



Transforming Safe Pipeline Excavation Operations



UtilAlert: What It Is

UtilAlert – an innovative Notification System – is a “plug & play” excavator-mounted device, able to:

- Discern digging activity from other activities through on-board multi-axis inertial measurement units
- Capture the GPS location of the excavator in real-time
- Compare the location to utility boundaries using GIS databases
- Alert the excavator operator and management when digging in an area that does not have a valid dig ticket or in proximity to a high consequence utility (requires local 811 center and utility participation)
- Transmit the information through the cellular network to a dashboard and stores it in a database
- Track last known position of excavator for more productive equipment management and theft recovery

How It Works

Software compares the excavator location and current activity with mapping from any connected utility and 811 dig ticket boundaries. When a high-risk utility facility is present or the software identifies digging with no active dig ticket boundary, the system alerts the excavator operator directly and both contractor and utility damage prevention teams through mobile and desktop apps. All parties can then act to prevent damage before it occurs.

Digging Deeper: Alerts & Geo-Fencing

Key to damage prevention is UtilAlert’s onboard multi-axis Inertial Measurement Unit (IMU) and patent-pending software that enables real-time alerts and geo-fencing. The operator notification system includes a loud buzzer, flashing lights and a message screen. Management alerts are flexible and customer defined through an online interface. Alert systems can be through email or text messaging as selected.

The GPS also provides geo-fencing of fleet storage yards and real time access to last known position on mobile and desktop applications- improving fleet management and recovery of missing equipment.



Key Benefits

- Improved transparency on excavation activities in the field
- Reduced risk when digging near underground pipelines
- Enhanced situational awareness through real-time data streams of excavation locations and movements
- Historical data archiving for big data analysis and trend identification
- Potential insurance benefits from continual safe construction job site
- Tracks digging activities outside of authorized boundaries
- Improves fleet management capabilities overall
- Improves employee compliance with good safety practice with timely supervisor reinforcement

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UtilAlert Has The Ability to:

- Communicate with the infrastructure locator database
- Locate the excavator and other equipment in motion in relation to underground infrastructure
- Determine the current equipment activity being performed
- Analyze line location, equipment location and equipment activity to determine risk
- Effectively alert stakeholders if a risk is imminent, including equipment operator, site safety manager and off-site personnel such as utility representatives

Ease of Use and Durability

UtilAlert can be plugged into any switched 12v or 24v power/lighter interface, or even hardwired into the electrical system of nearly any vehicle.

“Feedback” Alert Mechanisms - Optimizing Situational Awareness and Operational Safety

UtilAlert produces both auditory alerts (beeps loud enough to cut through ambient construction noise and ear protection) and visual alerts (a series of bright LED lights) in levels of urgency appropriate to the level of risk determined.

In addition, detailed operations desktop and mobile compatible dashboards are provided to supervisory personnel both in the field and in remote offices and other environments. These dashboards include real-time and historical data for all pieces of equipment on a given site, and can be readily accessed by users.



Limitations

UtilAlert device is intended to augment practices for safe excavation and shall not be considered a single solution to damage prevention. Boundaries of utilities and dig tickets have variability in accuracy and are intended to be set to provide greater tolerance to accommodate these inaccuracies and expected reach of excavators. GPS signals can be inconsistent or deflected due to buildings and terrain which will affect the effectiveness and accuracy of the UtilAlert system. Mobile cellular connections may be weak or interrupted which would prevent data transmission, analysis and alerts. Inertial algorithms determined from field data from many types of excavators and transmission at each interval may not detect digging activity. With deference to higher levels of safety, it is normal to expect some false positives from the system (if determined as false, the audio alarm can be silence).

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