EcoStruxure™
Innovation At Every Level

SUSTAINABILITY

Addressing global water scarcity with innovation

How EcoStruxure™ is helping Rainwater Management Solutions and its clients address the escalating issue of water conservation.

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Life Is On | Schneider Electric

A water management pioneer

As organizations come to realize that water is our most precious and valuable natural resource, they are increasingly turning to rainwater collection as a more sustainable and economical water source.

Rainwater Management Solutions (RMS) is an industry-leading supplier and professional services firm specializing in turnkey solutions for rainwater and stormwater management, based in southwest Virginia. RMS provides complete rainwater harvesting systems and solutions for residential, commercial, industrial, and agricultural projects.

RMS has always focused on smart, innovative water conservation. As a recognized authority, RMS originated the first national guidelines through the American Rainwater Catchment Systems Association (ARCSA). They also offer specialized rainwater and stormwater management system design and consulting services.

Rainwater capture and reclamation

Rainwater harvesting is often seen as a “new” industry today, but RMS has been in business for more than 20 years and is only continuing to grow. Rainwater harvesting is the collection, conveyance, storage, treatment and reuse of rainwater. Once a sufficient amount is collected in cisterns, it can be used for non-potable applications such as hydraulics, irrigation, cooling, industrial processes, fire protection and more.

This simple, cost-effective way of promoting sustainable and healthy water management has benefits for the entire population:

- Reduces strain on existing water supply
- Prevents aquifer depletion and collapse
- Reduces energy and economic costs associated with water
- Reduces runoff and stress to sewage systems

Faced with a myriad of challenges, communities and organizations are turning to rain as a resource, which RMS believes we should consider nature’s gift to us. RMS recalls that in their early days, some decision-makers scoffed at the idea of investing in on-site rainwater harvesting, as such systems were fairly scarce at the time. As seen in partnerships forged between RMS and their customers today, this is all changing.

Goal

To enable Rainwater Management Solutions to help their clients save money and energy by reclaiming a natural resource.

Story

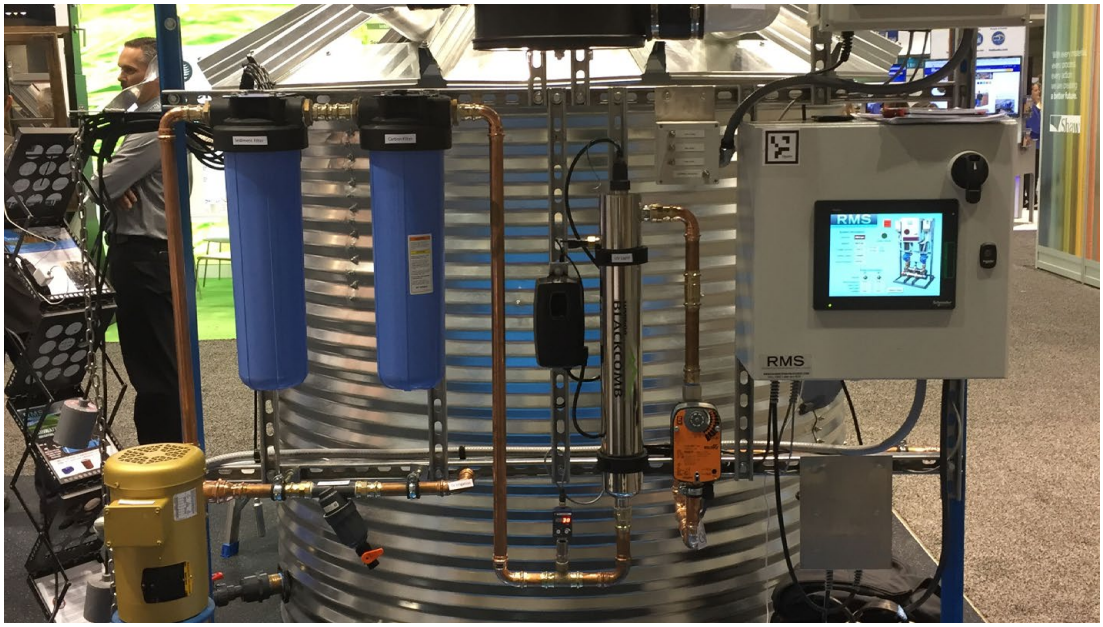
Rainwater Management Solutions (RMS) contacted Schneider Electric looking to save energy costs for cistern and booster pumps offered. This initial technical challenge expanded into greater partnership as Schneider Electric and RMS collaborated on driving efficiency with a number of innovative solutions.

