Working Smarter

Utilities share eight ways to improve productivity and cut costs without compromising safety, reliability or customer satisfaction.

Is there a more efficient way than the conventional one to rehabilitate gas mains or gas service lines? Can bar coding technology be put to use to save time performing a required meter inspection? Does keeping scorecards help improve field service employee productivity?

Yes, yes and yes. So say DTE Energy–MichCon, Intermountain Gas Co. and Washington Gas Light Co., who share below these and other ideas they've turned into realities in their quests to improve efficiency and cut costs without compromising safety, reliability or customer satisfaction.

BY KAREN RYAN

IDEA #1

Repair Mains and Service Lines Through a Keyhole

Washington Gas is in the midst of a major project to rehabilitate about 143,000 gas service lines and 1,900 miles of gas mains. Specifically, the utility is renewing the steel service lines by inserting plastic pipe into them, and it's encapsulating, or renewing the life of, the mechanical fittings that join the mostly 40-foot lengths of wrapped steel distribution main to prevent leaks on the couplings. "Unlike the couplings, the wrapped steel pipe is in really good condition and doesn't need to be replaced," says Katie Harkless, Washington Gas project manager, replacement.

The use of keyhole technology has lowered the cost and improved the efficiency of this twofold replacement project, according to Clayton Munsey, Washington Gas manager of field technologies. "Making an 18-inch-diameter keyhole cut rather than a conventional 3- by 5-foot or 4- by 6-foot utility cut has reduced our costs by approximately 50 percent. A majority of that savings comes from eliminating the need for the extensive pavement restoration work associated with digging a conventional size hole."

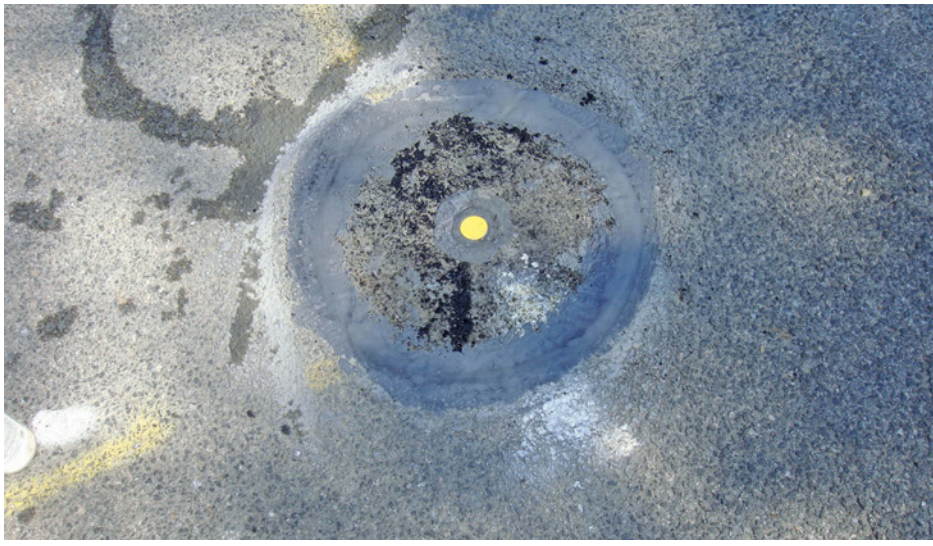
Repairing the distribution main couplings through a keyhole excavation requires that the location of each coupling be pinpointed before digging begins. "We do this by sending a tethered camera into the pipeline. At first we were digging conventional holes and physically disconnecting the pipe to insert the camera," explains Munsey. "Then we moved to a second-generation technology that involves a 45-degree launch fitting for the camera and eliminates the need to shut off the gas flow. We're now evolving to the next generation—inserting a camera into the pipe through a keyhole opening."

"One of the challenges with keyhole technology comes at the permit stage," says Tracy Townsend, Washington Gas operating and engineering division head. In the case of the coupling project, keyhole technology entails removing a core of pavement to open up an 18-inch hole. When the job is done, the pavement core is restored to its original position. "We interact with about 100 permitting jurisdictions, and it's taken a team effort to convince the jurisdictions to accept reinstalled and grouted pavement cores as a permanent restoration that won't lead to degradation or decreased life of their streets."

The utility also is using keyhole technology to renew the 143,000 steel service lines. "When we insert the ½-inch plastic pipe into the existing ¾-inch steel service line,

we start the project at the meter rather than at the tee connecting the service line to the main," says Harkless.

In a move unrelated to the current restoration project but related to keyhole technology, Washington Gas worked with a vendor on a project to incorporate a service line tee and an excess flow valve into a single device. "The idea was to have a combination tee and valve device that can be maneuvered into place through an 18-inch keyhole and will work effectively to close off the gas flow if there's damage to the service line," says Munsey.



Keyhole technology *(top)* permits Washington Gas to work on underground facilities through an 18-inch-diameter hole in a street's pavement. When the job is done, the street is restored by putting the pavement core back into place.

IDEA #2

Use Bar Code Technology for Meter Corrosion Inspections

Intermountain Gas has turned English into bar codes to improve the efficiency of its federally required triennial inspections for atmospheric corrosion on above-ground meter components.

When the utility had meter readers walking routes each month, those workers performed the atmospheric corrosion inspections as they made their rounds. As the new millennium got under way, the company began the move to drive-by automated meter reading and needed to come up with a new corrosion inspection procedure, according to Hart Gilchrist, Intermountain Gas manager of operations services.

"Collaboration between some of our information technology and operations people led to development of an efficient, paperless process that ties a bar code scanner to a very small, barebones laptop carried in a fanny pack," explains Gilchrist. The IT group also developed an application that delivers voice commands from the laptop to ear buds worn by the corrosion inspectors. "This set of tools captures the inspection findings electronically for uploading into our database," he says.

The way was cleared for use of the bar-coded inspection procedure when Intermountain Gas, in preparation for the transition to mobile meter reading, needed to make sure every gas meter had an ERT and corresponding bar code on it. ERT stands for "encoder, receiver, transmitter" and is an electronic measuring and encoding device with a radio transmitter attached that makes automated meter reading possible. Each meter has a unique ERT number that ties it to a specific address.

Here's how the bar-coded procedure works: "After the utility employee scans the ERT bar code to identify the meter and its location," says Gilchrist, "voice commands take him or her through a laminated inspection checklist." Each item on the checklist is written in English and accompanied by bar-coded answers. "The process begins," he continues, "when the voice asks if atmospheric corrosion is present. The employee scans the bar code for 'yes' or 'no.' If the answer is 'yes,' the voice takes the employee through each item on the checklist and the respective bar code answers." The checklist contains 10 to 15 items, a few of which are not related to the corrosion inspec-

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