NEXT GENERATION RFID UNDERGROUND ASSET MANAGEMENT IS HERE!

RFID has been used for underground locating for over 20 years. The benefits of below ground RFID markers—ability to be out of sight, long lasting, no internal power requirement—has helped infrastructure owners and utility locators find key underground utility points for years.

Advancements in RFID technology and the development of new technologies such as cloud-based software, smartphone applications, and GIS integration are reenergizing this underground locating solution. New RFID underground locating systems such as the breakthrough InfraMarker System announced recently by Berntsen International, are taking advantage of these technologies to create more benefits and opportunities than ever before. This article highlights how the RFID underground locating world is shifting with these new technologies.

Advances in RFID Technology

Previously, it was believed that only low frequency bands could read RFID tags underground. Recent advances in RFID tag and antenna technology have now made it feasible to use Ultra-High Frequency (UHF) to read tags through soil to 24 inches and in sand up to 5 feet. This breakthrough enables the use of smaller locating equipment, cheaper tags, and greater compatibility with the far more prevalent Class 1, Gen 2 tags. It opens the door for RFID systems that can track all infrastructure—above and below ground—in one system while setting the stage for future infrastructure advances such as sensor-enabled RFID tags that can communicate environmental status changes.

Cloud Data Storage

Traditional versions of RFID underground locating systems were limited by tag memory size for information storage. That small amount of tag information was read into a field unit and transferred to a personal computer via cables, and eventually into a customer's GIS or asset management system. Today, cloud software and storage capabilities have rendered tag data size irrelevant in the RFID discussion. In modern RFID systems, tag data can be linked to records in the cloud to provide almost unlimited data storage capability at every geo-located point. This means that locators and infrastructure managers can attach asset photos, location videos, maintenance documents, purchasing records, and more to every tagged asset in the field. This dramatically improves the underground locating experience and makes infrastructure management far easier.

Data Management and Standards

Traditional RFID systems either required a stock data format for the customer or were customized with software constructed for each organization. The former was too constraining while the latter was expensive and made data sharing difficult. New software systems and data management designs are now available that allow data to be parsed in ways that support standardization and customization. This means that basic infrastructure maps and data can be made visible to contracted utility locators, government officials, and even the general public while still securing customer proprietary information for internal use. The InfraMarker System, for example, uses a 3 level data schema to address this concern.

GIS Integration

Advances in GIS and standardization of shape files support easy exporting of field data into a company's GIS. No longer does an infrastructure owner have to wait for the data files to be translated and emailed for downloading into the company's infrastructure management system. New RFID underground management systems can speed the data transfer from field to ArcGIS from days to hours or even minutes.

Mobile Applications and the Internet

Traditional RFID locating systems were not linked to the Internet and required customized equipment and software to operate in the field. With advances in smartphone technology, a commercial smartphone can control the RFID reader, provide the Google map to help get a locator to the right spot, take photos and video in the field, and transfer data in real-time across the Internet. Field staff realize the benefit of this technology in smarter, cheaper, lighter, and easier to use equipment. Asset managers can see locating changes in real-time.

Conclusion

RFID for underground locating has proven itself to be a reliable option for locating underground assets. Adoption and integration of these new technologies has made underground RFID a more viable – and valuable - option than ever before. The new InfraMarker system incorporates all of the latest technologies to offer advances in streamlining asset identification and data management for faster, more efficient operations. For more information about InfraMarker, visit www.InfraMarker.com.