

Technology Tools Save Time and Money

GUEST SUBMISSION FROM MIKE BATTLES, WOOLPERT

WHILE THE BUCKEYE STATE already is home to some of the world's most innovative oil and gas technologies, additional technology tools are being developed and applied in Ohio that are making a significant impact on the industry as a whole. Unmanned aircraft systems (UAS), Esri's ArcGIS Online and Portal, and 3D laser scanning and modeling are increasing the efficiency of oil and gas operations in the engineering, surveying and construction industries, and are saving clients time and money.

UAS

The commercial use of UAS, or drones, in multiple industries has been debated for the last few years. When the technology was first introduced, there were questions about risk, applicability, benefit, restrictions and permits. The Federal Aviation Administration (FAA), in an effort to ensure that the application of this technology evolved safely, kept a close watch on multiple industries and reined in companies that didn't file the proper permits and follow the needed regulations by issuing million-dollar fines.

Over time, by fully understanding insurance limitations, risk mitigation, integration of traditional survey control, repeatable processing techniques, and 3D visualizations, end users are provided accurate and actionable data for their operations—not just a “cool video or picture.” For construction monitoring, for example, firms are using UAS to collect orthoimagery, generate contours, produce GIS/CAD vectors, and integrate 3D colorized point clouds into design software. Multiple deliverables can be generated from one flight, saving considerable time and money when compared to traditional methods. For a well pad development, survey control and the flight can occur in the same day or multiple sites can be collected in the same day, depending on proximity. In addition to this quick collection capability, many deliverables can be available within 24 to 48 hours.

Through these demonstrated benefits, UAS are quickly becoming invaluable to well pad and pipeline development, slip and other



hazard identification and construction monitoring for roads, bridges, pipelines, storage tanks and facility infrastructure. With this technology, projects can be completed more efficiently and, in many cases, can reduce risk by minimizing human exposure to unsafe or inaccessible areas.

ESRI'S ARCGIS ONLINE AND PORTAL

Esri's ArcGIS Online and Portal are platforms that environmental, construction or survey field technicians are able to use as well as a trained geographic information systems (GIS) professional. This geospatial technology can connect field staff phones/tablets to basic survey equipment to document both accurate asset location and attributes and condition of field assets—with or without cell/wireless service. GPS coordinates and real-time data and images can be recorded in the field through access of the Collector App and uploaded via Esri software to the office computer, where a GIS professional or manager can view, quality check and direct as needed.

This technology allows senior-level staff to mentor and coach the younger generation of oil and gas professionals in the field without having to visit a project site. This real-time data sharing also means less time driving to sites when questions arise, and more time solving other challenges. Those who have used ArcGIS online in the industry, have reported minimizing multiple route walks by a two-person environmental crew, followed by a two-person engineering/constructability

crew, followed by a three-person survey crew, as traditionally used for pipeline routing.

These geospatial technologies also allow for conducting an environmental assessment, collecting data of sensitive resources, staking and stationing of alignment and the collection of other attributes of interest by consolidating those tasks into minimal walks. This technology also provides consistent, immediate GIS data for accurate documentation.

3D SCANNING

3D Scanning and modeling is another groundbreaking industry tool that quickly has become vital to as-builts of legacy facilities, as well as for new facilities. These geospatially accurate scans and models enable firms and their clients to view progress, make measurements, manage inventory and assets, coordinate operational efficiencies, troubleshoot, etc., all from a remote location. This saves time by reducing mobilization to the project site and by not having to manually inspect each aspect of that site. It also can save hundreds of thousands of dollars in change orders by providing a more accurate representation of as-builts versus as-designed drawings for future engineering and construction enhancements. As technologies advance, 3D scanning also provides a reliable framework and datasets for virtual and augmented reality visualizations. ■

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