ESCOM
Enhanced Solutions

LiTeM

Liner Temperature Monitoring

Sense Freely
Self-Powered
Wireless-Batteryless

Sustainable Solution for Industry 4.0

Go Deep Inside the
Industrial Machines

LINER TEMPERATURE MONITORING

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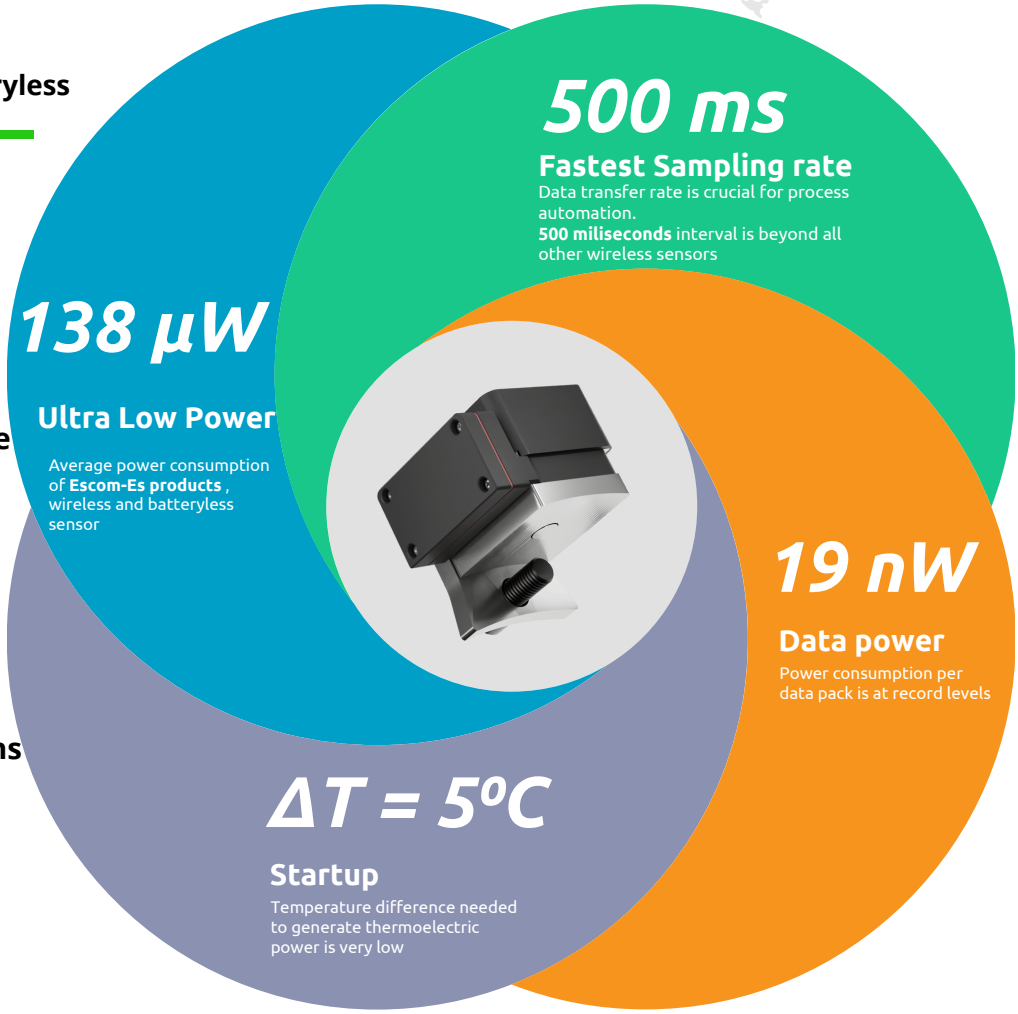
ENERGY HARVESTING for the FREEDOM of SENSORS

