WORLD PIPELINES®
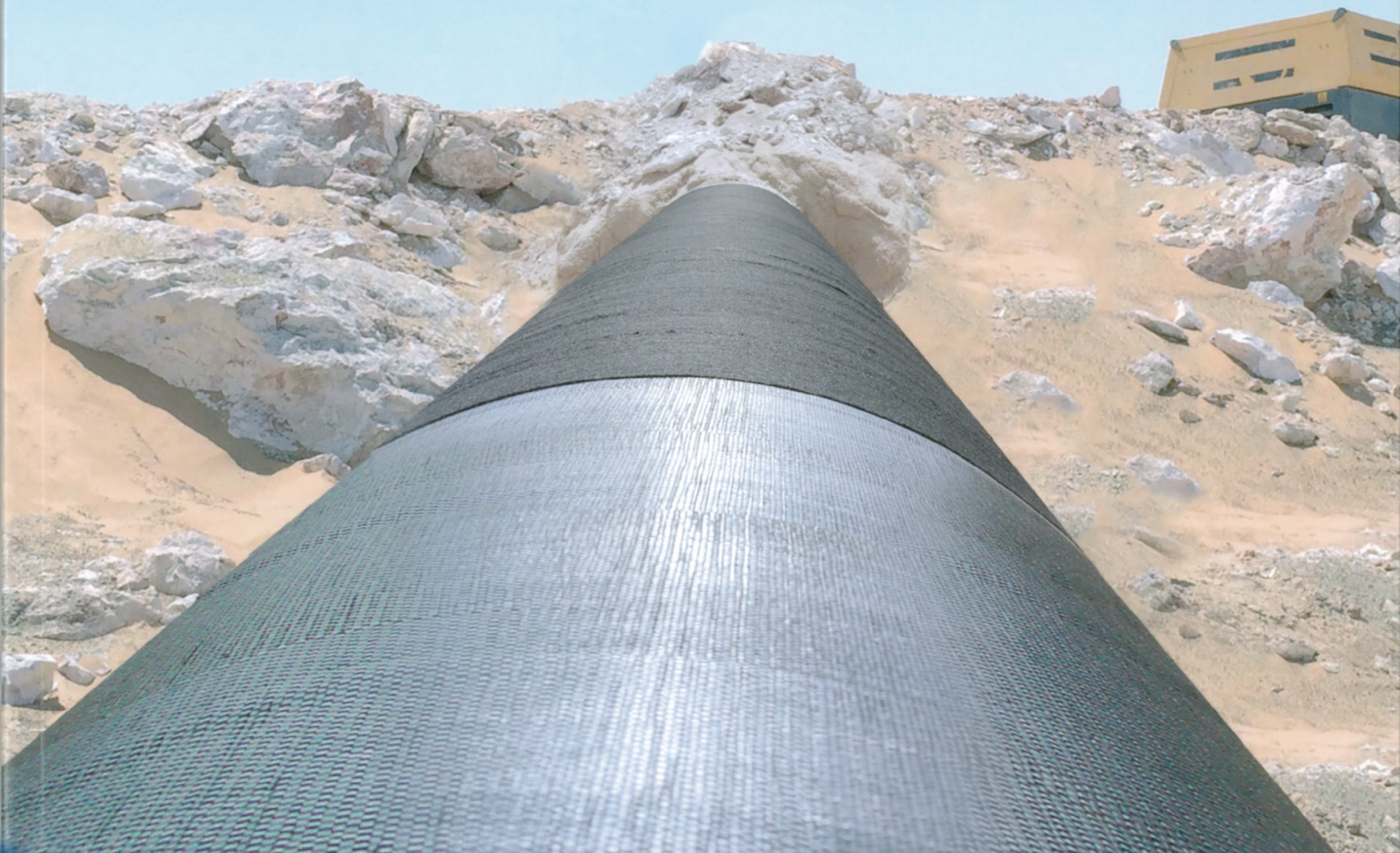
Polyguard®

Innovation based. Employee owned. Expect more.

