Solution Datasheet

ellenex

Air filter performance monitoring in HVAC Systems

Accurate and efficient air filter performance and cleanness monitoring in HVAC systems can lead to energy savings of up to 20%, improving overall building comfort and reducing carbon emissions.

CHALLENGE

Inefficient filter operation monitoring in air handling units of HVAC systems can lead to overload on fan's motor, uneven temperature distribution, reduced system performance, and increased energy consumption. To address these issues, it is crucial to have a reliable and energy-efficient solution that can effectively monitor the operation of the airfilters, provide accurate data, and enable better control over the HVAC system.

SOLUTION

Ellenex's battery-operated differential pressure sensor with built-in temperature sensor can be used to address this challenge. Leveraging NB-IoT technology, these ruggedized and IP66-rated sensors provide near real-time pressure drop across the filter and temperature monitoring within HVAC systems.

The benefits of using this approach include:

- Enhanced energy efficiency: Accurate air filter monitoring enables better control over HVAC systems, reducing energy consumption and operating costs.
- Improved comfort: By maintaining optimal temperature distribution, occupants experience a more comfortable indoor environment.

PPM-HV-A-N

Air filter performance monitoring in HVAC Systems

- Easy installation and maintenance: Battery-operated sensors require no additional power source, making them simple to install and maintain.
- Long-lasting performance: Ruggedized sensors with IP65 rating ensure durability and reliability in harsh industrial applications.
- Scalability: The NB-IoT technology allows for easy integration with existing infrastructure and the ability to scale up as needed.

Implementing Ellenex's battery-operated differential pressure and temperature sensors with NB-IoT technology helps solve the challenge of inefficient airflow monitoring in HVAC systems, leading to optimized energy efficiency and enhanced indoor comfort.
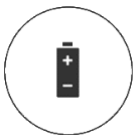
| Battery Operated | Ruggedised Design | Easy Install | Pre-Configured | Secure | Quick ROI |

TECHNOLOGY

Ellenex employs cutting-edge communication technology by utilizing the LTE Cat-M1 protocol, which operates on 4G and 5G cellular networks, making it suitable for mobile and stationary monitoring applications. However, its remarkably low power consumption and superior penetration rate, specifically designed for industrial solutions, sets it apart. Narrowband Internet of Things (NB-IoT) and LTE Cat-M1 are advanced communication technologies that offer significant advantages for monitoring applications. These technologies provide efficient and reliable connectivity for IoT devices, allowing for seamless communication between our sensor and remote monitoring systems. NB-IoT and LTE Cat-M1 are known for their low power consumption, enabling prolonged battery life for the devices, which is crucial for remote or hard-to-reach areas. Moreover, these technologies offer excellent penetration capabilities, allowing for reliable

PPM-HV-A-N

Air filter performance monitoring in HVAC Systems

communication even in challenging environments, such as underground or remote locations where devices are often deployed. NB-IoT and LTE Cat-M1 also provide secure and scalable connectivity, enabling robust and cost-effective solutions for monitoring applications in various industrial sectors, including agriculture, utilities, logistics, and more.

SENSOR TECHNICAL SPECIFICATIONS

•	Range	Standard Range: ±500 (or other ranges on request)	Pa
•	Accuracy (combined linearity, hysteresis, repeatability)	±0.2 (typ.)	%Span
•	Resolution	±0.02	%Span
•	Pressure Reference	Bi-directional Differential	
•	Temperature Accuracy	≤±2	°C
•	Temperature Coefficient of Zero	≤±0.05	%FS/°C
•	Temperature Coefficient of Span	≤±0.05	%FS/°C
•	Long Term Stability (1 year)	≤±0.05	Pa
•	Response Time	≤1	mS
•	Pressure Overload	100	%FS
•	Pressure Cycles (Zero to Full Scale)	10+	Million
•	Compensated Temperature	-20 ~ +85	°C
•	Power Supply	Built-in Replaceable Lithium Battery	
•	Rated Voltage	3.6	V
•	Battery Lifetime	10,000+ transmissions	
•	Media Compatibility	Air, Inert Gas	
•	Process Connection	NPT1/8 Female (or others on request)	
•	Weight	450	g
•	SIM Card Type	4FF Nano-SIM, from any Network Provider	
•	Firmware Update	Over The Air, Locally via Wireless Connectivity	
•	Sampling Period	Configurable via downlink (default 4 hours)	
•	Communication Bands	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 and B39	
•	Antenna	Internal (Default)/ External (customized options available)	

PPM-HV-A-N

Air filter performance monitoring in HVAC Systems

PLATFORM FEATURES

Ellenex's software platform is a comprehensive and user-friendly solution specifically designed for diesel delivery management. The platform offers a wide range of features tailored for diesel delivery operations, including real-time data visualization, customizable alerts and notifications, historical data analysis, and predictive analytics. It provides users with a holistic view of their diesel delivery assets, allowing them to make data-driven decisions for optimal fuel management. The platform is accessible via web browsers and mobile devices, providing convenient remote access to critical information anytime, anywhere. Ellenex's software platform is designed with a user-centric approach, offering intuitive navigation and a user-friendly interface for easy setup and configuration. With its advanced features and ease of use, Ellenex's software platform empowers users to effectively monitor and manage their diesel delivery operations in remote areas, ensuring efficient and sustainable fuel resource management.

