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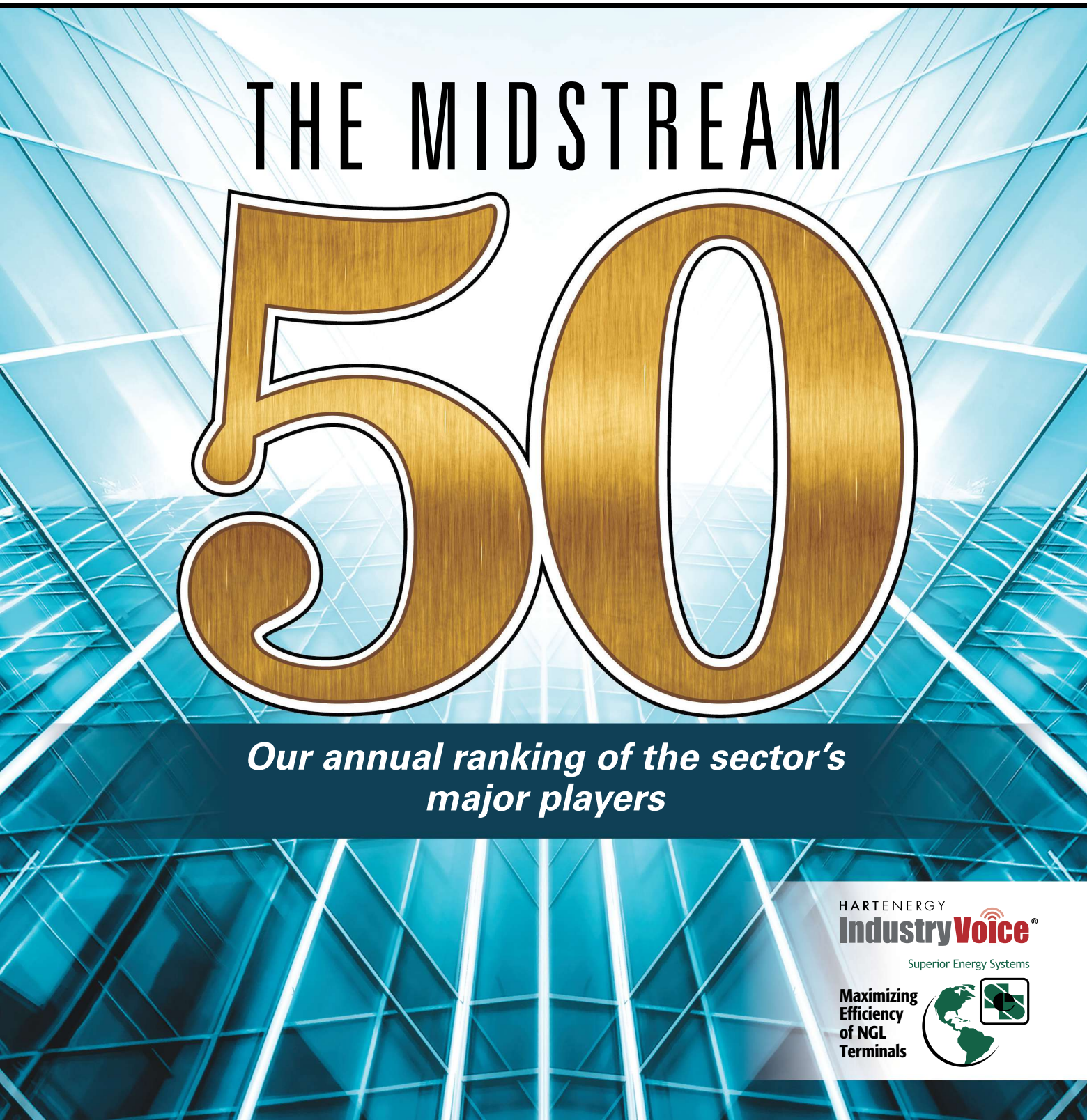

THE MIDSTREAM 50

Our annual ranking of the sector's major players

Onsite Verification

Mobile technology aids work site confirmation of worker training.

By David Finkelstein

Midstream companies are safety-conscious for good reason. Fewer accidents mean fewer delays, higher worker morale, lower insurance costs and avoidance of potential fines by the U.S. Occupational Safety and Health Administration (OSHA).

Ensuring that workers do only jobs they are trained for is one of the most critical steps in a safety program. An untrained worker who botches a job may injure himself and others, damage expensive equipment, cause fires and release hazardous materials.

