

## CASE STUDY

# SGS SEISMIC QUALIFICATION OF LATECH EQUIPMENT FOR KOREAN POWER PLANT

FEBRUARY 2013

In February 2013, SGS was contracted by LATECH Corporation to conduct seismic qualification services for nuclear power plant transformers to be installed at a Korean power plant. The three-week project ended with SGS-issued certification stating that the equipment had been inspected and qualified for seismic conditions.

LATECH is Korean leader in the field of programmable logic controllers (PLC) used for the automation of electromechanical processes and distributed control systems (DCS) used in a variety of industries to monitor and control equipment designed for HVAC LIG vessels and nuclear power plants.

After reviewing the few companies in the world offering earthquake testing services, LATECH project leaders selected SGS, the only private testing company of its kind in Korea, to conduct the necessary inspection and provide the required certification.

### SGS KOREAN LABORATORY

In response to the growing demand for seismic testing worldwide, SGS began conducting earthquake testing for nuclear power plants in its state-of-the-art Korean laboratory. Located in Giheung, the laboratory was specifically designed to perform all types of earthquake tests on samples of nuclear power plant products and components, electrical communication equipment and railway systems not exceeding a maximum weight of three thousand kg and maximal dimensions of 2500(W) x 2500(D) x 3000(H) mm.

One of only a very few of its kind in the world and the singular testing services provider to use three-axis shake tables for earthquake simulation, the SGS Korean laboratory is rapidly meeting the demands for earthquake tests among its affiliates around the globe. Accredited by the Korea Laboratory Accreditation Scheme (KOLAS), the SGS lab conducts earthquake test compliant to IEC international standards.

The LATECH transformers intended for use at the Korean power plant were tested and certified at this excellent SGS facility.

### EXPERT EARTHQUAKE TESTING

Earthquake testing consists of SGS experts measuring displacement and bolt strain in test samples and conducting performance inspections and structural integrity evaluations. In an initial thirty-minute testing period, SGS specialists determine the overall performance of a sample by mounting it on testing equipment and performing a resonance search. SGS expert inspectors then conduct earthquake testing, identify resonance levels and evaluate post-testing performance. SGS earthquake testing is done in accordance to the following international standards:

- IEEE 344
- IEC 60068-2-57
- IEC 60068-3-3
- NEBS (GR-63 CORE)

For the testing of the LATECH transformers, SGS inspectors followed the IEEE 344 international standard, "Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," which provides guidelines for establishing procedures yielding data to demonstrate that the qualified equipment meets all



performance requirements. These recommendations were applied in the tests, analyses and experienced-based evaluations of the LATECH transformers in order to prove performance claims and to document equipment or component performance as part of the overall qualification effort.

SGS experts chose to use the MAST (Multi-Axial Shaking Test) Seismic Simulation Test System testing method to verify that the LATECH equipment met the requirements mandated for functional and structural integrity.

After performing comprehensive earthquake testing at the Korean laboratory, SGS provided LATECH a test report including analysed data such as Required Response Spectrum (RRS), Test Response Spectrum (TRS), frequency and acceleration measurements, a performance checklist and resonance search data. Calibration reports on the testing equipment, measuring equipment,

accelerometers and sensors used in testing were submitted. SGS experts also provided measured data for the displacement of the samples as well as final test results.

#### SGS SATISFACTION GUARANTEED

LATECH satisfaction with SGS services and trust in SGS personnel is illustrated by a number of collaborations on other projects such as:

- 2012-05 SENSOR TB BOX for TBN-Driven Pump
- 2012-12 Level Switch
- 2013-01 Pick-up Sensor
- 2013-02 Engine Panel
- 2013-05 Pressure Indicator
- 2013-06 Governor
- 2013-06 Air Frame
- 2013-06 Instrument Board
- 2013-07 Pressure Switch

SGS is pleased to have assisted LATECH

in the past and looks forward to serving this distinguished partner again in the future.

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognised as the global benchmark for quality and integrity. With more than 75 000 employees, SGS operates a network of over 1 500 offices and laboratories around the world.

#### CONTACT

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