ESCOM
Enhanced Solutions

Wireless

Batteryless

Self-Powered

SENSING & AUTOMATION SOLUTIONS

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WIRELESS & BATTERYLESS

Industrial Sensing and Automation Solutions

WiT-es

WiT-es is a wireless, battery-free, and self-powered temperature sensor that plays a vital role in various industries. The accuracy and efficiency of temperature readings significantly impact industrial operations. Different areas within a facility experience temperature variations. WiT-es generates its own power from temperature differentials and communicates data via BLE, LoRa, Nb-IoT, and Wi-Fi to the gateway (Wi-GaTe), eliminating the need for batteries or cables. These temperature sensors are ideal for locations with varying temperatures. Key specifications include:

- Power consumption at a record low of 138µW.
- Data transmission every 500ms.
- Temperature difference requirement of 5°C.

WiPr-es

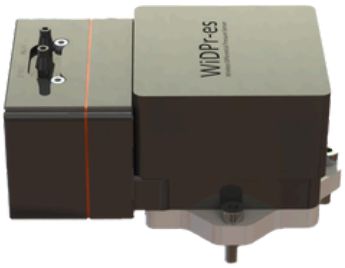
WiPr-es is a wireless, battery-free, and self-powered pressure sensor that plays a crucial role in various industries. The accuracy and efficiency of pressure measurement significantly impact industrial operations. WiPr-es generates energy from temperature differentials, ensuring dependable and precise measurements for your specific needs.

- Achieves low power consumption levels.
- Data transmission interval is 500ms.
- Requires a temperature difference of 5°C.

WiDPr-es

"WiDPr-es" pressure difference is a crucial parameter in various industries. The WiDPr-es low differential pressure sensor is specifically created for measuring dry air and non-corrosive gases in a variety of general-purpose and industries like HVAC, clean room monitoring, filter monitoring, and medical measurements.

- The Double-Effect version operates consistently regardless of changes in the hot and cold sides.
- Data transmission interval is 1 s.



WIRELESS GATEWAY

Wi-GaTe

Wi-Gate is a wireless gateway for all ESCOM-es solutions such as WiT-es and WiPr-es sensors, transmitting data to PLC and SCADA systems. Wi-Gate's versatility and compatibility make it a standout choice for integrating various ESCOM-es solutions seamlessly. With its robust support for Modbus, Profibus, Wi-Fi, and BLE communication protocols, users can rely on it to connect different devices effortlessly. Furthermore, boasting a substantial 30dBm transmission power and the ability to handle up to 128 MAC addresses, Wi-Gate ensures reliable and secure data transmission for wireless sensing applications. Its scalable design means that as your needs grow, Wi-Gate can adapt and expand accordingly, making it a smart and future-proof investment for your wireless gateway requirements.

Sensor-Hub

The Wireless Sensor Hub is an expansion hub for the Wi-GaTe, facilitating wireless communication between sensor and Wi-GaTe. It serves as a signal extension unit for WiT-es, transmitting data to PLC and SCADA systems. The hub supports LoRa, LoRaWan (optional), and BLE communication, with a 30dBm transmission power, providing a dependable and scalable solution for wireless sensing applications.

Wireless Sensor Hub provides a robust and scalable solution for integrating wireless sensors into industrial setups, offering a dependable means of transmitting crucial data for monitoring and control purposes. Its compatibility with different communication standards makes it a valuable asset for modern automation systems.

