Case Study

Structural Health Monitoring
Taipei Dome
Xinyi, Taipei, Taiwan

GeoSIG
swiss made to measure

In Cooperation With

sanlien

Background

The Taipei Dome in Taipei City, Taiwan, is a multi-purpose domed stadium that opened in October 2023. Developed by the Farglory Group, it is the first integrated mixed-use development in Taiwan, featuring an indoor baseball arena with seating capacity for 40,000. The complex also includes retail space, offices, apartments and a hotel, with views of the historic Song Shan Tobacco Factory. It can host up to 58,000 for concerts and performances, and is equally capable of accommodating large-scale exhibitions and conventions. Because it is sited on a historical site and because it will offer immense cultural and recreational opportunities, the complex is of importance to the community.

Challenge

Taiwan is a seismically active locale, as well as enduring typhoons seasonally. The Taipei Dome is a first-of-its-kind structure in Taiwan that accommodates tens of thousands of people at a time, therefore safety is paramount. Developers knew that the complex would require seismic, structural deformation, and health assessment monitoring of the dome.

Solution

Our Partner in Taiwan, Sanlien Technology, is a long-trusted provider of measuring technologies and solutions, with 50 years' experience in environmental monitoring. This experience was called upon for the Taipei Dome project.

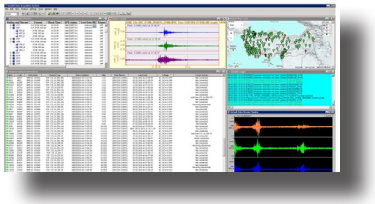
Sanlien's solution included 10 x GeoSIG GMSplus-73 force balance accelerographs, which can be configured in an interconnected network with common timing and triggering. On the upper level, there were 5 instruments placed on the roof on the north side, the east side, the south side, the west side, and the centre. Another instrument was situated in the centre of the underground level B5. Additionally, two instruments were placed, one on the top floor of the cinema building and one on the top floor of the mall building, and a further two instruments were placed, one on the top floor of the hotel building and finally one in a free-field seismic observation well to measure ground motion away from the structures. Sanlien's knowledgeable technicians took care of the installation, ensuring the stations were in the optimal locations.

All of the monitored data is transmitted in a Cloud-based monitoring system with secure communication over the internet and with full remote management using GeoSIG's proprietary GeoDAS software. While enhancing the Strong Motion Network in this seismically high-risk area, the measurements also improve the ability to make rapid post-earthquake assessments of expected damage.

Another Solution using GeoSIG instruments and a capable Partner effectively showing that quality and reliability can also be cost-effective.

Product links

GMSplus AC-73 GeoDAS



GeoDAS software

GMSplus-73

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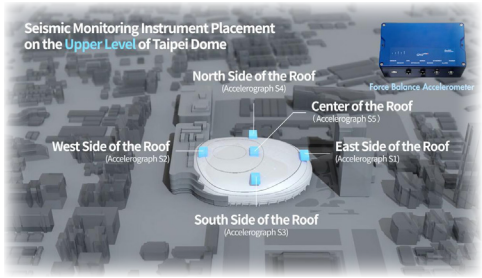
The multi-purpose domed stadium, Taipei Dome, is located in Xinyi, Taipei, Taiwan.

(Above) Sanlien technicians site the ideal locations for installation of the GMSplus-73 accelerographs; (below) levelling a GMSplus-73 in its station.



(Above) The domed roof is fitted with five of the 10 accelerographs; (below) data from the monitoring system is transmitted using GeoDAS software.