25 years
of continuous
sales expansion

TIMES ARE CHANGING

Steve Slusarenko (ProStar Geocorp Inc., USA) and Layne Tucker (EchoRFID LLC and ProStar Geocorp Inc., USA), explore ways of using RFID to track, trace and verify to meet pipeline regulation compliance requirements.

Pipeline companies have been around for over a 150 years, and the basic process of extracting, gathering, refining and shipping oil has not substantially changed. The basic equipment used in this process is essentially old technology that has been much improved. To a degree, the old saw 'if it ain't broke don't fix it!' has shaped much of what we still see as business practice today. Often, we try to reduce risk by not changing what we know works, and this approach has led us to be slow in embracing technologies that we do not yet understand or that we see as disruptive. Thankfully, with technological change now pervasive in our personal lives, we are more attuned with the potential opportunities that technology brings to us. Still, it may take a major event to drive us to change what we do, and we must see that the benefits of the

change outweigh any perceived risk associate it. Recent proposed changes in the US Pipeline Hazardous Materials Administration (PHMSA) regulations will determine the standards to which domestic pipeline operators must adhere. One of these changes relates to keeping reliable, traceable, verifiable and complete records.

While some in the industry may see the changes as a costly exercise to meet these requirements with little tangible benefit to the operator, others will see and seize this as an opportunity to make some long needed changes. This, as a result, will save time, money and resources, as well as reduce the risk of being non-compliant.

The opportunity

Ensuring that records are properly created, accurately completed and successfully stored for later retrieval requires a repeatable process to ensure that it is done correctly. This process will need some checks and

Figure 1. Any complete solution needs to support barcode and RFID.

Figure 2. An RFID tagged pipe joint is easily found.

balances that do not get in the way, while ensuring that personnel follow the process. This is where the technology comes in, to not only support the process, but also to make it easier for the people involved in creating, managing or using those records.

The current documentation and record keeping process, in many cases, still involves the use of technology that is thousands of years old. This, of course, is the old standby of written records using pen and paper. This method is not conducive to capturing, sharing, storing or finding old records; we have all heard of horror stories where records were lost or destroyed, or the provenance of the records were questionable due to missing information or formal signatures. Today, we have new technologies that allow information to be simply and accurately captured, instantly securely stored and easily shared with any stakeholders. Gone will be the days of thousands of records copied into binders sitting on a shelf or stored in a huge repository in banker's boxes.

The technology to support this records process is now pervasive in our lives. Most of us use smart devices, bank online and have purchased items that were electronically tagged with barcode or radio frequency identification (RFID) technology. We all understand the benefits of using these technologies in our personal lives, but somehow we do not make the connection to how they add value to our working lives and businesses.

What is RFID?

RFID is a technology that has been in use since World War II where it was used to identify friendly aircraft. An RFID tag contains a unique identifier. It is then interrogated by an RFID reader, which sends that identifier to the reader. Some RFID tags also contain snippets of other information and some can also have this information updateable. These tags are known as read/write tags. Today, RFID is used to uniquely identify any item with an RFID tag attached, associate that record with an electronic database, reduce data entry time and improve data accuracy by removing the need for manual entry.

Why RFID?

Unlike barcodes, labels or stencils, RFID does not need line of sight to read it, RFID read ranges can exceed 50 ft (30 m) and many records can be read at once, substantially reducing time to record multiple objects and eliminating the opportunity to accidently miss one. Some RFID tags are designed so that they may also have a barcode printed on them, which enables the unique identifier to be read with either a barcode reader or an RFID reader.

The cost of any RFID system when compared to a traditional pen and paper system on the surface may appear to be more expensive. However, if you look at the cost to print and distribute paper forms, then gather, input, copy, record, archive and store records, you will find that RFID-based electronic records will produce substantial cost savings over paper-based systems. Just the fact that data can be validated on entry or defaulted

Figure 3. Integration is the key to project and asset management.

Figure 4. Hardware components in a fully integrated solution.

based on location or sequence in a business process, will save time and ensure consistency and accuracy while reducing the time and effort of staff to input the information. On the flip side, retrieving records can be done in seconds and, as the database is electronic, they can be searched, filtered, sorted and distributed in minutes instead of days or weeks.

