

In Its Element

Connexus Energy has cost savings down cold with Intermec mobile computing

BY KELLY SCOTT

WITHIN FOUR minutes of exposure to an ambient temperature of 48 degrees Fahrenheit, the average human hand begins showing signs that all is not well. Blood vessels constrict. As the temperature falls, fingers go numb. Dexterity suffers. In the cold, hands work better sheathed in heavy gloves, but the bulkiness makes them ill-fit for anything much more dexterously ambitious than, say, skiing or shoveling a walk.

For Connexus Energy inspectors, dealing with extremities in the extremes is a daily occurrence some four months of every year. Winter wind chill temperatures for these Minnesota workers often drop to well below zero. The company won't send them out in temperatures below minus 10, but anything above that is a normal workday. Historically, this has meant braving severe cold to take 3,000 substation measurements using a pen and clipboard.

Not anymore. Connexus inspectors have traded the pens and clipboards for Intermec 740 mobile computers and mobile CMMS software from DataSplice. The change has increased inspector task time by 43 percent. It has reduced Connexus substation maintenance management costs by the same percentage and, most importantly for customers, has made inspection data available for analysis the day it is gathered.

The next logical step

Connexus management began looking for ways to improve efficiency several years ago. Once the company had implemented a computerized maintenance management system, mobile computing was the logical next step.

"Mobile computing seemed like one of the simpler projects where the return on investment was really big," said Craig Johnson, IS business systems analyst at Connexus. With it, substation inspectors could enter the 3,000 measure-

ment points into portable computers instead of writing everything down and then keying the information into a computer back at the office.

Johnson and his colleagues were thorough in their selection process for a mobile computing system. "We find if you set an objective and stick to it, do your evaluation and pick the right product, you save a lot of money. You don't have to redo it," he said. Evaluation meant giving Connexus substation inspectors products from five vendors—including personal digital assistants, tablet-type computers and Intermec's 740 mobile computers—and letting them simulate their work in the elements.

"It's one thing to evaluate a device in a building, but if you're going to use it outdoors, that's where you need to test it. You have to see how the screen looks in the sun, and how the device handles," said Brian Sullivan, Connexus systems analyst.

The results: "Our inspectors liked the Intermec handheld computer best because of the durability and the screen, among other things," said Sullivan. "One of the inspectors is a bigger guy with big fingers. He wanted to see how his fingers hit the buttons. The Intermec unit came with a numeric keypad instead of an alphanumeric one, which has more and smaller buttons. Bigger buttons—that was a key selling point."

Over 100 data entries

Thirty-nine distribution substations are scattered across the Connexus Energy service area. A substation receives electricity generated at a power plant and steps down the voltage to a level more easily distributed across the service territory.

Once a month, Connexus inspectors divide the territory and visit each substation for a detailed check. They measure such things as oil



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temperature, silicone condition, circuits, voltage surges and tolerances. The number of inspection points varies by location. Some substations require more than 100 different data entries.

“With the old method, by the time the readings were typed into the office computer and analyzed, it might be a week or more after the measurements were taken,” Sullivan said. Equipment operating out of tolerance range would be flagged for repair. “But by then, that piece of equipment could have failed. You might have customers without power, and obviously that’s not good.”

Now when an inspector arrives at a substation, he enters the location into the Intermec mobile computer. The unit runs Microsoft Windows CE software for Pocket PC configured by Intermec partner DataSplice and Connexus developers.

“We have standard bolt-on solutions for computerized maintenance management systems, but what Connexus wanted to do was really outside of that,” said Jeff Gibson, senior solution specialist at DataSplice. “They decided to have one of our consultants go up to Ramsey and work on development and train their developers at the same time. They built the solution together during a training session.”

That training session, with DataSplice consultant Mike Johnson, lasted about eight hours. By session’s end, Connexus had implemented the DataSplice product with full connectivity to the production database. Within the first two hours, Connexus designers built a complex Oracle database view that can be easily accessed on the mobile computer’s screen. It shows every inspection point in the physical order it appears during the inspector’s substation tour.

“If we didn’t have that, the inspection points

would just be random. The view not only pulls in the inspection points by substation, but also shows the piece of equipment they’re looking at, including the equipment number. That helps when creating a work order,” Sullivan said.

Guided through each substation by an efficient roadmap, the inspector simply walks from point to point, making equipment assessments or taking measurements.

Once the inspection is complete, the inspector locks up and moves on to the next substation. At the end of his shift, he uploads the day’s cached data via the 740’s docking station.

The company’s computerized maintenance management system now has same-day inspection data to analyze. Sifting through thousands of measurement points, it can compile a report on those measurements outside the normal range. A maintenance manager can dispatch repair crews within hours instead of days or weeks.

In the end, Connexus management wanted a system that would rival many of the qualities of its own inspectors. Rugged. Resilient. Versatile.

“Other equipment we tried didn’t stand up to the temperatures. It wasn’t waterproof. If you dropped it, it would break,” Sullivan said. “We wanted something our guys liked, something durable that we weren’t going to have to replace every time one of them dropped it. Intermec gave us all that.” ■

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Resources:

Connexus Energy: www.connexusenergy.com

DataSplice: www.datasplice.com | Intermec 740

Color mobile computer, Ethernet multidock:

www.intermec.com