Wi-CoRe

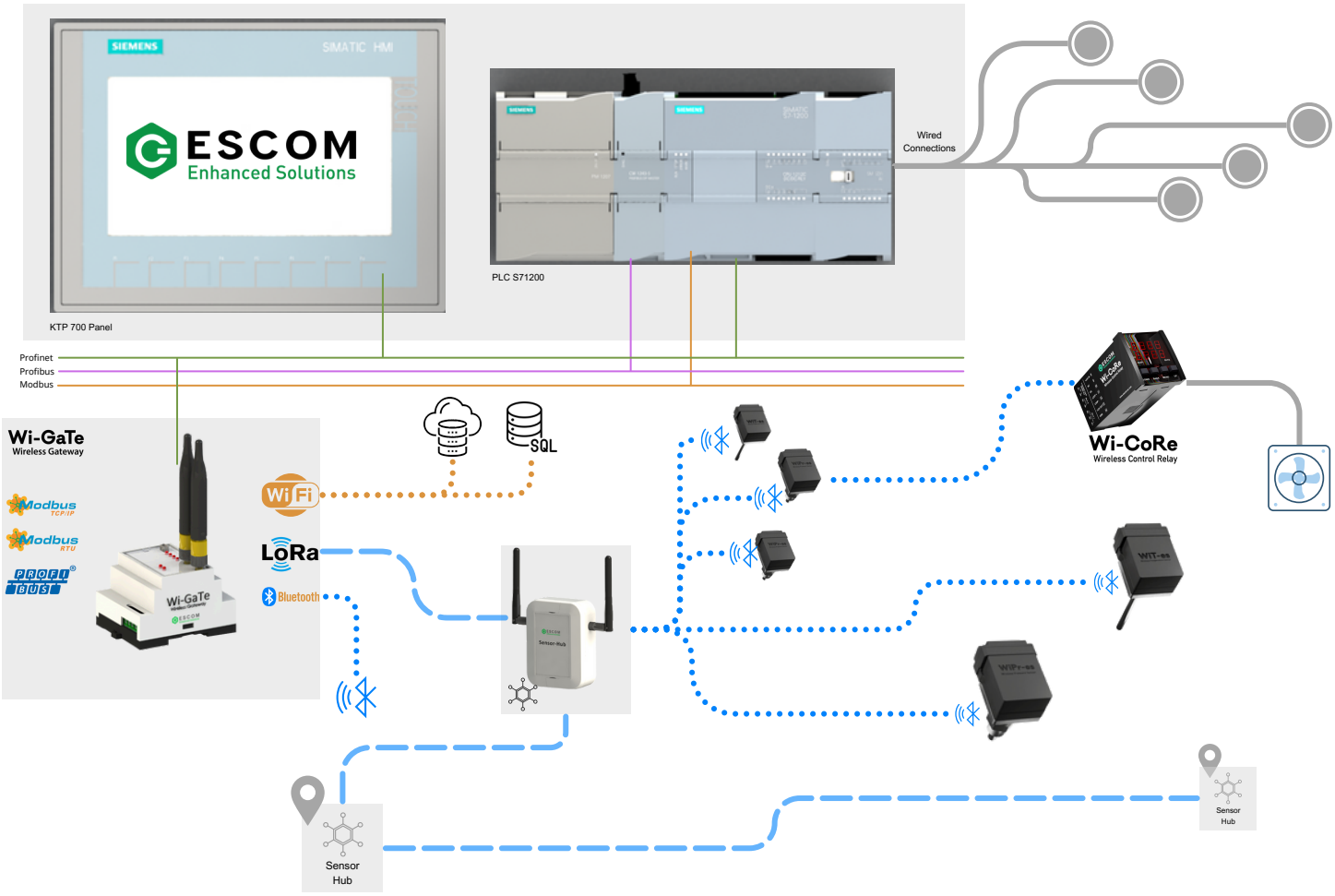
Wi-CoRe is a wireless control relay created to interact with ESCOM-es sensors, changing based on the data received from the sensors.
It includes customizable upper and lower limits for setting and alarm values, a minimum sampling time of 500ms, a supply voltage of 220V, a 0-20mA output, and two NO/NC relay outputs (10A).