Solution

With EcoStruxure, RMS gained new technology for reducing errors, increasing automation and making operations more efficient. Thus, allowing them to help their clients better address the pressing need for water conservation.

Results

EcoStruxure’s cloud-based and automated solutions are built for the growth that RMS is projecting for the future, helping the company save significant time, money and frustration on manual programming and troubleshooting.



RMS has proposed and completed solutions to their clients across industries, including a large home improvement retailer, airports, commercial car washes, high-rise condos and a children's museum. Rainwater harvesting is garnering interest in the green building movement as a renewable water source helping in LEED certification.

An initial challenge leads to a strong relationship

What began as a single project would evolve into a series of collaborations. In August 2018, Rainwater Management Solutions first met with Schneider Electric to discuss a specific technical dilemma: RMS was looking for a way to save energy consumption on booster and cistern pumps. Schneider Electric proposed installing VFDs with a programmed sleep mode.

Since this initial collaboration, RMS and Schneider Electric have gone on to partner on a number of initiatives. The team is co-engineering a range of pump products such as PLCs, HMIs, sensors and VFDs for this client – hoping to boost rainwater capture efficiency. The joint team of system architecture engineers is continuing to look for innovative solutions.

Given the importance RMS puts on innovation, they immediately became interested in the EcoStruxure™ Augmented Operator Advisor diagnostics tool, asking Schneider Electric to present a working system at upcoming trade shows. Attendees were wowed by the capabilities. As RMS CEO David Crawford notes:

"People were lined up for the new technology everyone's going for. By just adding a controller, building maintenance engineers can look at everything – from the office, from a skid, on their iPhone."

Saving energy consumption on water pumps

During the collection step, rainwater is collected, filtered and sent to a storage tank. Either a booster or cistern pump then drives the water into a facility, managing flow and storage and requiring significant energy consumption.

Using Altivar variable frequency drives (VFDs) programmed by Schneider Electric, RMS gained the ability to give their water pumps a sleep mode, which would engage when sensors detect low energy needs over a certain interval. This feature was incorporated into the product design through direct collaboration between RMS and the Schneider Electric Team, further enhancing the RMS offer. This successful project piqued the interest of the company's leadership to learn more about how Schneider Electric could help them continue moving forward.

"From the standpoint of the 20 years I've been in it, everybody thought we were nuts and didn't know what we were talking about. Because everybody assumed you just turn the tap on, the water was great, and it would be there forever. But through climate change and droughts, people are becoming more educated…"

– David Crawford, CEO and founder of Rainwater Management Solutions

"As the rainwater industry becomes more complicated and continues to open new doors for use, you need the ultimate ability to know what's going on with your system from anywhere."

– David Crawford, CEO and founder of Rainwater Management Solutions

A new way to troubleshoot and manage operations

Prospective buyers are often concerned about the complexity of potential headaches of keeping rainwater collection systems up and running. With this thought in mind, RMS took a closer look at Schneider Electric's EcoStruxure™ Augmented Operator Advisor operation system. RMS leverages the Augmented Operator Advisor with their water pumps, allowing the operator to access real-time diagnostic information on an iPad to identify any problems. Augmented reality features call up the relevant passages in the user manual and step-by-step instructions, overlaid on the image of the equipment – **eliminating user guesswork, reducing service calls and reducing downtime.**

RMS was intrigued with the possibilities of integrating EcoStruxure™ Augmented Operator Advisor into their systems. Ease of use is a top service commitment for RMS, and being able to quickly find, diagnose and correct system problems is key for their customers. The user-friendly augmented reality-based system is a great fit for this need.

