



Seismic monitoring of a high-rise building in the Philippines

Monitoring description

The Philippines are one of the most seismic countries in the world, with 5 earthquakes with magnitude equal or greater than 7.4 on the Richter scale since 2001.

Since there are many highly urbanized regions, the high-rise buildings are one of the most sensitive structures to be monitored.

In the example presented in this case study, a seismic monitoring is performed inside a high-rise building in Taguig (see Figure 1), in the south-eastern portion of Metro Manila, close to Marikina Valley Fault System.

Three MR3000SB devices are installed respectively at the foundation, middle and top floor of the structure. They have the following characteristics:

- Internal recorder and triaxial accelerometer;
- Internal AC/DC converter;
- Ethernet RJ45 connector;
- Horizontal installation.

Figure 2a shows the MR3000SB installed in the ceiling at the middle floor, while Figure 2b shows the MR3000SB ready to be installed in the ceiling at the top floor.

The instruments constantly monitor the structure and raise instant warnings if the pre-defined acceleration thresholds are exceeded. Such exceedance may result in potential structural damage.

Monitoring Summary

| | |
|---------------|---|
| Project: | Seismic monitoring of a high-rise building |
| Location: | Taguig (Philippines) |
| Objective: | Strong motion monitoring with 3 devices installed at foundation, middle and top floor |
| Device type: | MR3000SB with internal triaxial accelerometer |
| Installation: | February 2018 |



a)



b)

Figure 2. Two MR3000SB used in the project: a) device installed in the ceiling, at the middle floor; b) device ready to be installed in the ceiling, at top floor.



Figure 1. High-rise buildings in Taguig (Philippines). The MR3000SB devices are installed in the building on the left.

Conclusions

Three MR3000SB strong motion devices are installed in a high-rise building in Taguig. The instruments monitor that the accelerations do not exceed the maximum acceptable values, by effectively contributing to the structure risk mitigation.

Special thanks to Konnect Universal Solutions who allowed us to write this case study.

About BARTEC SYSCOM

SYSCOM Instruments SA is a subsidiary of BARTEC GROUP, a multinational manufacturer of industrial safety equipment. SYSCOM Instruments SA is a leading provider of vibration and seismic monitoring equipment for civil engineering and safety related markets, especially for NPP and LNG plants. SYSCOM Instruments SA reputation rests on the reliability of its products, coming from a meticulous control of every design and production aspects.