Wi-CaM

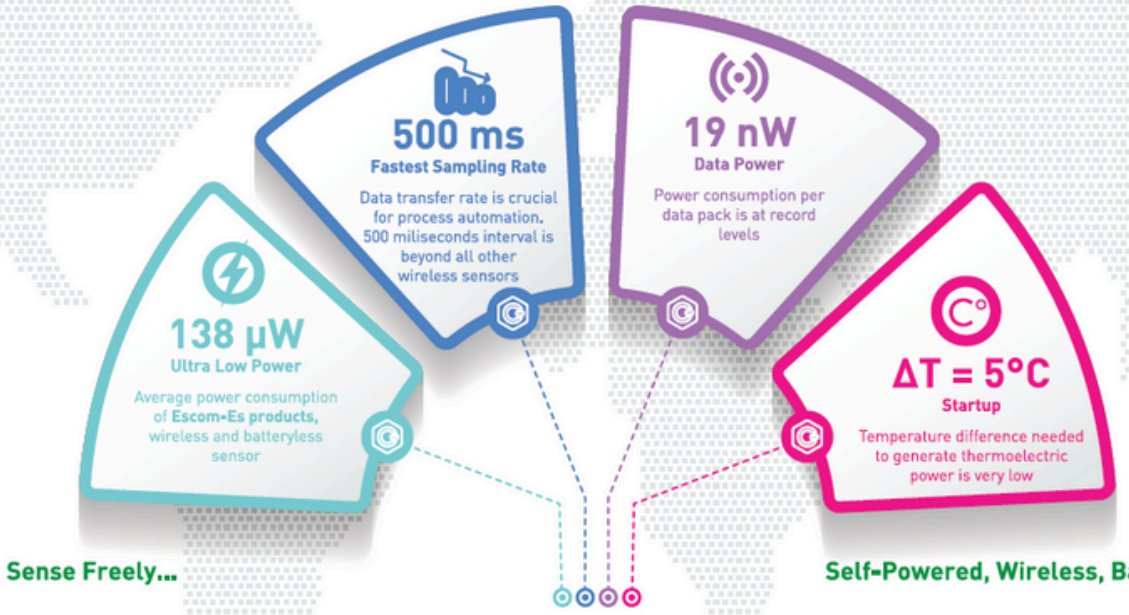
Wi-CaM is a wireless charging and data monitoring device designed for sensors that generate their own energy.

- Charging Mode: In situations where sensors generate energy from temperature differences and the temperature is insufficient, it quickly charges the temperature and pressure sensors wirelessly within 2 seconds. This enables field personnel to easily install them and facilitates data monitoring from the initial installation stage.
- Monitoring Mode: Additionally, it provides real-time monitoring of Escom-es developed sensors for field personnel.

WIRELESS AUTOMATION IoT NETWORK



ENERGY HARVESTING for the FREEDOM of SENSORS



Sense Freely...