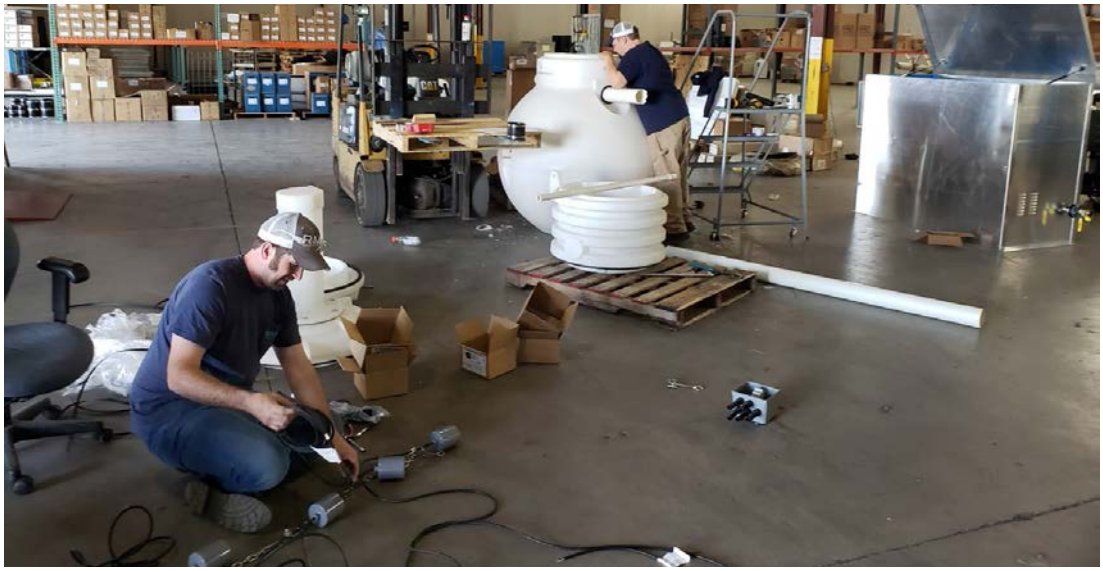
Schneider Electric and RMS are currently working on additional implementations and pursuing further enhancements using Schneider Electric PLCs, HMIs and drives.

The benefits of better control

EcoStruxure™ Augmented Operator Advisor enables troubleshooting without opening a panel, with augmented reality solutions that offer immediate, real-time access to relevant information in the field, making both operation and maintenance easier. This allows users to **reduce up to 50% of labor time**, reduce downtime, speed up operation and maintenance, and reduce human error for customers using rainwater capture systems.

Raising the bar on booster pumps

The RMS team is also focusing on booster pumps, which are necessary for pumping water to upper floors in multilevel facilities. Schneider Electric engineers are currently working with the RMS team to co-develop booster pump solutions. The booster pump products being developed include Modicon PLCs, Magelis HMIs, Altivar Drives and Telemecanique sensors. The Schneider Electric engineer has written the PLC program and is currently helping RMS develop their PLC code. Once completed, the HMI will help clients adjust and display parameters easily on screen.



"There is a tremendous amount of potential water, if only we know when to capture it. We have to start thinking in terms of moving away from stormwater detention to stormwater retention."

– David Crawford, CEO and founder of Rainwater Management Solutions

RMS is also working on a separate booster pump solution involving iPCs (industrial PCs), sensors, VFDs and the Augmented Operator Advisor. As a next step, the team will be adding the lead-lag of duplex or triplex booster pumps. They are continually looking for opportunities to increase the smart features of rainwater capture systems.

Collaborating for the future

The RMS/Schneider Electric partnership is gearing up to work with warehouse and technical staff on different avenues to interact via the internet to control rainwater capture systems. The demand has been increasing for smart control systems that can tap into online 5-day forecast data and notify users when rain is coming.

RMS is also working with plumbing unions to help technicians get certified in rainwater harvesting. As the partnership with Schneider Electric continues, new technicians will learn about EcoStruxure™ solutions that the co-engineers are developing.

