
# The Smart Move for Two-Way Advanced Metering Infrastructure (AMI)

Mi.Net®

The Mi.Net® Mueller Infrastructure Network for Utilities

Improved Network Intelligence
Through Two-Way Communication

SmartMove™

# The Mi.Net® Mueller Infrastructure Network for Utilities

## Improved Network Intelligence Through Two-Way Communication

The U.S economy loses billions each year due to the current outdated water infrastructure and inefficient energy grid. The need for better water management is also becoming a bigger issue due to the continued population growth and increasing demand for water.

Mueller Systems provides smart metering solutions designed specifically for the municipal water and energy utility market to help you increase efficiencies, reduce costs, conserve energy and water, and improve customer service.

When you are ready for a true two-way advanced metering infrastructure (AMI) system, the **Mi.Net®** Mueller Infrastructure Network for Utilities from Mueller Systems is your ideal solution.

The **Mi.Net** System fully automates the meter-reading-to-billing process for water and energy utilities, linking meters, distribution sensors and control devices in a single, highly efficient wireless mesh communication network that provides access to real time water, electricity and gas consumption.

And, the **Mi.Net** System sets a foundation for future network enhancements, as its scalability allows for additional technologies from Mueller Systems or other vendors to be deployed in stages, as their needs and budgets allow.

**The Mi.Net System's two-way meter communication and control capabilities provide:**

- Total solution for combined (water and electric) utilities
- Increased Operational Efficiencies
- On-Demand Reads in Seconds, Not Hours
- Outage Detection / Outage Restoration
- Tamper & Leak Notification
- Reduced Labor Costs
- Peak Load Reduction
- Increased Profitability
- Improved Energy Management & Conservation Efforts
- Increased Customer Satisfaction
- Improved Demand Response

Through its wireless fixed network and true two-way mesh configuration, the **Mi.Net** System fully automates the meter-reading-to-billing process and links meters, distribution sites and control devices in a single, highly efficient data network.

The many benefits of the **Mi.Net** System include "On Demand" meter readings, e-mail alerts and alarms based upon near real-time information, and the ability to best manage your water and electricity resources through on-going access to custom data and information.

The **Mi.Net** System uses **Mi.Node** transceivers on water and electric metering devices to gather and pass data through unlicensed radio frequency to area **Mi.Hubs**. These gateways collect and upload the data to either the utility's server or our hosted server with **Mi.Host** MDM software via GPRS or other data backhaul options.

Mueller Systems also offers a variety of additional high quality, advanced products that enhance the **Mi.Net** System's ability to help utilities lower costs, improve operations, and easily and proactively respond to customer needs.

