And the winner is…

Link 200 Joint Venture and Gammon Construction Ltd. have taken Instantel® Minimate Plus™ vibration monitors into space for an all new application - the Hong Kong Space Museum in Hong Kong's busy Tsim Sha Tsui district to be exact!

KDB200 is a two billion Hong Kong dollar ($256 million USD) construction contract that includes the design and build of the new West Kowloon Station and twin TBM tunnels. These tunnels link the new station to the existing MTR East Rail Line and East Tsim Sha Tsui Station. Link 200 Joint Venture is the main contractor on the project and Gammon Construction Ltd is the instrumentation and monitoring subcontractor responsible for the foundation works.

Over 40 vibration monitoring stations are required due to the highly developed urban location of the construction site. Especially challenging is the section of TBM tunnels running west to east under Salisbury Road, a busy roadway. The tunnels not only cross over existing, operational MTRC railway tunnels, but are also in close proximity to prominent hotels and sensitive structures, such as the historic Marine Police Headquarters building and the Hong Kong Space Museum (HKSM).

A main attraction at the HKSM is the space theatre. The space theatre includes a hemispherical projection dome, a fully automated star projection system, and an OMNIMAX® projector. HKSM staff were extremely concerned that vibrations from the foundation pile driving or tunnel boring could disrupt their daily planetarium shows or cause damage to the sensitive projection system.

To alleviate their concerns, and ensure the projection system would not be affected, Gammon Construction Ltd. developed a unique solution using Instantel Minimate Plus vibration monitors. The seismographs were used with geophones to continuously monitor vibrations on the OMNIMAX projector and projection system hoist frame during working hours. The Minimate Plus units were connected to a computer in the HKSM and using Instantel® Blastware® Auto Call Home™ remote monitoring feature, reports were automatically retrieved every four hours and uploaded to a website. Alarm breaches were also uploaded and emailed immediately for review if excessive vibrations were recorded.

The monitoring results showed that minimal vibration was recorded at the OMNIMAX projector, while the monitoring at the star projection system hoist frame revealed that operation of the hoist resulted in vibrations far greater than those from the construction. Their innovative and reliable monitoring system ensured that the foundation works, and first TBM tunnel closest to the museum, have been completed successfully without any effects to HKSM operations.