf. The community and the government sought to implement two new systems to reduce energy costs and conserve water.

“THE TECHNOLOGY CAN SAVE 40-50% OF THE ENERGY REQUIRED FOR THE BUILDING’S HEATINGS COSTS.”

1. New refrigeration plant

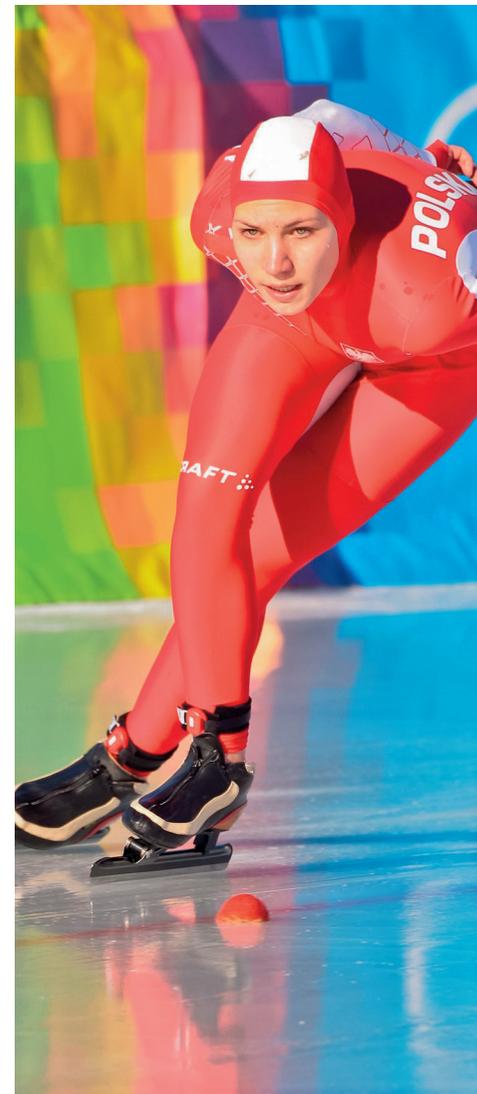
The ice rink’s new refrigeration system is a “warm-cold exchange system”, which supports the building’s heating system. The waste heat generated by refrigeration is incorporated into the heating system, significantly reducing energy consumption at the facility – as at most ice rinks, this waste heat had previously vanished

through an exhaust system. The reconstruction of the ice rink in late 2014 was completed in approximately three months. It was approved by the German Ice Skating Federation and supported by the German Ministry of Sport.

2. New technologies for ice resurfacing machines

The ice resurfacing machine at the rink has been equipped with a scale to measure the amount of water filling the tank, along with a mechanism that ensures the filling process automatically stops when the required amount of water has been reached – previously, the machine was always completely filled regardless of how much water was required for the specific task at hand. The person operating the machine can preselect the required quantity of water, in some cases by using electronic control units located around the rink.

The water supply pipe that provides water to the machine is equipped with a thermostatic valve, which regulates



OBJECTIVES

After the city of Oberstdorf in Germany was faced with high energy costs associated with operating and maintaining local ice rinks and swimming pools, city officials researched ways of reducing utility costs. Officials decided to invest in a new refrigeration plant for the local ice rink, which is used for skating, curling and ice hockey, in an attempt to reduce the energy costs at the facility. In addition to the new refrigeration plant, the ice resurfacing machines were equipped with new technology in order to save water and energy.

Each project contributes to one or more of the IOC's sustainability focus areas and one or more of the UN's SDGs:



UN SDGs



the temperature and can be manually adjusted using the electronic control units. The required temperature varies between 40° and 60° Celsius, depending on the activities taking place in each session. For example, figure skating requires “warmer” ice than ice hockey or short track speed skating; resurfacing after a public session requires more water at colder temperatures than resurfacing after a sport session; and preparing for a figure skating session requires less water than an ice hockey session. Adjusting the water temperature accordingly can save 40%-50% of the energy required for the building's heating system.

The entire system can be placed on a time control. Approximately 15 minutes before the preset resurfacing time, the heating system will begin to warm the water to the predetermined temperature and will begin filling the tank. The filling process will cease once the required level of water has been reached.

The system guarantees that no energy is wasted by heating water at

unnecessary times; the water temperature is automatically regulated, saving energy; the automation allows the driver of the machine to focus on other matters; and the amount of water used each day has been reduced by 30-40%.

EVALUATION

Having studied the impressive results in Oberstdorf, the International Skating Union (ISU) has begun discussing how to help to promote these methods of energy and water conservation for ice rinks. Contact has been made with the International Ice Hockey Federation (IIHF) to see how the two IFs could partner to promote the process at other ice rinks across the globe.