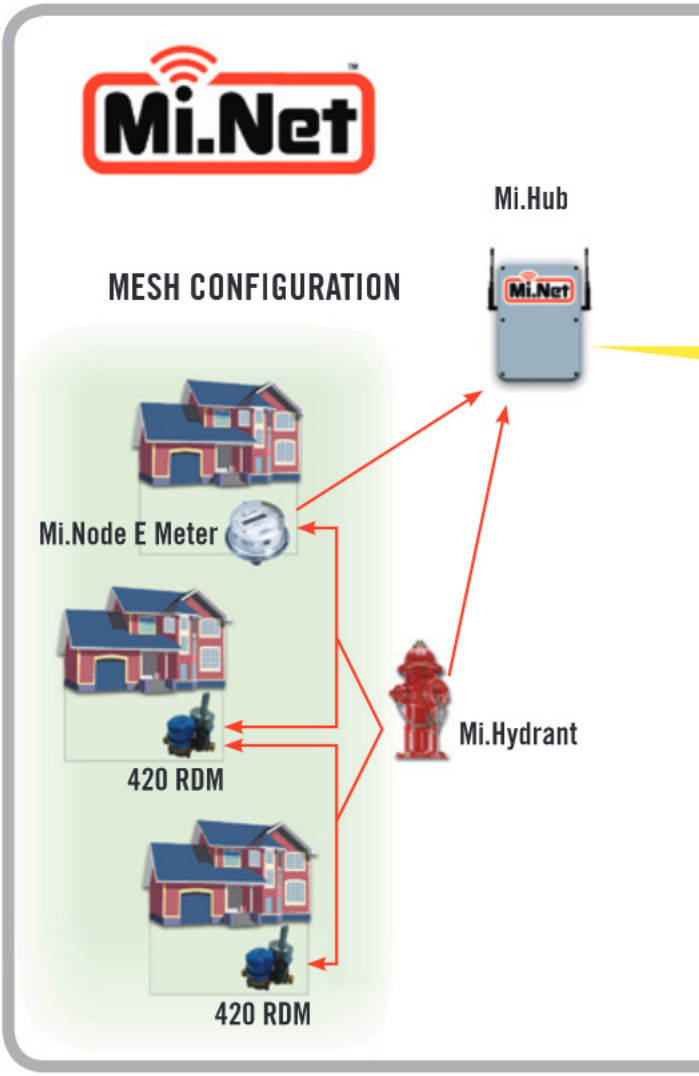
## Smart Metering Solutions

- Completely automated meter-reading-to-billing process
- Flexible billing capabilities offer enhanced rates for energy and water conservation, and cost savings
- Ability to participate in revenue-generating Energy Efficiency programs such as demand-response programs

# Revolution in Residential Metering

## Having two-way meter communication and control capabilities helps you:

- Take action on near-real time information with e-mail alerts and alarms
- Implement remote water and energy management and advanced time-of-use billing services
- Direct demand response-ready customers connect with/disconnect and manage loads
- Identify leaks, detect outages and perform on-demand reads
- Empower consumers with secure Internet access to promote conservation efforts