Self-Powered, Wireless, Batteryless

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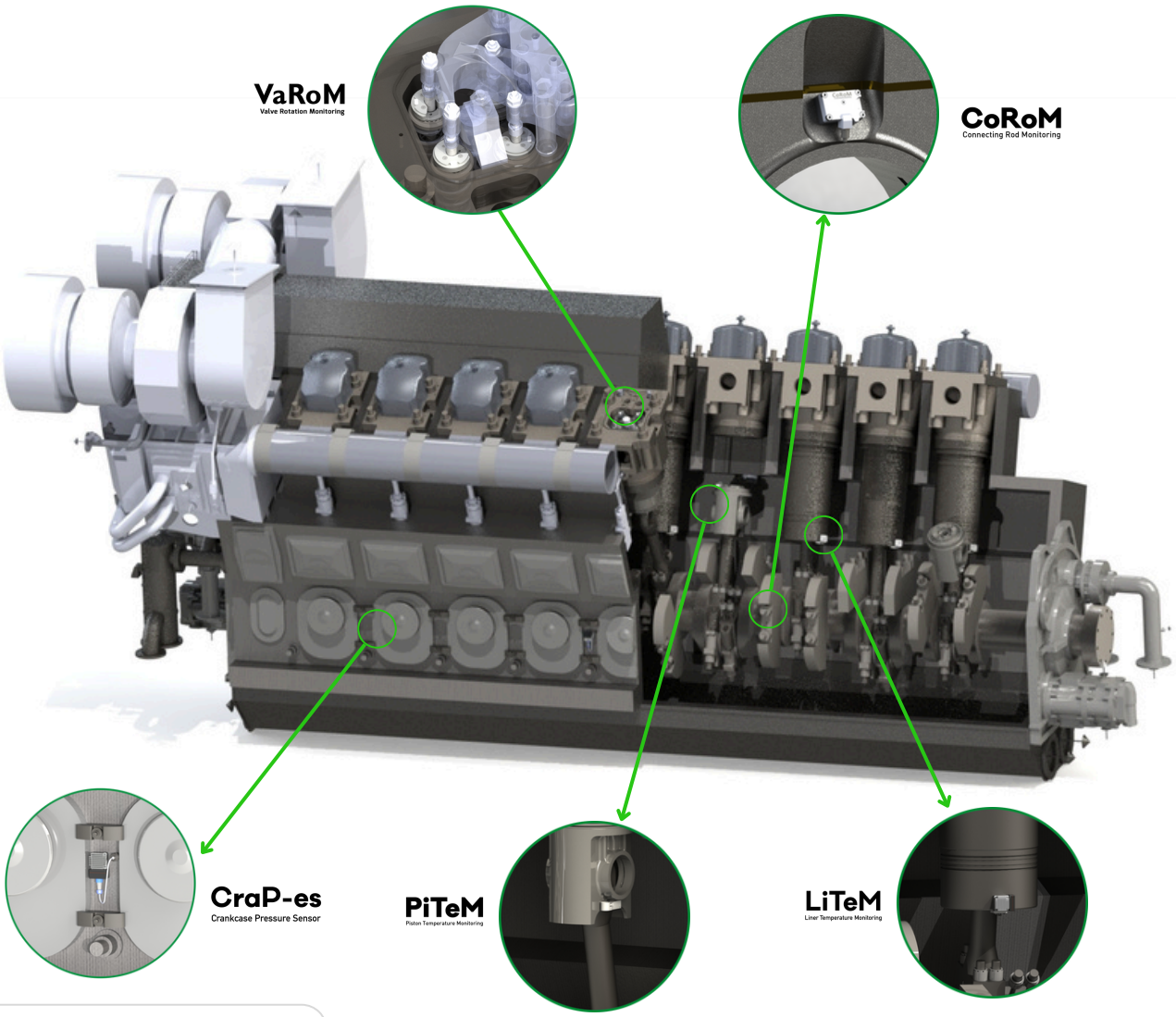
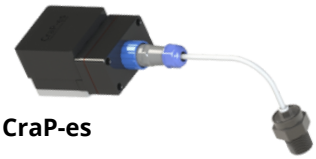
*Tested and approved by Niğde OHU Engineering Faculty

GO INSIDE THE ENGINE



VaRoM

VaRoM is a Valve Rotation Monitoring system designed for reciprocating Diesel, HFO, Gas Engines. It is a patented technology that provides continuous, reliable, and safe monitoring of the valve rotation and temperature conditions of engines. VaRoM is an innovative and unique product, provides a vital data for Diesel/HFO Engines which has never been monitored before.
VaRoM, is the first solution to be installed on the Inlet and Exhaust Valves of engines, and provides very critical data about the valve rotation and temperature. Thus, operators can follow the valve conditions and apply preventive and protective maintenance against Valve Break Failures.



CraP-es

The Crankcase Pressure Sensor (CraP-es) plays a crucial role in ensuring optimal engine performance, detecting potential problems, and preventing damage to the engine. CraP-es can detect problems such as excessive pressure build-up, which could indicate a problem with the crankcase ventilation system or worn piston rings. It can also monitor for low crankcase pressure, which could indicate leaking or faulty components.

