

Mobilizing Water Management with IoT Solutions

Industry: Government, Water Resource Management

Product: SRG-3352

Introduction

For many communities, water management is a vital task for ensuring safety and prosperity, whether it's for irrigation, flood control, or resource management. The cities and counties located in southern Taiwan have to contend with all three. Southern Taiwan is home to several important fresh water reservoirs as well as ample flatlands for various agricultural purposes. Taiwan also experiences typhoons and steady rainfalls thanks to its unique geography, requiring every level of government to contend with flood prevention.

One county in southern Taiwan has relied on an army of fixed-in-place water pumps to handle these tasks for many years. However, the government has to contend with several shortfalls with permanent installations. First, doing maintenance work in the field can limit the quality and ability of repairs, with removal of the pump being costly and time consuming. Secondly, in times of excessive rainfall, several pumps have been damaged due to exceedingly-high water levels submerging the pumps themselves. Finally, the old equipment offers no means of alerting government officials when there's an outage or even when fuel reserves run out for the pumps.



The county government recently decided to deploy a fleet of mobile water pumps, diesel powered pumps which are mounted on trailers, allowing for easy deployment or movement. This allows the government to retrieve individual pumps for maintenance, as well as reposition them during typhoons or floods. However, they still needed a method to monitor the pumps, and were introduced with a new problem to their strategy; how to locate each pump since they were no longer permanently installed in fixed locations. The county government turned to AAEON and the SRG-3352 IoT Gateway to solve these challenges.

Challenges

To help meet the goals of this project, AAEON worked closely with the county government to identify several key requirements. A successful solution needed to be able to connect to a central monitoring service, provide GPS location data for the pump, and offer a stable, low maintenance platform to ensure reliable operation.

LTE Capable

To provide live monitoring, the SRG-3352 support LTE cards, connecting each pump to the cloud via cellular networks. As the SRG-3352 gathers a range of data, from fuel levels to oil pressure and engine temperature, it is sent to a central cloud management service

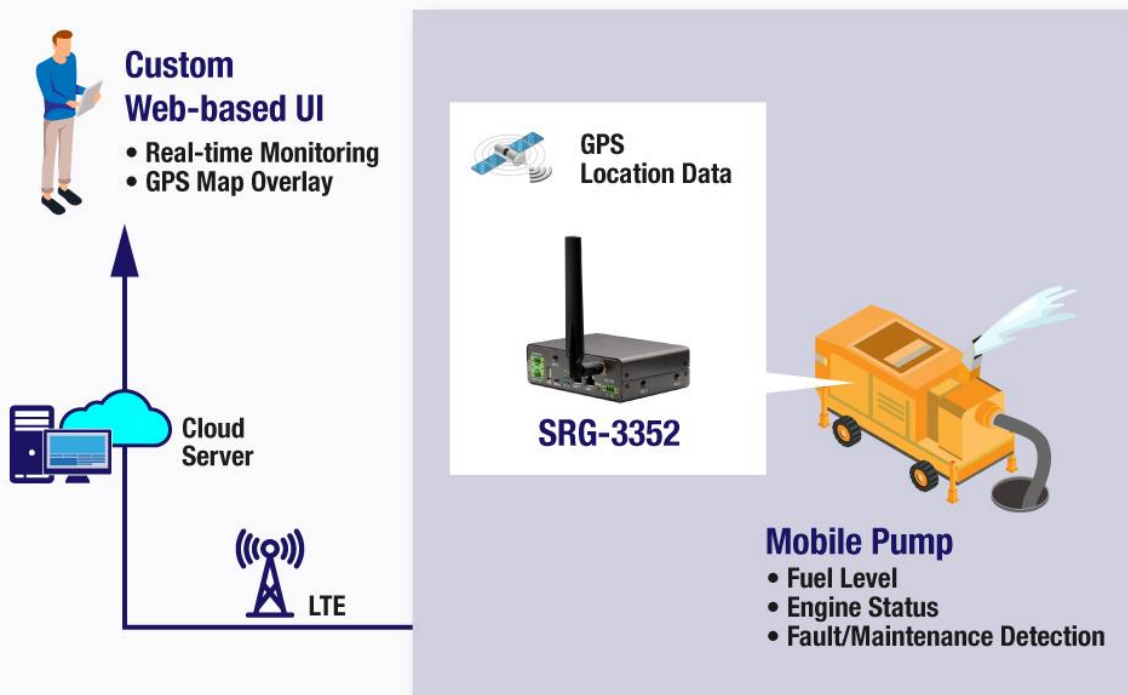
so county officials can observe the operation of each pump in real time.

