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Water Pipeline Pressure and Leakage Monitoring

Modernizing water pipeline monitoring with advanced IoT sensors is essential for sustainable water management, reducing water waste, and improving the overall efficiency of water distribution systems.

CHALLENGE

Inefficient water pipeline pressure and leakage monitoring is a real-world problem that leads to significant water wastage and resource management issues. Traditional monitoring methods are time-consuming and often fail to detect leaks promptly. This challenge requires a more advanced and efficient approach to monitor pressure and leakage in water pipelines, ensuring rapid response and minimized water loss.

SOLUTION

Using Ellenex's battery-operated pressure sensors with NB-IoT technology effectively solves this challenge. These ruggedised, IP65-rated sensors provide near real-time water pipeline pressure and leakage monitoring. Ellenex's IoT sensors are specifically designed to withstand harsh industrial applications, ensuring reliable performance in various environments.

Benefits of using this approach include:

- Enhanced leakage detection: Rapid identification of leaks allows for prompt maintenance, reducing water loss.
- Optimized pressure monitoring: Accurate monitoring of pressure levels helps prevent pipeline damage and prolongs pipeline lifespan.

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- Near real-time data: With data transmitted every few hours, operators can make informed resource management and pipeline maintenance decisions.
- Battery-operated: Ellenex sensors are energy-efficient and do not require an external power source, making them ideal for remote or hard-to-reach locations.
- Ruggedized and IP65 rated: Designed for harsh industrial applications, these sensors are built to last and withstand various environmental conditions.
- Improved resource management: With better monitoring, operators can allocate resources more effectively, improving overall efficiency.

This solution helps address the water pipeline pressure and leakage monitoring challenge by providing near real-time data on pipeline conditions, enabling rapid response and improved resource management.
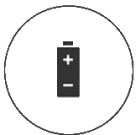
Battery Operated	Ruggedised Design	Easy Install	Pre-Configured	Secure	Quick ROI

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.

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Moreover, these technologies offer excellent penetration capabilities, allowing for reliable 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	10	bar
•	Accuracy (combined linearity, hysteresis, repeatability)	±0.25 (typ.)	%Span
•	Resolution	±0.01	%Span
•	Temperature Coefficient of Zero	≤±0.02	%FS/°C
•	Temperature Coefficient of Span	≤±0.02	%FS/°C
•	Long Term Stability (1 year)	≤ 0.2	%Span
•	Pressure Overload	300 (range <1bar); 150 (higher range)	%FS
•	Pressure Cycles (Zero to Full Scale)	10+	Million
•	Compensated Temperature	-10 ~ +70	°C
•	Power Supply	Built-in Replaceable Lithium Battery	
•	Rated Voltage	3.6	V
•	Battery Lifetime	10,000+ transmissions	
•	Materials	O-ring: Viton, Body: SS316L, Diaphragm: SS316L, Oil: Silicon, Enclosure: POM	
•	Weight	550	g
•	Protection Rate	IP66, UV Protected	
•	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 (customised options available)	

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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

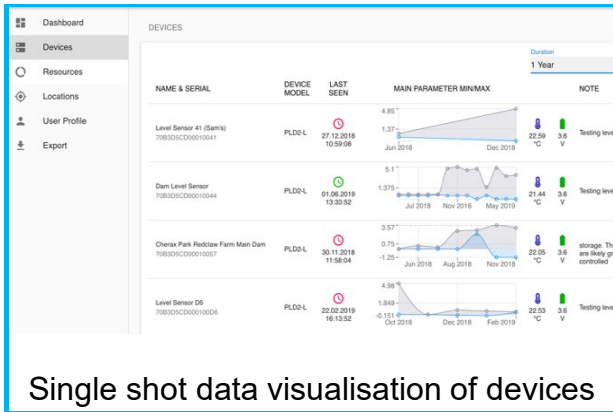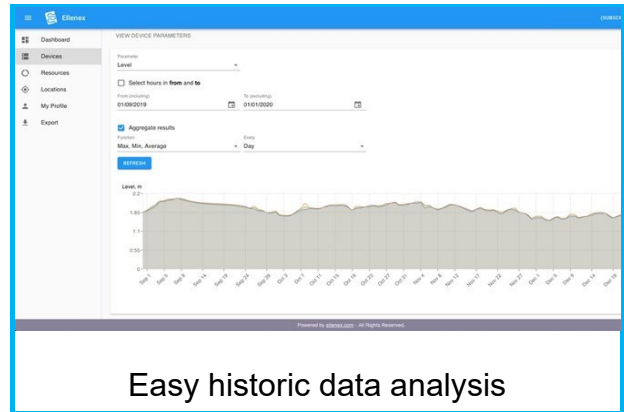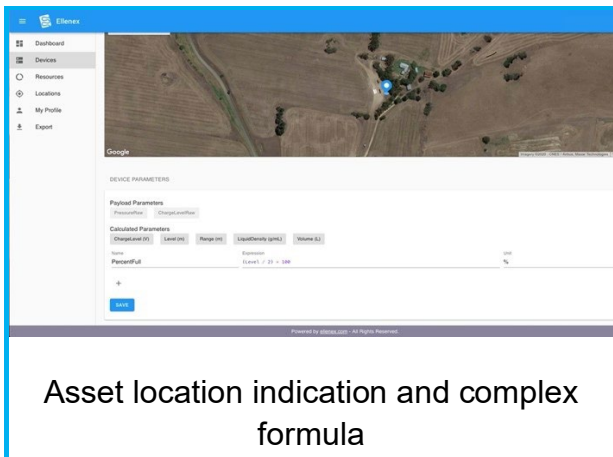|		
Encrypted & ultra-low power	Integratable	Dynamic alerting
Multi-tenant	Scalable	Composable & API first
Low cost	Action management	Resource monitoring

