



Airvac

Wireless Monitoring

Proactively operate and maintain your vacuum sewer collection system.



A brand of
Aqseptence Group



Airvac's wireless monitoring system tracks trends, providing operators the ability to proactively operate and maintain your vacuum sewer collection system.

Airvac's Wireless Monitoring with the patented S.M.A.R.T. Technology

(Strategic Monitoring for Advanced Remote Transfer)

Airvac's wireless monitoring system with our patented S.M.A.R.T. technology can track trends and identify any abnormal conditions as soon as they occur. The data received from LoRa modules can be used to adjust the system, making certain that it continues to run at peak performance levels. If an issue occurs along the vacuum main or at a valve pit, the monitoring system will pinpoint the exact location and identify any necessary adjustments that need to be made. Airvac's system will monitor vacuum levels, valve status, high sump level, system trends, cycles, cycle time, and any instances of infiltration.

Our system not only monitors itself, but it also automatically makes real-time adjustments to optimize system hydraulics. This proactive approach of controlling a vacuum system's behavior results in optimum system performance, prevents problems from occurring, and reduces operation and maintenance costs.

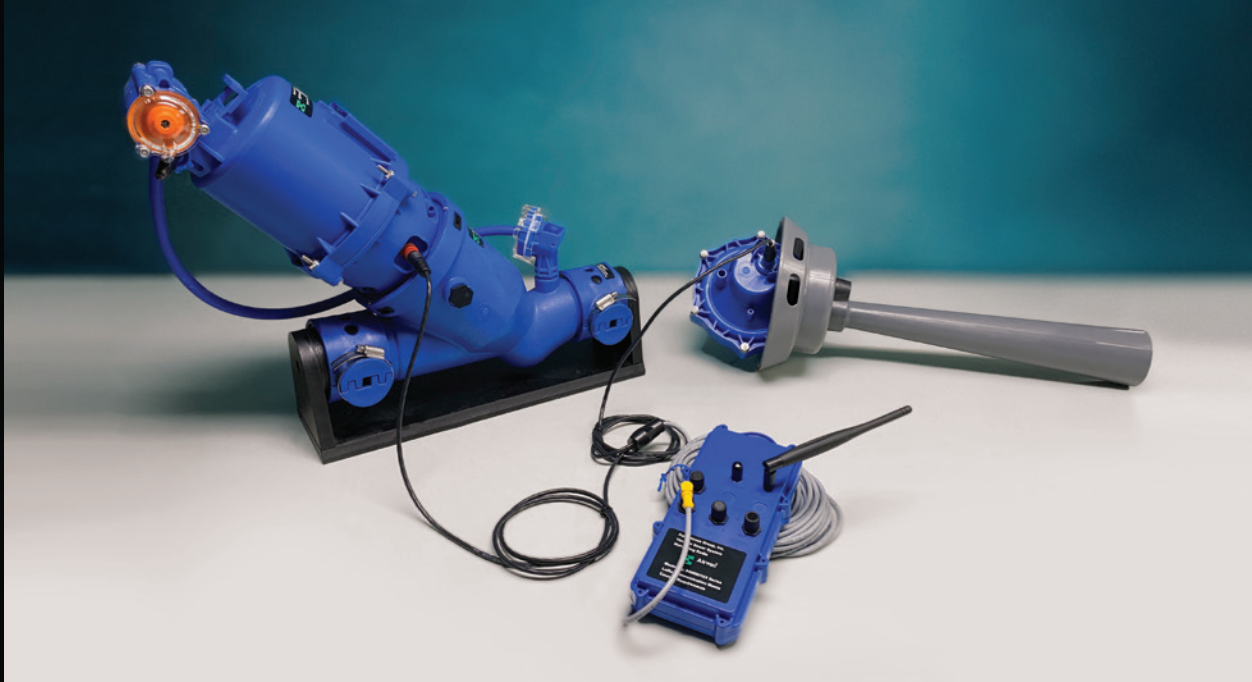


Monitoring Features Side-by-Side Comparison

Benefits

- **Predictive and proactive:** Potential problems are not only identified, the adjustments are automatically made to correct them.
- **More efficient system:** System imbalances can easily be overcome, resulting in a more cost-effective system.
- **Airvac is connected 24/7:** Airvac specialists can monitor the system in real-time, providing assistance to the operator.
- **Built-in purge cycle:** A “purge” cycle can be programmed into the logic controller that will automatically clear the vacuum mains at programmed times to ensure that waterlogging of the system will not occur.
- **Automatic system updates:** Airvac can remotely push programming updates to keep S.M.A.R.T. current.

