

RFID Device Serves as Plumber's Helper

An RFID-enabled monitoring device can recognize when a toilet is leaking or overflowing and shut off the water source automatically.

By Claire Swedberg

May 12, 2005—Water-management technology company [AquaOne Technologies](#) has announced an RFID-enabled water-monitoring device that can be attached to public and private toilets. The device will recognize when a toilet is leaking or overflowing and sound an alarm or shut off the water source automatically.

The H2Orb system replaces the company's previous water-monitoring device, Flow Manager, which was not wireless and did not use RFID technology. The new system is smaller, quieter and more effective than the Flow Manager, according to Richard Quintana, president and founder of AquaOne, which is based in Long Beach, Calif.

By using radio frequency identification, the company has been able to provide a device that is less visible and operates without wires. That was the goal of AquaOne throughout the six years it developed this technology, Quintana says; to develop a system that could be easily installed without wires and would be unobtrusive. By being less visible than wired systems, it is also more attractive to commercial customers such as hotels.

The device was inspired, Quintana says, by a conversation he had with someone at [Texas Instruments](#) who was involved in developing RFID chips for automotive use. Using the same TI passive 134.2 KHz chips used to provide keyless entry to cars, the H2Orb system could potentially more than double the chips' market, according to Quintana. There are 800 million toilets in the United States, and Quintana reports that several government agencies in North Africa that suffer from water shortages have expressed interest in this device.

The system consists of three components: a tank sensor, a bowl sensor, and H2Orb control unit, an electronically operated valve that attaches to the pipe that supplies the toilet with water. The control unit, which includes an RFID reader, is powered by a standard coin cell battery that will need to be replaced once every five years.

The tank sensor, which attaches to the rear of the toilet tank, comes with three switches to detect three different problems: a silent leak, an open flapper or a fill valve leak. The bowl sensor, which is attached to the rim of toilet bowl, detects the rise of water level and sends a signal to the receiver when the water level reaches imminent overflow.

If one of the sensors detects a problem, such as water overflow or leakage, its embedded RFID tag transmits this information to the RFID reader incorporated into the H2Orb control unit. The receiving unit will then respond according to the particular problem and user-defined response by emitting an audible alarm or shutting off the water supply.

For commercial users, AquaOne offers a "housekeeping beeper." The beeper consists of an RFID reader that

hotel housekeepers can wear on their belt or carry in a pocket. When the beeper is within the tank and bowl sensors' 6-foot transmission range, the housekeeper can press a button and be alerted if the toilet is malfunctioning. In that way, Quintana says, hotels can eliminate the alarm system that might disrupt hotel guests if it sounds while they are using the room.

The system's predecessor, Flow Manager, operated with four AA batteries that needed to be replaced about once a year. It was mostly mechanical, Quintana says, and included gears that turned the toilet's shut-off valve when necessary and were the source of noise. The H2Orb system, on the other hand, "is very silent," Quintana says.

Quintana says AquaOne H2Orb systems will be available to the public beginning late August 2005, and will retail at \$89.95. Hotel housekeeping beepers would be priced separately.

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