Most accidents are relatively minor but even they interrupt work, decrease productivity and drive up workers' compensation costs.

At the other extreme, catastrophic events are infrequent but devastating. Companies must do everything they can to prevent disasters. The inherent nature of the work—and potential for catastrophe—requires even more vigilance than in the usual construction environment.

Proper vetting

But in the rush to get things done, proper vetting can be overlooked. How can supervisors in the field know for sure whether a particular worker is qualified to do a specific task or operate a certain piece of machinery? Many workers, eager to show their stuff, will reply, "I can do that," but they may not have the required training. Or maybe they once had the right training, but their credential has expired.

On the other hand, the supervisor may not be aware of an employee who does have the right credentials.

Proper vetting poses many challenges. Pipeline and other midstream workers are often in remote locations. Their bosses don't have access to normal computer infrastructure and certainly not to paper files at headquarters. As a result, there is often a long and costly delay to check credentials/qualifications, much more so than at a typical urban construction work site. Furthermore, a multitude of subcontractors are often used, and their employees all have to be vetted too.

If something goes wrong, the subcontractor, contractor and midstream company itself will be held liable.

In a pipeline environment, there is a wider range of agencies potentially monitoring employee training. Besides OSHA, the Environmental Protection Agency, Department of Energy and the Department of Transportation's Pipeline and Hazardous Materials Safety Administration might be involved—especially after an incident.

Having good records documenting training can help avert regulatory problems.

Mobile technology

How can supervisors efficiently verify training? Paper files don't cut it because they aren't accessible in the field and become outdated quickly.

The worker who claims he or she was trained for a certain task may, or may not, be correct. A paper file in a file cabinet somewhere isn't up-to-date or accessible. Excel files may be more up-to-date but are generally only accessible by the user managing the Excel file on his/her computer.

Storing training credentials on a central computer system is a step up, but onsite bosses generally don't have access to such a database, and they're rarely designed for mobile access.

Phoning or emailing to ask someone in Human Resources to check credentials is obviously slow and unreliable.

A smart, comprehensive and effective verification system starts with the fact that every worker has an identification card. If you can use their ID cards or ID bracelets to tap into a database to verify the worker's training, you have a versatile solution.

The solution requires integrating four technologies: mobile, cloud, database and quick response (QR) code. It all starts with imprinting the QR code on the ID cards.

What is it?

A QR code is the black-and-white square that appears in magazine ads and is used for ticketing with smartphones and many other applications. It's a simple, tested, reliable and inexpensive technology that works with any phone or tablet.

The QR code imprinted on each employee's photo ID card identifies the employee. The ID card with a QR code can actually replace most, if not all, of the many cards that energy and construction workers are typically expected to carry.

The next step is to create a comprehensive database of employee training records. The data usually exists already; the key is to put the data into a usable form that can be accessed anywhere. In other words, you must create a single repository for all safety-training records, including qualifications from both internal sources and external providers. Employee training profiles can be created one-by-one or uploaded from a spreadsheet.

Next, the database must be stored in the cloud. This is crucial for a number of reasons. First, it ensures accessibility. Employers must have reliable access to the data from the field 24/7. Second, placing the data in the cloud ensures that authorized users can access it with any device, anywhere. It's simply the best, most modern solution.

Now, the QR code on the card must be linked to the database of employee training records stored in the cloud. Each worker is assigned a unique identifier embedded in the QR code. This avoids any possible confusion on credentials. The QR code will be easily scannable by any phone for instantaneous access. The QR code also avoids the need for typing, often difficult for those working in rough conditions.

Something better

The employer needs an efficient way to record every training session and credential the worker has completed. One way is for a trainer to email or fax names of employees and training completed, based on the sign-in sheet, to whoever is in charge of the database. That works, but there's a better way.

A smartphone app can eliminate the errors and delays associated with a mud-stained paper sign-in sheet. The app lets authorized trainers automatically

'Digital revolution' can improve safety

New digital tools and processes that drive operational efficiencies and competitiveness in a sustained era of low oil prices also have the potential to transform safety in energy workplaces, Kurt Loustalot, vice president of midstream in the production and processing division of SNC-Lavalin, told attendees at the April Rice University Global Engineering & Construction Forum (RGF) roundtable luncheon in Houston.

"Most people think of digital in terms of cost savings and productivity improvements," Loustalot said. "But adopting new digital tools and techniques also improves safety throughout the workplace. Safety has evolved to meet the needs of the workplace throughout the 19th and 20th centuries, and as we step into the digital revolution age, safety is evolving again."