	Airvac	Industry Standard
System Connections		
LoRa Modules	✓	✓
Cloud Data Storage	✓	✓
SCADA Connectivity	✓	✓
Main Gateways	✓	✓
Remote Gateways	✓	✓
Magnet Activated Sensors	✓	✓
Sump Float	✓	✓
Vacuum Station Control Panels	✓	✓
Types of Reporting		
Vacuum Levels	✓	✓
Valve Status	✓	✓
Sump Level High	✓	✓
System Trends	✓	✓
Cycles, Cycle Time	✓	✓
Infiltration	✓	✓
Latest Technology		
Dedicated Ports	✓	
Modulation	✓	
S.M.A.R.T. Technology	✓	
Two-Way Communication	✓	✓
Interactive e-Cabinets	✓	
No Magnets or Floats Required	✓	



S.M.A.R.T. Technology

Airvac's patented S.M.A.R.T. technology works in conjunction with the monitoring system. It proactively makes real-time adjustments, prevents problems from occurring, and it reduces operation and maintenance costs.

Using artificial intelligence (AI), S.M.A.R.T. communicates with the various vacuum station controls and will override pump control as necessary. S.M.A.R.T. software uses several modes to identify system imbalances and to provide recovery options. This may include monitoring various system vacuum levels, monitoring pump operating parameters, monitoring incoming flows, actuating remote vacuum valves, and adjusting vacuum levels at the station.

Dedicated Ports

Dedicated ports are integrated into the vacuum valve and sump breather, which makes connecting monitoring cables quick and easy.

No Magnets or Floats Required

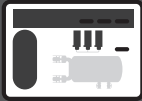
Our vacuum valve monitoring does not require a magnet with newer model vacuum valves, minimizing the risk of failure due to misalignment, switch malfunction, or debris build-up. Sump levels are monitored through our new breather diaphragm instead of using a float. This minimizes the chance of failure due to the float getting stuck or hung up on internal wiring.

(magnet switches and floats are still available for older systems)

Two-Way Communication

Two-way communication offers operators the ability to remotely cycle specific S.M.A.R.T. vacuum valves.

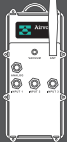
Key Airvac Monitoring Components



Station Monitoring

The benefits of station monitoring:

- Allows remote viewing of station status, vacuum level history, and pump operation trend graphs. These are very valuable to keep your system running at its best, and to know when problems begin.
- Allows comparison of end of line vacuum to station vacuum to diagnose vacuum main water logging.
- If backups start to occur you need to know vacuum levels on the system. All of this is viewable remotely.
- All incoming I/O, like vacuum level, tank level, pump status, and alarms can be monitored if desired.
- You will have access from any mobile device with an internet connection.



Modules

"Modules" collect data from the vacuum valves and breathers and transmits the collected data, via LoRa, to the "Main Gateway". "Modules" operate at 7.2 volts (battery) and can be customized to handle many different I/O's. The 'Modules' are IP68 and can be installed inside or outside the valve pit.



Main Gateway

Our "Main Gateway" communicates with the "Modules" in the field. All information received from the "Modules" is transferred to the control server. This can be done with GPRS/GSM or by wired LAN. The best spot to install a "Main Gateway" is in the middle of the development area, or at the highest point. The "Main Gateway" needs power (100-240VAC-1A) and an ethernet connection, if you're not using the GSM function. In large areas, or areas with tall trees and buildings, there can be multiple "Remote Gateways" installed to cover the entire area.



Remote Gateways

Our "Remote Gateways" communicate with the "Main Gateway". The "Remote Gateways" always need at least one "Main Gateway" in the system. The main advantage of using "Remote Gateways" is to deliver better signal coverage to the "Modules", which helps to conserve their battery life. It also reduces installation time, avoiding the need for site surveys in the field.



Battery

Airvac modules use Lithium thionyl chloride batteries (Li/SOCl₂). These batteries have a long life expectancy, and they are designed for use in temperatures ranging from -76° to 185° Fahrenheit or -60° to +85° Celsius. The modules also have special built-in features to further extend battery life.

These batteries have a 20-year shelf-life. With the recommended Airvac data transfer frequency, 3 to 5 years battery life is expected. Battery life depends on the frequency of the data transfer.



What Is LoRa?

LoRa is the existing wireless platform of the Internet of Things (IoT). LoRa chipsets connect sensors to the Cloud and enable real-time communication of data and analytics. LoRa devices enable smart IoT applications that solve some of the biggest challenges facing our planet: energy management, natural resource reduction, pollution control, and infrastructure efficiency.



