



TECH SUPPORT

1. Functional test vs. Calibration

Background

Seismic monitoring systems generally require periodic inspection and test in order to verify that the system is operational. The recurrence interval between inspection and test visits is dependent on several factors including: the applied technology, manufacturer's recommendations, the controlled process/media, applicable codes and ordinances, and the owner's quality assurance program requirements.

Inspection, test and preventative maintenance

With respect to the applied technology, issues affecting the inspection and test interval include: type of sensor, site environmental conditions (temperature, humidity, dust, corrosion), enclosure rating, consumables (recording media, batteries, desiccant, lamps, etc., as applicable) and battery capacity. Preventative maintenance is equipment specific, but may include: lubrication, checking corrosion, removing foreign objects, replacing consumables (spent or as scheduled), checking battery performance loaded and unloaded, checking sensor alignment or orientation, correction of sensor offsets/drift, verification of timing circuits, check instrument operating parameters, verify data file transfer and file formatting.

Unless otherwise specified, ESS recommends at least one annual visit for the inspection, functional test and preventative maintenance of its solid state (MEMS based) seismic monitoring systems operating in a controlled environment. For older systems employing electro-magnetic sensors or outdoor systems we recommend a semi-annual interval. If you are not sure about your system's requirements, contact us and we will be happy to assist you.

Calibration or Setpoint Verification

ESS' strong motion earthquake monitoring equipment is activated by a seismic switch which transduces ground motion (acceleration) into a useable signal (i.e. alarm relay contacts). MEMS-based IC sensors, like those employed in ESS' seismic switch, reportedly do not ever require re-calibration. However, for most applications the **sensor's acceleration alarm set-point should be verified periodically (typically annually)** by testing the seismic switch against a known physical constant (i.e. earth's gravity, nominally 1 g) or against another sensing element previously calibrated against a known physical constant or NIST-traceable test equipment. NIST stands for National Institute of Standards and Technology.