Let's look at one process on a major pipeline construction job and see what is often still done today. The following demonstrates what information is available to owners today, and follow the business process from

end to end for an order of piping to see if we can answer some simple questions:

● Where is my pipe?
  • Today, we may only know that a shipment has left the plant.
  • Tomorrow, RFID will provide a listing of each joint as it is produced, coated and shipped as it passes by RFID readers at the gate of each facility.

● What have I received?
  • Today, it may take a day or so to get the records inputted into a database where we can view the nature of the pipe received. It may take days to find a particular hot bend, for example.
  • Tomorrow, the RFID reader at the laydown yard gate will capture each joint as it arrives in real time.

● Where does it go?
  • Today, we would look at an alignment sheet to see where bore pipe or heavy wall goes.
  • Tomorrow, we can see in a map display where each heavy wall joint or bore pipe is installed.

● How much has been installed?
  • Today, we may know at the end of the day how much pipe was strung, welded, coated or backfilled.
  • Tomorrow, electronic reports will produce a real time map of the location of each value add activity in the pipeline installation process.

● Am I on schedule?
  • Today, we may know generally our productivity and compare that to the schedule.
  • Tomorrow, we will capture the up to the minute installed quantity, view the location of the completed works and produce electronic productivity reports.

● Do I have any spare pipe?
  • Today, we may know at the end of the job but, during the project, tracking the nature and location of spare pipe requires substantial management and rigor.
  • Tomorrow, the RFID tag will provide identification of each joint of pipe and, when read by an RFID reader, we will not only know the nature of the pipe, but also the location of each joint or material item.

● Am I able to identify where each of my material items came from and is my material documentation accurate, complete and retrievable?
  • Today, substantial management and oversight is required, and the process is very labour intensive.

- Tomorrow, the RFID tag on each material item can be accounted for in a report showing the location and disposition of each material item, as well as the nature and location of all of the documents associate with the material items, including mill test reports, weld records, X-ray records, hydrotest reports, daily inspector's reports etc.

Of course, the above questions will not only be provided for other material components, but will also provide answers to other stakeholders that may ask very similar questions related to the installed locations of certain materials: when and who installed them? For example, during an audit a regulator may ask the owner to trace an installed component back to the original purchase requisition, to ensure that the documentation is complete at every step in the process that was to be documented.

Bernard-Luc Gagnon, President of BlueStar GPS, commented: "Our clients use our GPS to register every weld and every joint within 6 in. or less. Then, when they are doing integrity digs on buried pipelines they are able to use the GPS to find the exact location of the RFID tag on the feature that they are looking for and confirm that they have the right asset by reading the RFID tag."

Along the same lines, Layne Tucker, Founder and CEO of EchoRFID LLC and Co-Founder of ProStar Geocorp Inc., added: "Not only can we find assets using GPS and RFID locally, the system is designed with global standards and will work anywhere in the world and this would be of great benefit to the multinationals in managing their materials." Tucker went on to say that "knowing the who, what, where and when information on materials and activities – essentially the ability to show all of the required documentation to regulators – will provide a significant premium to a firm's assets when selling or merging with another firm."

Steve Slusarenko, Chief Services Officer of ProStar Geocorp Inc., states: "Our clients are concerned about many things: data collection and governance, GPS accuracy, data sovereignty concerns, intrinsically safe devices, system integration, security, rugged conditions etc. We have to make sure that it is all covered by the solution."

Conclusion

Regulatory agencies have proposed rules relating to the management of pipeline records. Pipeline operators will now have to ask themselves how to best take advantage of the opportunity presented so that they can use these new requirements as a springboard to improve the business. Part of this review should also be assessing the current data capture and management processes, and ensuring that they use mobile and RFID technologies to improve productivity, reduce costs and eliminate the risk of losing critical records. Smart operators will take advantage of the opportunity to not only meet regulations, but add to the bottom line and meet the expectations of shareholders as well. Ⓦ

What   Who   When   Where

MATERIALS   TASK MANAGEMENT   GEOSPATIAL   REALTIME   LIABILITY PUBLIC SAFETY

CHAIN OF CUSTODY