Wireless Monitoring

Valve Pit Reports

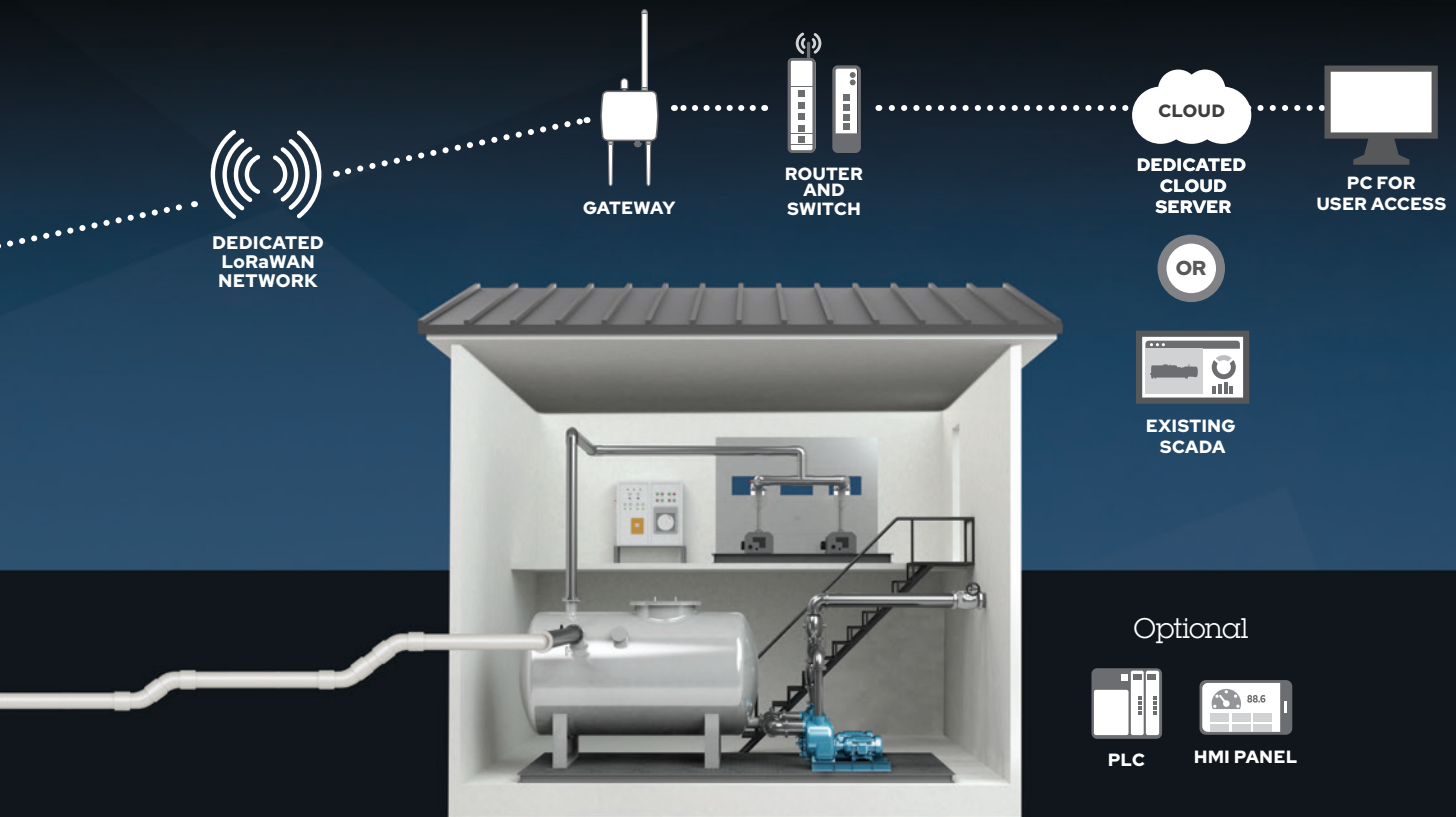
- Vacuum Levels
- Valve Status
- High Sump Level
- Trends
- Cycles, Cycle Time, Infiltration

What Is LoRaWAN?

LoRaWAN is low-power, wide area networking (LPWAN). It leverages the unlicensed radio spectrum in the Industrial, Scientific, and Medical (ISM) band. The LoRa Alliance®, a nonprofit association and fast growing technology alliance, drives the standardization and global harmonization of the LoRaWAN standard.

With the Airvac LoRa monitoring system, numerous battery-powered “things” can be connected to a single, dedicated LoRaWAN network. It can facilitate data collection from energy meters, street lighting, parking sensors, condition monitoring equipment, air quality stations, waste and recycling containers, storm drains, asset monitoring and much, much more.

LoRaWAN provides secure, bi-directional, low-power, long-range communication. The LoRaWAN data can be incorporated into existing city systems. It can send notifications, create reports, activate processes, alert people, or trigger other automated actions.



Vacuum Station Reports

- Vacuum Levels
- Liquid Levels
- Alarm Conditions
- Pump Run Times
- System Trends

Discover Better.

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We provide **FREE** cost estimates & system layouts.



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