

# RFID Helps Field-Workers Inspect and Maintain Valves

**Newfoundland-based company Score Eastern Canada provides its personnel with pen-size RFID interrogators to retrieve and record data regarding the valves and seals the firm supplies to its oil- and gas-drilling clients.**

By Claire Swedberg

Jan. 20, 2009—Inspectors and maintenance personnel for valve company Score Eastern Canada Ltd. (SECL) work in remote locations—including off-shore oil rigs—inspecting and maintaining the valves and seals the business supplies to its oil- and gas-drilling clients in northeastern Canada.

With a paper-based system, Score's employees needed to make sure they carried the right maintenance and inspection records with them. If they forgot any documents, or if a valve's serial number plate had fallen off, they were forced to call office personnel to gain maintenance and inspection data regarding the valves in front of them, assuming a cell phone connection was available at that site.

To solve this problem, Score began utilizing an RFID-based system, piloted from June to October 2008, and now fully deployed. The system, provided by Cathexis (which is undergoing a name change to IDBlue), uses Microsoft BizTalk software as its platform. Thanks to the system, says Steve Taylor, IDBlue's CEO, workers can access and revise maintenance records encoded to a valve's or seal's tag in the field. At press time, Score was unavailable for comment regarding this article.

Each employee carries an IDBlue high-frequency (HF) RFID interrogator and a Pocket PC handheld computer. The IDBlue interrogator, which is a handheld device the size and shape of a wide writing pen, captures data encoded to RFID tags attached to the valves onsite, then forwards that information to the Pocket PC so that when the worker later returns to Score's office, the Pocket PC can upload it to the company's back-end system via a Wi-Fi connection. The back-end application employs the Microsoft BizTalk RFID Mobile platform, which enables the RFID data to be run on Windows software.

Score's staff must typically inspect dozens of valves and seals at each onsite visit, and make several dozen service stops each week. Without the system, an agent would have to use paper and pen to manually record the serial numbers of oil-drill seals and valves. To learn or verify the inspection records of any specific item, if necessary, that individual would have to call the St. John's office—if they were able to get a cell phone connection—and dictate those serial numbers to the office staff, who would then need to look up the records for that particular item. The agent would then have to wait for that data before determining if, for instance, further inspection or maintenance was necessary.

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With the RFID solution, the valves and seals are tagged with Texas Instruments' 13.56 MHz RF-HDT-KMAB HF tags, which comply with the ISO 15693 standard. Thus far, Score has tagged 75 to 100 valves, according to Jeff Brown, IDBlue's director of products and services. "Also, as current valves are replaced, the replacement valve will receive a tag," he states, thereby gradually providing RFID capabilities for all of the company's valves. "This was the strategy we agreed to in trying to resolve the logistics issue around tagging all valves in the field."

The valves the agents inspect can vary in size from an inch to many feet in diameter. In each case, the tag is scanned with the IDBlue reader, which fits into the agent's pocket. At the start of the inspection process, an employee uses the device to read the data already encoded to the tag, such as when the valve or seal was inspected, along with the results of that inspection. This information is then transmitted to the worker's Pocket PC via a Bluetooth connection. After finishing the inspection, the employee enters the results and date into the Pocket PC, and the IDBlue device downloads that data and writes it to the tag. The agent can then use the Pocket PC to transmit the information back to Score's office via Wi-Fi upon returning to that location.

When it comes to reading the tags in the rugged environment typical of the oil-drilling industry, Taylor says, "We've done extensive testing with dirt, grime, oil and cold, with no troubles." Score attaches the tags to the valves and seals by wrapping them down with wire to each seal or valve.

Score's team worked closely with IDBlue, Brown says, to ensure the tags were attached in such a way that they would not be damaged and could be easily read. With the RFID system, he notes, the overall servicing time is reduced by 5 to 15 percent.

The company uses the system to keep records of inspections, and is currently looking to integrate the system into its invoicing process by utilizing the data to send maintenance and service invoices to customers.

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