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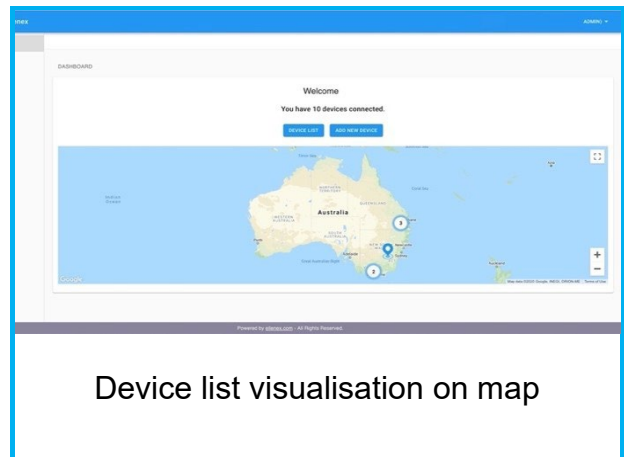## Water Pipeline Pressure and Leakage Monitoring

Single shot data visualisation of devices
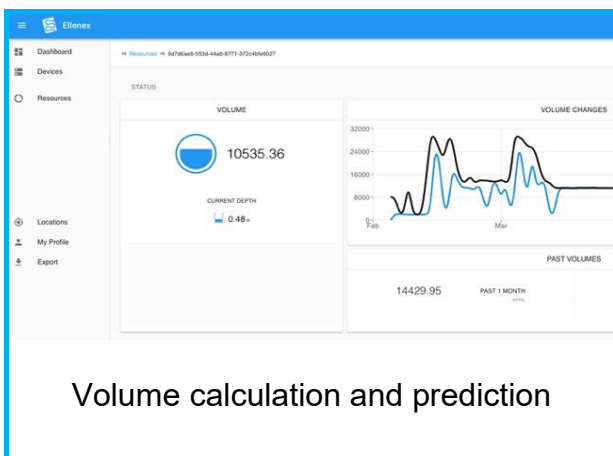

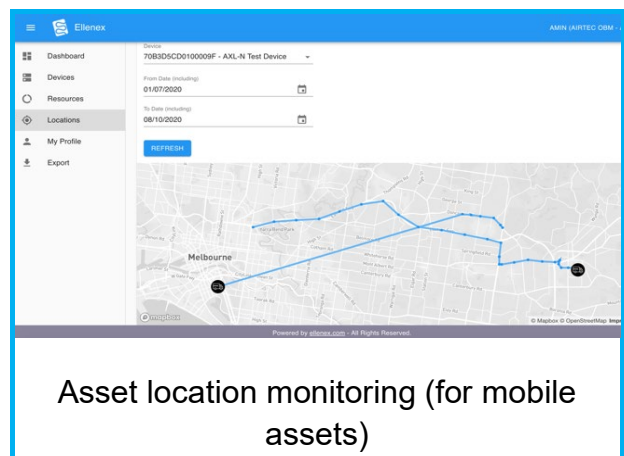Easy historic data analysis

Asset location indication and complex formula

Device list visualisation on map

Volume calculation and prediction

Asset location monitoring (for mobile assets)

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INDUSTRIES SERVED

Agriculture & Farming

Water & Wastewater

Smart Building & HVAC

Mining & Construction

Oil & Gas

City & Councils

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.

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Purchase the solution online

Learn more about our Software Platform

View the Included Sensor Datasheet

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Integrated IoT Solutions

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