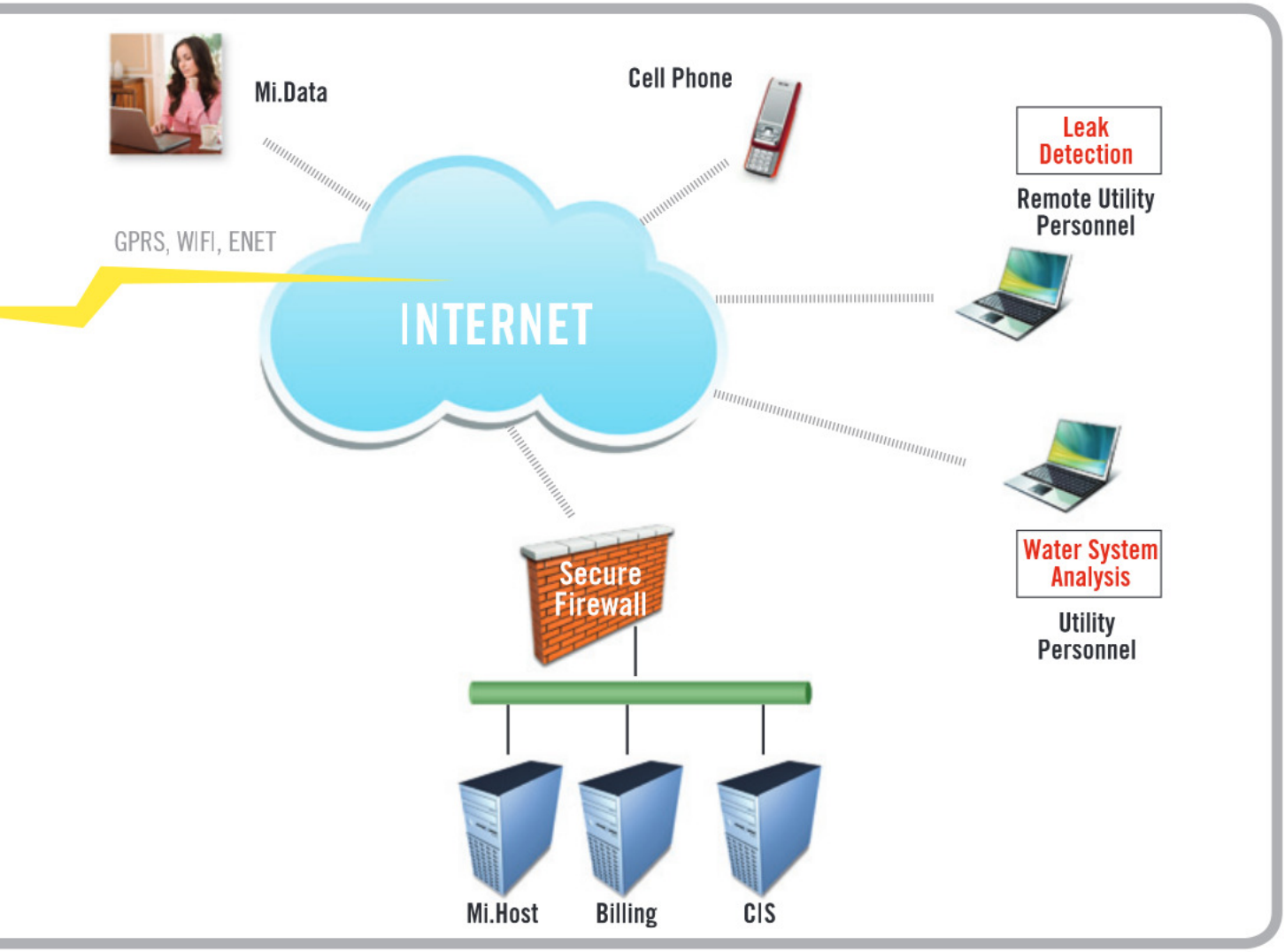



### Primary Components of the Mi.Net System

**Mi.Node:** The **Mi.Net** System uses **Mi.Node** transceivers on metering devices to gather and pass data through radio frequency technology to area **Mi.Hubs**. These gateways collect and upload the data to either the utility's server or our hosted server with **Mi.Host** MDM software via GPRS or other data backhaul options.

Mueller Systems also offers a variety of additional high quality, advanced products that enhance the **Mi.Net** System's ability to help utilities lower costs, improve operations, and easily and proactively respond to customer needs.

**Mi.Node E**; Mueller Systems' **Mi.Node** E meter interface unit provides a direct connection to all Landis+Gyr electric meters. The primary function of **Mi.Node E** is to provide full, two-way communications between the **Mi.Net** System and the smart meter. Each smart meter located on the consumer's premises collects electric usage data at regularly scheduled intervals and transmits it via 900MHz unlicensed RF to information gateways.




**Mi.Hub:** The **Mi.Hub** area data collection module receives usage data transmissions from **Mi.Nodes** and relays the information via available backhaul (ex. GPRS) to the host server as scheduled by the utility.


**Mi.Host: Mi.Host** collects data from **Mi.Hub** area data collection modules and stores the information in a reliable, high performance Microsoft® SQL server, which can be accessed at any time from any PC or mobile device with an internet connection that can support the minimum hardware specification required by Windows® Server 2003. **Mi.Host's** intuitive user interface allows utilities to easily manage and monitor the **Mi.Net** System from the office or in the field.

# 420 RDM*

## Manage Water Service from the Office, Not the Curb

420 Remote Disconnect Meter (RDM) from Mueller Systems is a fully integrated remote disconnect meter that enables utilities to leverage the **Mi.Net** System to remotely manage water services—from the office or the safety of their vehicles.

Being able to remotely manage water services through the **Mi.Net** System helps utilities improve customer service, as consumers will not have to wait for a field crew to arrive to turn on their water. It also helps utilities—especially those that experience high account turnover—to improve employee safety, reduce labor and operational costs and reduce their carbon footprint, as field crews and service vehicles will not have to be dispatched to connect or disconnect water services.

420 RDM can also be used for complete water service shutoffs or configured to limit shutoffs to provide Life Sustenance Flow for utilities that have policies against completely terminating water supplies to residential customers.

Allowing for in-line maintenance and simple service, 420 RDM is fully-integral with 7 1/2" positive displacement (PD) meters—in standard AWWA laying length—and can be quickly and easily installed without requiring any re-plumbing.

