

# Getting the right read

## Advanced water meter reading technology provides rural municipality's efficiency gains

The Rural Municipality of Macdonald (RM Macdonald) is a group of six rural communities – Brunkild, Domain, La Salle, Oak Bluff, Sanford and Starbuck – in Manitoba, located south and southwest of the City of Winnipeg. The six villages that make up Macdonald are spread over an overwhelming 25 by 18 miles, an area comparable to Winnipeg and, according to a *Winnipeg Free Press* article, one of the fastest growing areas in Manitoba. The municipal offices are located in Sanford, the geographical centre of the municipality.

With limited resources, Macdonald faced challenges that are similar to those faced by many rural communities across Canada. It must manage 1,750 water meter accounts over this massive area. Of these accounts, 1,100 are urban, 650 are rural located outside of the communities, and their overall meter population continues to grow.

RM Macdonald wanted to find a solution that would improve water meter reading efficiencies over this widely distributed area. The existing water meter infrastructure was onerous as 90 percent of the water meters required inside access to the home to obtain a reading. The remaining 10 percent of the meter population had remote units installed outside the residence.

Due to the rural setting, inefficiencies in collecting the reading data forced the municipality to abandon the idea of implementing a completely remote system. Macdonald was forced to resort to a system whereby all 1,750 accounts were required to telephone in their meter reading into the municipality every quarter – a process that raised concern with respect to accuracy and reliability.

Of the 1,750 accounts required to call in their readings, only 60 percent responded, causing the number of estimate bills to be as high as 40 percent. Readings were called in to a dedicated answering machine, with the majority occurring a few days prior to the due date. Three to four days were dedicated to listening and recording readings. All of this data then had to be entered electronically, estimates determined where needed, followed by printing the bills. This entire process consumed three weeks of time and it put tremendous demands on municipal personnel. Normally the municipality had one person assigned to utility work. During this peak time, three or more other municipal personnel had to interrupt their duties to assist, including answering time-consuming customer calls. During the month after the bills were sent out, a minimum of

15 percent of the accounts called the municipality regarding reading, billing and estimate questions. Most calls required further work such as billing adjustments. This post billing process would easily require two weeks of dedicated resources.

In moving forward with a solution, Macdonald had several issues to address: older meters were losing revenue due to decreasing accuracy; and future new housing growth was on the rise causing personnel resources to be stretched. All of these factors created the need for Macdonald to investigate solutions to improve reading efficiencies and improve data integrity.

RM Macdonald decided that Neptune Technology Group's R900



*Paul Verrier, building inspector, and Shannon Hesford, utility clerk, standing outside the Macdonald municipal offices in Sanford, Manitoba. Paul is holding one of the handheld computers used to read the new water meters.*

Radio Frequency Automatic Meter Reading (RF AMR) Solution was the optimum solution to achieve the municipality's goals. In the summer of 2004, it moved ahead to implement the RF AMR technology. The project was overseen by Neptune's Service Division, which provided a turnkey solution to deploy the system – a single-source solution including supply and installation of the automatic meter reading system (R900 meter interface units, water meters and PC9800 handheld computer), system implementation, and turnkey project management.

All 1,750 meters were equipped with an R900 radio frequency meter interface unit (RF MIU). In addition 900 of the meters were replaced due to accuracy and migration issues. The municipality selected a walk-by system using Neptune's PC9800 handheld system to read the meters. The R900 MIU transmits a radio frequency reading, which is automatically collected by the DAP9800 handheld computer.

The investment in RF AMR technology has dramatically reduced the number of hours required to read the meters. A large portion of the readings can now be collected by the meter reader from street level without having to exit their vehicle. Macdonald now enjoys a read success rate of greater than 99 percent. For example, during their last read cycle, all but one read was collected in one pass! During any reading cycle, a utility can factor in temporary obstacles, such as vehicles, as a cause for not achieving 100 percent.

According to Tom Raine, CAO for RM Macdonald, there has been an enormous improvement in billing efficiencies with the implementation of RF AMR.

The previous billing cycle took approximately five weeks, which included the time to collect and process the readings, the actual billing process, and customer calls. Today, a single meter reader can obtain all of the urban reads in one day and all of the rural reads in 3-4 days. With the rapid downloading of the meter readings from the handheld, in a single day the municipality can import the readings and print the bills for distribution. Post-billing calls have declined dramatically.

Overall, the reading and billing cycle is now 89 percent more efficient with a reduction in resource hours required from 380 hours to 40 hours. "In the past we could never get a complete read even after three weeks of intense work – 40 percent were estimates. Now with RF, we get virtually all the reads in three days and expect it will take even less time in the future," says Dave Grabowsky, public works superintendent for RM Macdonald.

RM Macdonald has achieved its goals of increasing meter reading efficiencies and improving data integrity. Utility personnel now have more time to focus on other productive services. A key benefit resulting from increased data integrity is the municipality's ability to conduct water audits, pinpoint leaks, and control unaccounted for water. As water treatment costs will continue to increase, the municipality can now use the reading data to audit water production more closely against overall usage. All of these benefits allow the municipality to provide proactive, accurate and timely services to water customers of RM Macdonald. *mm*

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