Loustalot said digital engineering and technology is disrupting all market sectors, which means big changes in performance expectations and the ways in which suppliers, engineers, contractors and producers work and interact.

"Everyone has a responsibility in driving the next step-change for successful digital transformation," Loustalot added of the evolving business environment. "From encouraging and implementing a culture of innovation and technology, to reforming a company's data architecture, we all need to adapt and revolutionize our ways of working.

"We all need to be sure that we can rely on our partners to recognize the importance of this digital transformation," he added. ■

—Paul Hart

record attendees who have completed courses. The trainer just scans the QR code on the badge of each employee to instantly update their training records. Alternatively, the trainer can enter the employee's ID number.

The app also can be used by foremen to track attendance at work site meetings, like toolbox talks. Or, it can be used by administrators to track attendance at company orientation sessions and work site safety briefings.

With all the pieces in place, a supervisor simply scans the ID card with a smartphone or tablet to read the QR code. The employee's current training records are then displayed on the screen, securely and reliably. Basic information includes credential name, date attained and expiration date. For some companies, that's sufficient. Others may want to add more information, such as the trainer or issuing authority, license number and type of training.

Another important feature of a comprehensive system is the ability to alert the employee and/or manager that a credential will soon be expiring, so that recertification training can be scheduled with plenty of advance notice.

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Other uses

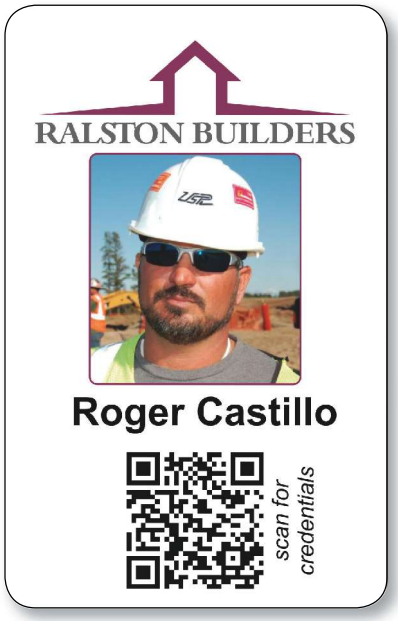
Beyond credential verification, the card-based system can be extended to let managers track in real time all employees and contractors who are entering a work site. To make it work, the ID card must include a radio-frequency identification (RFID) chip. To gain entry, the individual just places the card within an inch of an RFID reader.

The card can then connect to a cloud-based database to give security staff the information needed to determine whether to admit or deny entry. The readers also send the time and location of each "tap" and, optionally, can record each exit.

The system can be connected to turnstiles for automated entry. Readers can be either secured to a fixed physical location or used as mobile devices. Multiple entry/exit points can be configured.

The system offers secure identification of authorized employees and immediately alerts security to potential intruders. It stores historical data so managers can spot trends and issues. Data is easily exported into other systems, including human resources and time and attendance systems.

On complex work sites, additional readers can be installed at controlled-access choke points. Data stored on the cards is highly secure because of advanced encryption technology. Log-in events are immediately viewable online. Data can be downloaded at any time for import into other systems, or further data analysis.



A QR code added to a standard identification badge can provide extensive information on an employee's training and expertise. *Source: Credential Verification Service*

This service can be configured to display who is onsite at any point in time, a process often called mustering. As a result, for example, managers can know everyone needing to evacuate in case of a major incident.

Optionally, the system can be configured to check individual credentials, including verifying whether someone is whitelisted or a blacklisted. It can also verify whether someone meets pre-established rules for access to that location and then show a red light or green light to the guard.

Protective equipment

Monitoring personal protective equipment usage is another application. Authorized employees can scan the QR code on the employee's card with a tablet or smartphone to log each checkout of a respirator mask, a climbing harness, eye and hearing protection, or other safety equipment.

The card is scanned again to display the employee's past usage of safety equipment.

The database is instantly updated to record each usage. Managers can easily download a complete spreadsheet of all equipment checked out by the employee to meet regulatory reporting requirements.

The main reason for monitoring is to make sure workers are always using the right equipment. Additionally, recent OSHA silica regulations require companies to track the usage of respirator masks. If an employee uses a mask more than 30 times a year, he or she must receive a specialized medical checkup.

With today's technology, there's no reason not to check worker training and verify credentials consistently. It's no longer slow, inconvenient and unreliable. Integrating various technologies on the foundation of an ID card offers a big step up in safety and compliance. ■

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