## Features:

- s / PTIMUM PERFORMANCE AND EFF CIENCY OVERAN EXPECTED YEARLIFE CYCLE
- s ! DIAPHRAGM DESIGN VALVE THAT OPENS CLOSES USING WATERPRESSURE FORLOWFRICTION LOSS AND LOW ENERGY USE
- s 5 SERFRENDLY DESIGN FORSIMPLE SERVICE AND IN LINE MAINTENANCE
- s %NGINEERED MATERALS THAT PROVIDE CHEMICAL RESISTANCE FORLONG LIFE
- s %XCELLENTREGULATON PERFORMANCE UNDERLOWHIGH mOW CONDITONS
- s )NTEGRATED INTOA v INCH LAYING LENGTH NUTATING DISK 0$ METERFOREXTREME LOWmOWACCURACY

OATENTOENDING

## 420 RDM Enables Utilities To Remotely Manage Water Services Through the Mi.Net System To:

- )MPROVE CUSTOMERSERVICE
- )MPROVE EMPLOYEE SAFETY
- )NCREASE OPERATIONAL EFFICIENCY
- , OWEROPERATIONAL AND LABOREXPENSES
- 3AVE TIME THROUGH QUICK AND EASY INSTALLATION
- 2EDUCE CARBON FOOTPRINT

## Manage Water Service from the Office

1

7ATERSERVICE CONNECTSAND DISCONNECTSARE PROMPTED THROUGHTHE M.Net 3YSTEMS 5SER)NTERFACE

2


4HE COMMAND IS TRANSMITTED THROUGH THE UTILITYS HOST SERVER TOTHE INTERNET

3

4HE CONNECT DISCONNECT COMMAND IS RECEIVED BY M.Hub WHICH THEN TRANSMITSA SIGNAL THROUGHAN UNLICENSED RADIOFREQUENCY

4

4HE FREQUENCY ISRECEIVED BY M.Node 7 ENGAGING 2$- TOCONNECTOR DISCONNECTWATER SERVICE

## Manage Water Service from the Safety of a Vehicle

1

2

7ATERSERVICE CONNECTSAND DISCONNECTSARE PROMPTED THROUGHA HAND HELD COMPUTER

4HE COMMAND FREQUENCY ISRECEIVED BY A M.Node 7 ENGAGING THE 2$- TOCONNECTOR DISCONNECTWATER SERVICE

Optional Enhancements

# Mi.Data

## Improve Customer Service and Water Conservation Through Consumer Education

**Mi.Data** enhances the **Mi.Net** System's ability to improve customer service and conservation by providing consumers with a consolidated view of their water and electricity usage online to help them better understand and improve their usage behavior.

An interactive and easy-to-use web-based consumer portal, **Mi.Data** graphically presents real time and historic usage data, which is collected and stored by the **Mi.Net** System, to consumers in a format that helps them to:

- Easily monitor their water and electricity usage
- Compare current usage to previous periods
- Configure individual alerts
- Set budget and water conservation goals
- Estimate usage costs before getting the shock of a monthly bill
- Identify data inconsistencies that may indicate potential household water leaks

Mi.Data's User Interface can be customized by utilities to include background images and logos that reinforce their brand and geographical location. Utilities can also post educational articles and videos that teach consumers about different ways they can change their consumption behavior to help meet usage or budget goals and improve conservation.

## Features:

- CONSOLIDATED VIEW OF WATER AND ELECTRICITY CONSUMPTION
- EDUCATIONAL INFORMATION ON CONSERVATION
- ANSWERS TO &!1S
- REAL-TIME ALERTS AND NOTIFICATIONS FOR LEAK DETECTION AND POWER OUTAGES
- CONSUMER PREFERENCE THRESHOLDS
- REAL-TIME ACCESS TO METER READS
- EASY NAVIGATION
- NUMEROUS REPORT FORMATS
- ONLINE GRAPHS THAT CAN BE EXPORTED TO EXCEL
- CONSUMERS MONITOR THEIR USAGE ONLINE TO:
  - !DJUST CONSUMPTION/ENERGY CONSERVATION
  - PROJECT MONTHLY BILLS BASED ON USAGE
  - $ETECT LEAKS
  - PARTICIPATE IN INCENTIVE PROGRAMS