- Encrypted ultra-low power communication protocol
- Advanced device inventory
- Integration APIs for enterprise systems
- Multi-tenant role-based access control
- Data export and import
- White-label platform for enterprise runs on private account
- Variable alarm setting for high and low thresholds and multi-channel alerting
- Sampling and transmission interval configuration
- Transmission condition configuration
- Other configurations and customisation available on request

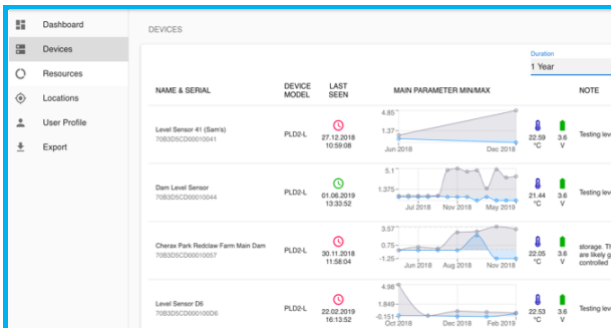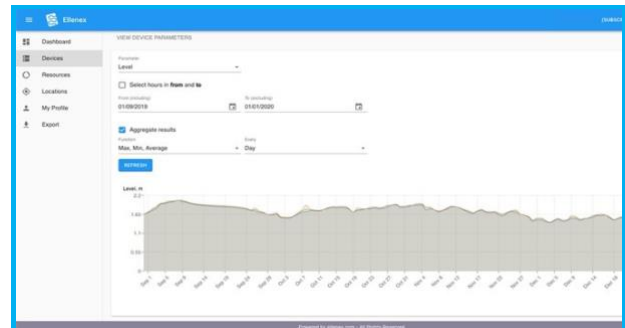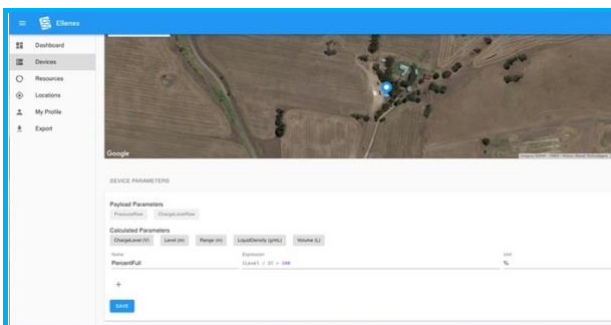|		
Encrypted & ultra-low power	Integratable	Dynamic alerting
Multi-tenant	Scalable	Composable & API first
Low cost	Action management	Resource monitoring

PPM-HV-A-N

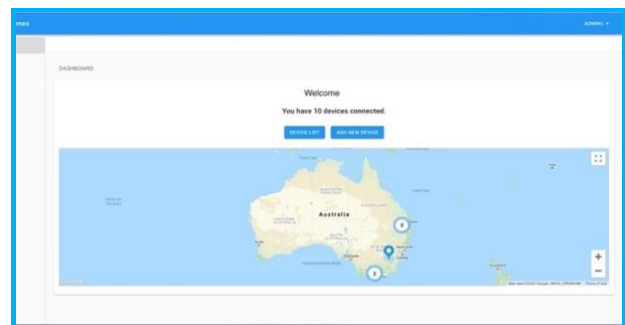Air filter performance monitoring in HVAC Systems

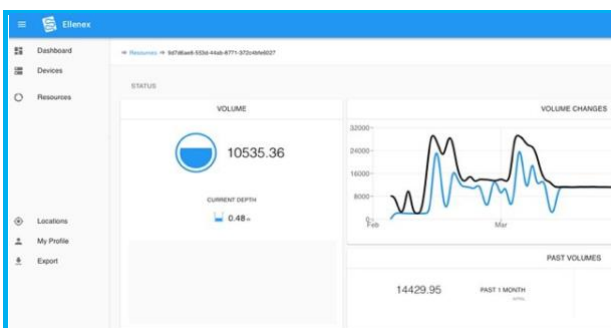Single shot data visualisation of devices

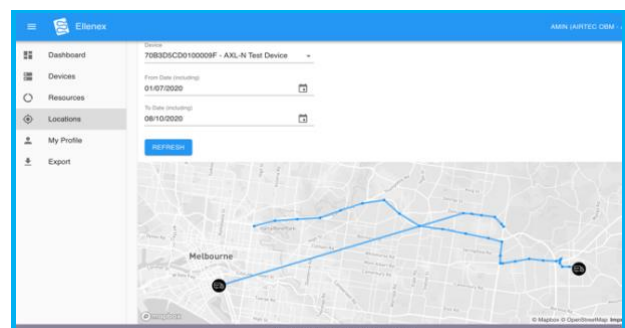
Easy historic data analysis

Asset location indication and complex formula

Device list visualisation on map

Volume calculation and prediction

Asset location monitoring (for mobile assets)

PPM-HV-A-N

Air filter performance monitoring in HVAC Systems

INDUSTRIES SERVED

City & Councils

Smart Building & HVAC

INTEGRATION OPTIONS

Ellenex's solution sets itself apart with its pre-configured and plug-and-play design, eliminating the complexities of configuration, programming, and connection to the platform. This unique approach ensures that users can start monitoring their diesel tanks quickly and easily without any technical hassles. Additionally, Ellenex offers seamless integratability at both the network and platform levels, allowing for easy integration with any network or visualization/analysis platform. This competitive advantage makes Ellenex's solution highly adaptable and compatible with existing systems, providing users with flexibility and convenience in managing their diesel resources effectively.

ORDERING PROCESS

Ellenex offers simple and easy way to order the solution from any location on earth with narrow band cellular coverage. Please visit our sales portal (www.ellenex.shop) or contact us to discuss your application. This is the first step to experience a reliable IoT solution at scale.

PPM-HV-A-N

Air filter performance monitoring in HVAC Systems

Purchase the solution online

Learn more about our Software Platform

View the Included Sensor Datasheet

Browse our other solutions

Ver. 1.3-06/24

Integrated IoT Solutions

ellenex

Email: sales@ellenex.com
Web: www.ellenex.com
Platform: ellenex.net
Sales Portal: www.ellenex.shop