GPS Location Service

The SRG-3352 was deployed with a GPS module in addition to the LTE card, allowing the SRG-3352 to share GNSS data with the central cloud management service. This allows county officials and maintenance crews to quickly find and locate each pump via the management service.

Stable and Reliable Performance

The SRG-3352 is designed with stability and reliability in mind, to deliver accurate and on-time data reporting. This helps to reduce maintenance requirements and costs over the lifetime of the platform.



AAEON Advantage

In addition to meeting the project's requirements, AAEON and the SRG-3352 offered several key advantages in utilizing the solution. The SRG-3352 offers compatibility with a wide range of cloud services, but also AAEON provided a total solution with cloud

monitoring software and a custom UI for the web-based central monitoring service.

Cloud Compatible

The SRG-3352 is compatible with a range of cloud services and software, making it easy to integrate with a user's preferred service. The SRG-3352 is compatible with popular cloud

services including AWS, Azure, and Arm Pelion, or can be configured to work with a customer's own cloud platform.

Total Solution

AAEON services offered a total package solution, not just hardware, but also with setting up the cloud software required by the county officials. This included designing and implementing a custom UI based on an open-

sourced platform, allowing officials to monitor and locate each pump through a web-based interface.

AAEON Service

AAEON provides industry leading service to every customer, including software implementation and testing to ensure the platform will work reliably and accurately in any application.

Impact

Thanks to AAEON and the SRG-3352, the county government is able to monitor the status and location of each pump in real time with a user-friendly web-based interface. This helps lower maintenance costs by extending the time between routine work based on actual usage of the pump, and by making it easy for maintenance personnel to locate each pump.

The system also helps government officials quickly locate each pump during an emergency, such as flooding or typhoons, preventing damage or even loss of a pump. And with better monitoring of each pump, their lifecycle can be extended thanks to improved usage rates.

Thanks to these pumps and monitoring provided by the SRG-3352, the county government can provide better targeted water management services to their citizens, improving quality of life as well as irrigation and flood control, helping ensure bountiful crops and safe homes. With the savings in maintenance costs and avoiding damage to the pumps, the government can reinvest into either expanding their fleet of mobile pumps, or other water management projects.

Product

The SRG-3352 from AAEON is built to power reliable and cost-effective edge gateway operations, with low upfront cost and reduced maintenance requirements over time. Powered by the Arm[®] Cortex-A8 800 MHz RISC processor, the SRG-3352 offers lower energy requirements for solar or battery powered operations, as well as reduced thermal output, allowing the system to operating in a wide range of temperatures from 0°C to 60°C without a loss in performance.

The SRG-3352 supports wireless communication through 3G/4G/LTE as well as NB-IoT to help reduce carrier costs. The SRG-3352 provides flexibility in connecting with edge nodes, supporting Wi-Fi and featuring



two Gigabit Ethernet ports, USB 2.0 and RS-485 ports. Optional wall-mount and DIN rail kits ensure the SRG-3352 can be deployed anywhere it's needed. The SRG-3352 is also compatible with popular cloud services including AWS, Azure, and Arm Pelion, or can be configured to work with a customer's own cloud platform.

About AAEON

Established in 1992, AAEON is one of the leading designers and manufacturers of industrial IoT and AI Edge solutions. With continual innovation as a core value, AAEON provides reliable, high-quality computing platforms including industrial motherboards and systems, rugged tablets, embedded AI Edge systems, uCPE network appliances, and LoRaWAN/WWAN solutions. AAEON also provides industry-leading experience and knowledge to provide OEM/ODM services worldwide. AAEON also works closely with cities and governments to develop and deploy Smart City ecosystems, offering individual platforms and end-to-end solutions. AAEON works closely with premier chip designers to deliver stable, reliable platforms, and is recognized as an Associate member of the Intel® Internet of Things Solutions Alliance, as well as an NVIDIA® Preferred Partner. For an introduction to AAEON's expansive line of products and services, visit www.aaeon.com.

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