## - I$ATA %NHANCES THE - I. ET3YSTEM BY (ELPING5TILITIES TO

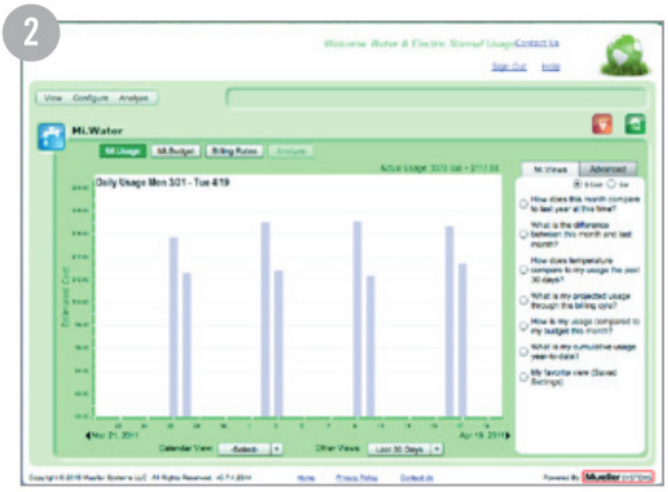
- s 3TRENGTHEN RELATIONSHIPS WITH CONSUMERS
- s )MPROVE CUSTOMERSERVICE
- s %DUCATE CONSUMERS ON THE IMPORTANCE OF CONSERVATION
- s ! DDRESS NON REVENUE WATER
- s 0ROMOTE CONSUMERUNDERSTANDING OF RATE INCREASES
- s 2EDUCE BILLING hSURPRISESv
- s %NHANCE COMMUNICATION WITH CONSUMERS

## Online Access To Real Time Consumption Information

1


4HE LOOK AND FEEL OF Mi.Data CAN BE CUSTOMIZED BY MUNICIPALITIES TO INCLUDE THEIR LOGOS COLORS AND IMPORTANT MESSAGES AND EDUCATIONAL INFORMATION FOR CONSUMERS ON CONSERVATION #ONSUMERS CAN SET THEIR PREFERENCES TO RECEIVE INFORMATIONAL ALERTS ON WATER BANS LEAKS AND USAGE GOALS OR BUDGETS

2




%ASY TO READ GRAPHS HELP CONSUMERS TO EASILY MONITOR THEIR USAGE AND ESTIMATE THEIR USAGE COSTS BEFORE GETTING THE SHOCK OF A MONTHLY BILL ! NSWERS TO FREQUENTLY ASKED BILLING QUESTIONS ARE ALSO INCLUDED BY ANSWERING POTENTIAL QUESTIONS AND FACILITATING AN ADDITIONAL COMMUNICATION CHANNEL Mi.Data PROVIDES EXTRA SUPPORT THAT CAN HELP CUSTOMERSERVICE DEPARTMENTS ASSIST CONSUMERS IN A MORE TIMELY FASHION

3


#OMPARISONS TO PREVIOUS TIME PERIODS BY DAY WEEK OR MONTH CAN HELP CONSUMERS BETTER UNDERSTAND THEIR USAGE AND IDENTIFY DATA ANOMALIES THAT INDICATE POTENTIAL WATER LEAKS IN THEIR HOUSEHOLDS

Optional Enhancements

# Mi.Hydrant

## The Smartest Fire Hydrant on the Block

**Mi.Hydrant** extends the **Mi.Net** System's two-way network coverage by relaying data between meters equipped with **Mi.Node** units.

**Mi.Hydrant** is an enclosed transceiver that replaces the pumper cap of existing fire hydrants to provide multi-path RF coverage by storing and transmitting usage data from other metering devices in the network. By transforming the fire hydrant into an active part of the **Mi.Net** System, **Mi.Hydrant** reduces equipment and labor costs for utilities, while helping them to eliminate the need to navigate the procedures, politics, and logistics of locating and installing additional structures on which to place network communication devices.

The enhanced flow of information provided by **Mi.Hydrant** helps you become even more flexible and responsive to customer needs while proactively identifying and resolving critical issues around water conservation, operational efficiency, and workforce productivity – before they affect services.