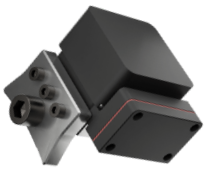
CoRoM

The Connecting Rod Monitoring (CoRoM) system aims to successfully receive and monitor temperatures directly from the diesel engine's connecting rod upper bearing shell. It can also optionally measure the piston lubrication oil temperature to provide crucial data, including:

- Assessing the condition of the connecting rod upper bearing shell (which is a key area)
- Detecting any bearing seizure at an early stage
- Ensuring continuous monitoring and control of the con-rod bearing and oil temperature

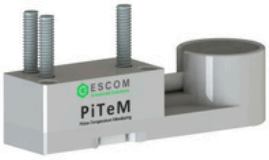
This is achieved through a Wireless & Batteryless Sensing Node with an Energy Harvesting System. The data is then transmitted via Wi-Fi / BLE to the Main Control Panel to establish an early warning system that is preventive, informative, and protective. The goal is to reduce instances of Connecting Rod Bearing and Piston Failures commonly found in diesel engines.

TRANSFORM the PREDICTIVE & PREVENTIVE MAINTENANCE STANDARDS



LiTeM

In power plants with internal combustion engines; An increase in cylinder liner temperature is observed for various reasons.The purpose of the Liner Temperature Monitoring (LiTEM) system is to detect the temperature imbalance of the cylinder liner. The cylinder liner temperature monitoring system consists of two temperature sensors for each cylinder placed on the cylinder liners. LiTeM is wireless and battery-free and generates its own energy from the temperature difference, so it does not need external wiring and energy.



PiTeM

Piston Temperature Monitoring (PiTeM) allows for direct temperature monitoring from various engine components like the connecting rod, piston pin bushing bearing, piston head, and piston rings. This system enables:

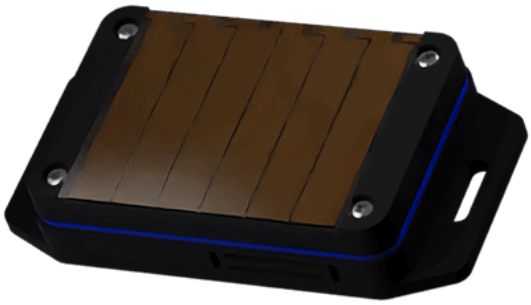
- Continuous monitoring of piston cooling efficiency
- Assessment of the connecting rod upper bearing shell condition
- Evaluation of the piston pin bushing bearing condition
- Detection of any piston rings jamming against the liner

PiTeM, coupled with an Energy Harvesting System, operates wirelessly and without batteries. By utilizing BLE and LoRa to transmit data, this system offers early intervention to prevent Connecting Rod Bearing and Piston Failures, serving as a proactive, informative, and protective warning system.