According to David Crawford, "Taking care of the environment doesn't only grow green things – it also grows green money." Companies can go green by utilizing rainwater capture systems, and they can be profitable. EPA studies show that some large cities in the US are wasting hundreds of billions of gallons of runoff water. What if we were able to capture that water instead, making use of it to benefit companies and communities?

St. Paul takes a huge step forward for water reuse in the United States

RMS recently completed a project with the city of St. Paul to build a 675,000-gallon rainwater harvesting system under the lawn in front of its new soccer stadium. The system is designed for efficiency and for protection from the harsh Minnesota winters. The program, "Utilizing Rain as a Resource", is looking at how to make use of rainwater – rather than allowing it to be lost and add stormwater pollution to surrounding lakes or the Mississippi River.

Starting with consultation on a single technical issue, the partnership between Rainwater Management Solutions and Schneider Electric has grown into a flourishing relationship built on innovation and trust. Together the two companies are committed to creating solutions that help organizations and individuals address the urgent issue of water scarcity. Our companies look forward to finding more new ways to help customers make the most of the rainwater that nature provides.

"If we are serious about our future, our children's future, our grandchildren's future, sustainability is the key."

– Raymond Boyd, Training Director, Rainwater Management Solutions

EcoStruxure™
Innovation At Every Level

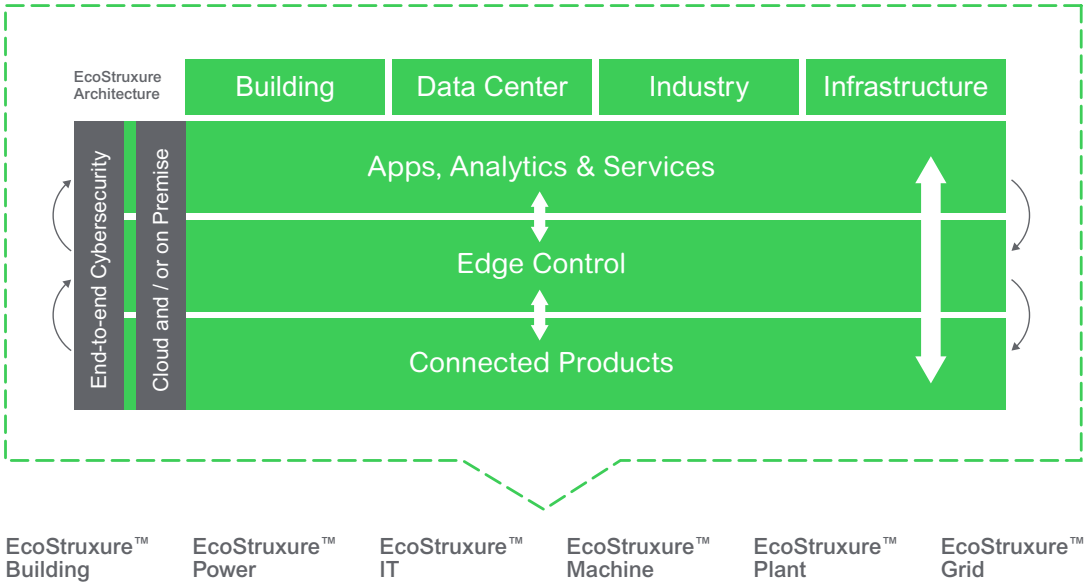
IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise



EcoStruxure™ Building | EcoStruxure™ Power | EcoStruxure™ IT | EcoStruxure™ Machine | EcoStruxure™ Plant | EcoStruxure™ Grid

Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

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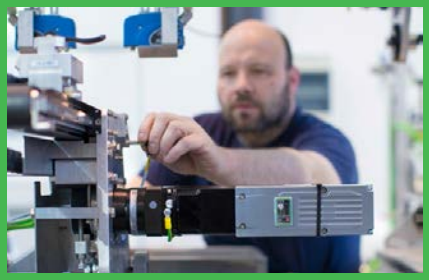

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Schneider Electric

8001 Knightdale Blvd
Knightdale, NC 27545
United States
Phone: +1 919-266-3671

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