WORLD GAMES STADIUM

Start of Construction: **2007**
End of Construction: **2009**
Coverage: **19 acres**
Cost: USD **150.6 million**
Design: **Toyo Ito**
Capacity: **40,000**

Sport Architecture
(Taiwan)

KAOHSIUNG STADIUM IS ONE OF A KIND. BUILT ENTIRELY FROM RECYCLABLE MATERIAL, IT SURPRISES THE VIEWER WITH ITS OPEN STRUCTURE AND ROOF, COVERED BY SPIRAL-SHAPED SOLAR PANELS. IT IS THE ONLY STADIUM IN THE WORLD TO BE COMPLETELY POWERED BY SOLAR ENERGY.

AN ADVANCED STADIUM

Built during the **2009 World Games**, **Kaohsiung Stadium**, whose main structure is surrounded by a large park, occupies an area spanning 19 hectares. It is an advanced facility especially from the environmental point of view; both for the lush greenery that surrounds it and its construction achieved entirely with recyclable materials while being powered completely by **solar energy**.

AN OPEN STRUCTURE

At first glance, the **World Games Stadium** is striking for its open structure and steel spiral shaped roof that enhances the fusion of the facility's external and internal spaces.
"We wanted to open the southern part of the stadium not only as an ideal, but physically as well. We were able to realize this idea of openness by making the building welcome spectators starting from the MRT (**Mass Rapid Transit** subway line in Kaohsiung) station, which serves as a gate to the stadium. The steel pipes of the roof wrap around the entire stadium in a spiral and reach as far as Zhong Hai Road to the south, accompanying the spectators inside the structure while fueling their enthusiasm," said **Junji Oga**, associate architect at **Toyo Ito & Associates**. Compared to the traditional closed form stadiums, this system eliminates the boundary that separates the interior from the exterior, creating a situation where the entire area is transformed into a large park that surrounds the structure. In this way, the activities that take place on the field and those outside are connected. "Although the concept of openness is not suitable for densely populated urban areas because of noise and vibrations, in this area, surrounded by nature, we have been able to experiment with a new typology of sports facility," said Junji Oga.

RESPECTING THE ENVIRONMENT

"I wish to emphasize two aspects – said Junji Oga. First, we considered the entire area as an urban park, a place where residents can relax in nature even when the stadium is not hosting any event. As for the structure itself, it is possible to extract considerable amounts of energy from the solar panels that completely cover the roof. The result is a sports facility that is environmentally friendly and sustainable."

What makes this stadium special is that it has been built using recyclable materials and that it is powered by solar energy. All materials used for construction are 100% recyclable and manufactured in Taiwan. Meanwhile, there are 8,844 solar panels on the roof covering, which are expected to produce up to 1.14 million kWh per year. This saves **660 tons of carbon dioxide** while allowing the sale of the excess energy produced during periods when the plant is not used. When the stadium is in use, the energy produced is used to light up 3,300 light bulbs and two jumbo video screens.

A SYMBOL OF THE CITY

The stadium designers wanted the structure to reflect, as best as possible, some of the features of the host city of Kaohsiung, Taiwan's second largest.
"It's a very lively city where parks abound; the climate is pleasant and the people are dynamic and cheerful – said Junji Oga. The spiral pattern of the roof structure reflects the dynamic nature of the city and its inhabitants, and it has been designed to arouse enthusiasm and determination in athletes and spectators." Moreover, the choice of colors for the playing surfaces was not casual. "We opted for blue and red - said Junji Oga. The blue gives a feeling of freshness while red symbolizes the tropics. In this way, the bright colors better express the image of Kaohsiung."

THE 2009 WORLD GAMES

The **Kaohsiung National Stadium** was built to host, from July 16-27, 2009, the eighth edition of the World Games, a sporting event organized by the International **World Games Association**, under the auspices of the International Olympic Committee, which brings together athletes from disciplines not included in the official Olympic program. During the show, the Stadium hosted the opening and closing ceremonies as well as the Frisbee and rugby sevens matches. Inside, there is a football pitch and a **Super X Performance** athletic track manufactured by **Mondo**. The stadium was completed in January 2009, after only two years of work. It has a capacity of 40,000 spectators.