

Automatic tank gauging for underground storage tanks

When is automatic tank gauging required?

Performing a monthly leak test using a properly installed and maintained automatic tank gauge (ATG) system, which meets the minimum performance specifications, is one of several options for meeting the leak detection requirement.

How do ATG systems work?

ATGs can provide tank inventory information, tank leak testing, and, for some models, piping leak testing. Some ATG systems also have other automated features that exceed federal and state leak detection requirements, as well as help with tank management.

ATG systems are permanently installed in underground storage tanks (USTs). A probe is inserted into the tank, which measures the product level and temperature. An ATG monitor and a microprocessor are installed in a nearby building to record probe readings. The monitor has a keypad for programming, a display to show the required data, and the capacity to print out inventory and test data. Many ATG systems may have four to eight probes connected to one monitor so multiple tanks may be monitored. ATGs may be wired to monitor electronic line leak detectors and may be linked to computers at remote locations from which the system can be read and programmed.

While in the inventory mode, the ATG automatically measures the product and water level in the tank, replacing the use of the gauge stick to perform this function. This mode records the activities of an active tank, including deliveries and sales.

While in the leak test mode, the ATG takes static product level and temperature readings nearly continuously for a set period (typically 2-5 hours) to determine if a changing product level may be due to a leak. The times are programmed at the time of installation and are typically done at night when pumping activity and deliveries are less frequent.

Some ATGs perform continuous statistical leak detection (CSLD) or statistical continuous automatic leak detection (SCALD). Rather than having a programmed set period of time to perform the leak test, this ATG software automatically takes tank readings over the course of the month at all times of the day, whenever there is no pumping activity or product deliveries. The software statistically analyzes the data to determine if the tank is tight or leaking.

What performance standards must the ATG meet?

ATG leak tests must meet minimum performance standards for detecting leaks. ATGs must be capable of detecting leaks of at least 0.2 gallons per hour.

How do I know if my ATG meets the performance standards?

The ATG must be evaluated by a third-party testing laboratory to determine if it meets the required performance standards. A government panel then reviews the evaluation; if the minimum standard is met, the method and vendor are listed on the National Work Group of Leak Detection Evaluations (NWGLDE) website found at <https://neiwpc.org/nwglde/>. The test results from this evaluation are known as performance claims and must be provided to you by the vendor.

How do I select an ATG?

Owners and operators generally select ATG systems because they require minimal operator involvement, cause few service interruptions, and can provide numerous automated leak detection results. There are many types of ATG manufactures and methods available. An ATG system that performs static testing at a programmed time is commonly found at facilities where there is no pumping activity during the programmed leak test time and enough product is in the tank to perform the leak test.

An ATG system that performs continuous leak detection (e.g. CSLD or SCALD) is commonly found at facilities with a 24-hour pay-at-the-pump dispensing option. A continuous leak detection system would allow the tank to be kept in more or less continuous service. When purchasing an ATG, work with the vendor to assess your needs and budget to determine which system works best for you.

Note: If the ATG is to be used for leak detection on manifolded tanks, the ATG must be certified for such use.

The tank owner should insist that the installer provide clear instructions and training for properly operating and maintaining the system at the time of installation.

How do I monitor my tank using an ATG?

For proper leak detection using an ATG, a passing leak test result must be obtained at least **monthly** for each tank. The leak test may be initiated automatically or manually. The tank must be taken out of service during the leak test if using an ATG system performing static testing at a programmed time. No product should be delivered to the tank or withdrawn from the tank during the test, which generally takes from two to five hours. This is typically done at night when it is more likely that nothing is being added to or removed from the tank.

You should test when the tank is relatively full, e.g. after a delivery, since no leaks can be discovered above the product level. The manufacturer of the ATG may require a minimum product level in the tank for a passing leak test to be performed.

This leak test must be conducted at least once a month. Occasionally, a test will not give adequate results due to low volume, fluctuating temperature or other reasons. It is advisable to conduct a leak test often so that at least one passing test is obtained each month; the Minnesota Pollution Control Agency (MPCA) recommends a weekly test.

For continuous leak detection type systems (CSLD or SCALD), the tank does not have to be taken out of service to perform a test. However, during a given month, if there is insufficient data to receive a passing test, the system must be shut down and put in the leak test mode until a passing leak test is completed.

If a leak test gives an “inconclusive” or “invalid” result, the reason for this result must be investigated and corrected. Common explanations include tank volume too low, tank was filled during the test, weather conditions, traffic vibrations, and malfunctioning probe. Within 24 hours, the test must be repeated to obtain a passing result. If the test continues to be inconclusive, a UST contractor should be contacted to investigate the issue. After any leak test, passing, failing, or inconclusive, always print out the results and keep them on file.

Keep in mind that ATG systems have various system needs for leak tests. Product levels, temperature, and other factors may influence the results of these leak tests. You should fully understand your system’s capabilities and limitations. Always refer to the manufacturers’ instructions for the proper operation of the ATG system.

Put ATG monitoring in the most responsible hands. Do not rely on part-time or under-trained employees.

Do I have to report a possible leaking tank based on the ATG leak test results?

If a leak test gives a failing result, the test must be repeated within 24 hours. If the second test also gives a failing result, a UST contractor should be contacted to investigate the issue. The UST contractor may need to

conduct tightness testing to verify the test result. If the UST contractor confirms a release, the tank owner must immediately call the Minnesota Duty Officer at 651-649-5451 or 800-422-0798. You must promptly investigate and resolve all suspected leaks.

How do I maintain my ATG?

Make sure your ATG is constantly on, otherwise it is not monitoring for leaks. ATGs must be maintained and calibrated according to the manufacturers' schedule. An MPCA approved tester must conduct a functionality and programming check of the ATG annually. Lightning strikes and power outages may disrupt ATGs and servicing may be needed after such an event. Do not hesitate to contact the manufacturer or installer for help if you are experiencing problems with your ATG. A contractor that knows ATG calibration and maintenance requirements may perform adjustments and repairs for you.

What about water in the tank?

Normally a small amount of water is in any tank due to condensation and water that is found in today's fuels. Overtime this the amount of water may slowly increase. The tank owner should monitor the water level in tanks. Any sudden increase in the water level may indicate a leaking tank or a leaking tank top fitting. A UST contractor should be immediately contacted to investigate any sudden increase in water. Excess water should be removed from the tank.

What records must be kept on file?

Without written records, there is no way to verify that leak detection is being performed. Owners and operators are required to maintain certain written records. These records must be kept at the facility where the tanks are located, or if kept elsewhere must be immediately submitted to the MPCA upon request.

The following records must be kept **as long as the ATG is used**:

- Documentation of the manufacturer's written performance claims.
- Documentation of the manufacturer's written maintenance and calibration schedules.

The following records must be kept for at least **five years**:

- Monthly leak tests (or for continuous leak detection systems, monthly data analysis). Keep the printout of at least one passing result per month.
- Documentation of any repairs, maintenance calibration, and annual operability inspections.

Need more information?

Visit the UST Program at <https://www.pca.state.mn.us/waste/underground-storage-tank-systems>. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864 and ask for the UST Program