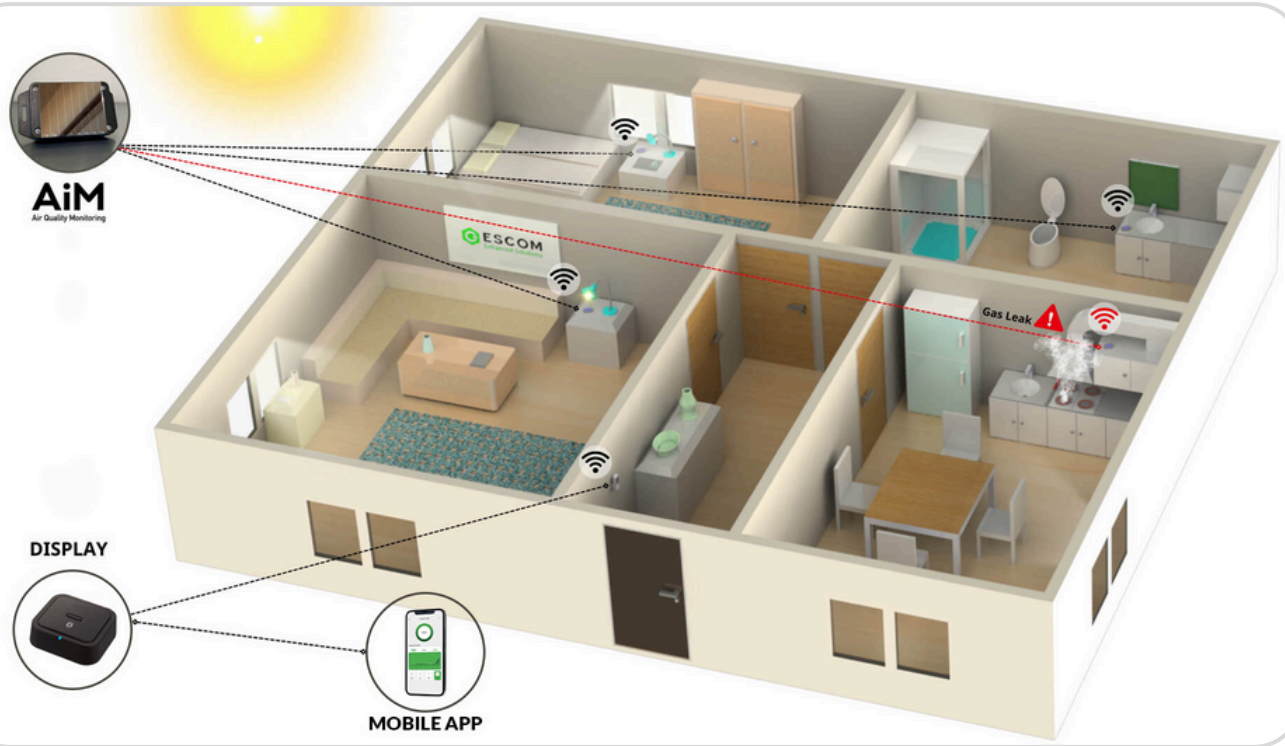
DOMESTIC PRODUCTS

AiM

AiM is an improved indoor air quality measurement system by ESCOM-ES. Temperature, Humidity, Pressure, Air Quality and CO2 levels have been monitoring without requiring batteries and maintenance. With the receiver module and mobile application, you can monitor from anywhere you are connected to the internet. It provides ease of use thanks to its small and simple structure.



In addition, the AiM-x version, which can monitor air quality in product and food warehouses with artificial intelligence-supported machine learning, offers user-specific solutions. Thanks to the mobile application, you can receive notifications wherever you are in the world. You can view temperature, humidity and pressure information. In addiction, the voice warning system of the mobile application warns you in unusual situations. AiM and AiM-x can be easily integrated into smart building or facility automations and ventilation and air conditioning systems. It can be used as a precaution against fire or smoke poisoning.



SuT-es

SuT-es is a water leak detection device that can be easily integrated into your smart building automation systems with the help of a solenoid valve. With the mobile application, you can conveniently monitor audio and video feed from anywhere as long as you are connected to the internet.

ESCOM Power Plants Engineering Services Ltd.

ESCOM Power Plants Engineering Services Ltd. has gained widespread recognition for its comprehensive expertise in erecting, commissioning, supervising, operating, and maintaining power plants worldwide since 2007.

ESCOM Enhanced Solutions (ESCOM-ES)

ESCOM-ES, was established in 2018 in order to develop solutions to the difficulties encountered in the light of the experiences gained during these studies.

Specializing in autonomous wireless sensing technology for industrial applications, ESCOM-ES serves as a leading center for technology research and development. The company was founded with the objective of innovating and delivering cost-effective industrial solutions that enhance flexibility, enable monitoring of inaccessible areas, and ensure safety in hazardous environments.

The extensive use of sensors worldwide is hindered by sustainability issues related to wiring and battery requirements. Moreover, obtaining data from moving components and challenging locations within machinery poses further obstacles. ESCOM-ES intervenes in this context, poised to revolutionize the industry with products derived from practical field knowledge. Through its wireless, battery-free, and self-powered sensor and automation solutions, ESCOM-ES successfully accesses data from previously inaccessible areas and liberates existing sensors from reliance on cables and batteries. For more information on industrial sensor solutions and beyond, please visit www.escom-es.com.

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