

Making Use of Seismic Isolation Systems to Keep Tests Running Even During Earthquakes

In the medical laboratory where I work, we perform a variety of tests, including blood tests, immunological tests, and urine tests. These tests are used for diagnoses, so they are an indispensable part of the medical process. We work tirelessly to ensure testing equipment will function even if it gets damaged in a natural disaster because of the important role these tests play in protecting the lives of our patients.

I saw how severely the Tohoku University Hospital was damaged during the Great East Japan Earthquake. Much of its valuable testing equipment fell over and was rendered unusable. During the Kumamoto-Oita earthquakes that occurred last year, we provided medical assistance in the city of Aso. Luckily, these earthquakes only had a magnitude of 5 where my hospital is located, and the damage it suffered was negligible. At the same time, the Kumamoto City Hospital, located in the city of Kumamoto, where the recorded magnitude was 7, did not have a seismic isolation system and suffered significant damage. All of its patients had to be moved to other facilities because of the risk of the building collapsing. Having personally experienced these two major earthquakes reaffirmed for me the necessity of taking appropriate precautions against earthquakes. In particular, I felt the urgent need to secure our testing equipment with seismic isolation systems.

Therefore, when we installed new equipment during the reconstruction of our testing rooms, we used seismic isolation systems to secure our most valuable devices: biochemistry auto analyzers and blood analyzers. For our other equipment, we used standard earthquake-proofing methods, such as securing the equipment to the wall using bands. Our testing equipment is extremely precise and examines patients' bodies and responses on the micron scale. If these pieces of equipment are damaged during a major tremor, we cannot perform tests until their functions are restored, which takes a long time. As the Advanced Emergency Medical Service Center and Disaster Base Hospital, we provide medical examinations 24 hours a day to emergency patients. To per-



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form these functions, the testing systems that doctors use to treat their patients must remain in working order at all times. We cannot turn patients away during a disaster. We must be able to conduct diagnostic tests, no matter what. From what I saw of THK's seismic isolation system at an academic conference and the results it displayed at the Tohoku University Hospital, I have placed my trust in this technology.

In March 31 of this year, the head of the Health Policy Bureau at the Ministry of Health, Labor and Welfare issued a revision to the requirements for disaster base hospitals, adding a business continuity plan (BCP) to the list. Because we are a disaster base hospital, I was certain that installing a seismic isolation system was the right decision from a BCP standpoint, as well.

There are many fault lines in Oita Prefecture, and its neighboring Beppu Bay has been an epicenter in the past. This area could see a major earthquake at any time, and there is even a legend that tremors once caused an island to sink into the ocean long ago. I prefer seismic isolation systems over other options such as seismic damping and earthquake-proofing for their ability to isolate objects from tremors. While seismic damping and earthquake-proofing can prevent testing equipment from toppling over and breaking, these methods will not protect what is inside of a machine from breaking due to vibration. Seismic isolation systems, on the other hand, not only prevent equipment from falling over, but also protect the interior of the device from vibration.

We have been charged with the duty of performing diagnostic tests at all times. While securing the entire hospital with a seismic isolation system is not possible, I very much hope to install a seismic isolation system under a whole floor, room, or other section of the hospital.



Blood analyzers (top right) and biochemistry auto analyzers (bottom left) installed with seismic isolation systems