## Features:

- s - OUNTS INCONSPICUOUSLY ON EXISTING HYDRANTS WITHIN THE UTILITY INFRASTRUCTURE TO PROVIDE ENHANCED NETWORK COVERAGE
- s ! CTS AS AN EXTENDER FOR METER DATA PROVIDED BY - I. CODE AND ( OT 2 CD UNITS WHEN DEPLOYED IN A MULTI PATH NETWORK
- s 2 & ENABLED WIRELESS DEVICE COMMUNICATES IN THE UNLICENSED - ( Z BAND
- s , OGS AND STORES METER DATA IN INTERNAL MEMORY AND TRANSMITS IT TO OTHER DEVICES WITHIN THE Mi.Net 3YSTEM
- s . O EXTERNAL POWER SUPPLY REQUIRED FOR OPERATION
- s YEAR BATTERY LIFE
- s . OTI ES THE SYSTEM OF LOW BATTERY LEVEL FOR PREEMPTIVE MAINTENANCE
- s &## # OMPLIANT

- I( YDRANT %XTENDS 4HE - I. ET 3YSTEM S 4WO 7 AY
. ETWORK # OVERAGE &URTHER )MPROVING 5 TILITIES ! BILITY 4O

s )NCREASE OPERATIONAL EFFICIENCY
s ! CCOUNT FOR NON REVENUE WATER
s ' AIN BETTER ACCESS TO CUSTOMER USAGE AND DEMAND DATA
s 2EDUCE CARBON FOOTPRINT BY STREAMLINING LABOR AND WATER USAGE
s , OWER OPERATIONAL EXPENSES BY ELIMINATING EXPENSIVE UTILITY POLE LEASES
s %FFECTIVELY MIGRATE TO MORE COST EFFECTIVE METERING STRATEGIES
s )MPROVE CUSTOMER SERVICE AND SATISFACTION

## Improved Information Flow


7ITHIN THE M.Net 3YSTEM NETWORK DATA RETRIEVED FROM A WATER METER IS STORED TEMPO RARILY WITHIN THE M.Node UNITS INTERNAL MEMORY ! TA SPECIFIED TIME OR DURING AN ON DEMAND READ THE M.Node INTERFACE UNITS WILL TRANSMIT READING LEAK BACKFLOW TAMPER AND ALARM DATA

4HIS INFORMATION CAN BE PASSED TO A M.Hydrant TRANSCEIVER WHERE IT IS TRANSMITTED TO THE M.Hub COLLECTOR VIA AN UNLICENSED RADIO FREQUENCY AND THEN RELAYED TO THE M.Net 3YSTEMS HOST SERVER FOR STORAGE AND ANALYSIS

! LL M.Hydrant UNITS SUPPORT THE RELAY OF DATA TO AND FROM OTHER M.Node AND M.Hydrant UNITS 4HIS ALLOWS THE M.Net 3YSTEM TO SUCCESSFULLY OVER COME OBSTACLES SUCH AS VARIED AND DIFFICULT TERRAIN AND PER MANENT OR MOVABLE OBSTACLES

- ULTIPLE SECURE ROUTING OPTIONS FOR EACH M.Node AND M.Hydrant UNIT ENSURE THAT THE SERVER WILL RETRIEVE THE DATA

Mueller SYSTEMS

## About Mueller Systems.

Where Intelligence Meets Infrastructure™

Mueller Systems provides Smart Metering solutions to optimize the delivery and use of water and energy. Municipalities that supply water, electricity or gas — or any combination of the three services — need innovative ways to increase efficiencies, reduce costs, conserve water and energy, and improve customer service. The Mi.Net® Mueller Infrastructure Network for Utilities from Mueller Systems meets that need.

Mueller Systems develops meters and metering systems that are a Smart Move™ for the most demanding applications including residential, commercial and fire-line meters, advanced metering infrastructure (AMI)/automated meter reading (AMR) systems and related products. We provide utilities with infrastructure technology—including the water industry's first AMI system with 2-way mesh network configuration—that enables them to access the intelligent, actionable data needed to increase efficiencies, reduce costs, conserve water and energy, and improve customer service.

Mueller Systems is part of Mueller Water Products, Inc., a leading manufacturer and marketer of products and services used in the transmission, distribution and measurement of water.

**Find out how Mueller Systems can help you increase efficiencies, reduce costs, conserve water and energy, and improve customer service by calling us today at 800-323-8584 or visiting www.muellersystems.com.**

Mueller Water Products

Smart Move™