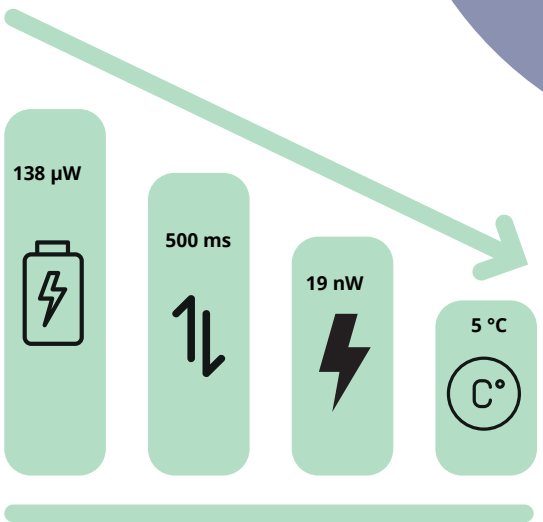
Sense Freely...

Self-Powered, Wireless, Batteryless

NOW POSSIBLE.

ESCOM-ES innovative technology achievements makes the wireless and battery free sensors possible to be used instead of conventional sensors, and contributing the cost effective and environment friendly sustainable solutions





- *Tested and approved by Niğde OHU Engineering Faculty*

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The Future of Wireless - Batteryless Energy Harvesting Sensing Technologies

ESCOM-ES is the R&D center founded in 2018 and owned by ESCOM Power Plants Engineering Services. We are focusing on and developing Self Powered - Wireless - Batteryless Sensors which is eliminating all wiring and cabling cost and workmanship which can reach many kms in a simple industrial plant. And offering smart and green solutions getting rid of batteries and cables...

No Battery - No Cable - No Wiring

ESCOM-ES offers a wide range of domestic and industrial sensing systems that can be used in harsh environment harvests its own power from ambient sources such as motion, temperature, sunlight, magnetic fields, or where energy is available to scavenge...

Self-powered, wireless sensing technology, combined with engineering expertise and rich analytics provide real-time information for our customer's needs...

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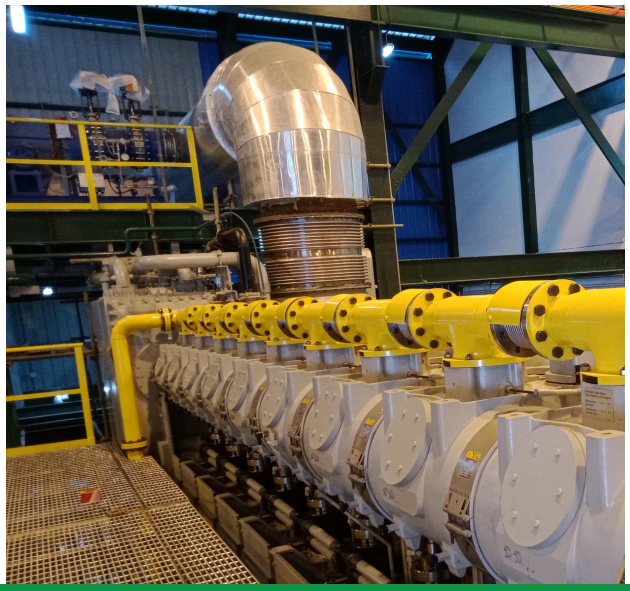
SUSTAINABLE MEASUREMENT TECHNOLOGY

Industry-specific Solutions

We produce innovative and economical industrial solutions specific to the problems occurring in internal combustion engines. We ensure that physical information such as temperature, pressure, required in risky areas that are difficult to access in internal combustion engines are received and monitored securely.



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LiTeM in the FIELD

Various sensors are tested in the power plants operated by ESCOM Power Plants Engineering Services. ESCOM-ES R&D center designs, develops and manufactures these sensors. LiTeM, one of ESCOM-ES's most innovative and functional products, was assembled and tested in one of the mentioned power plants. According to the test results, LiTeM, which works very efficiently, has been developed to be used in internal combustion engines.

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HOW to GET ENERGY?

Harvesting Energy

Harvesting energy is the production of its own energy by using the difference between the temperature on the liner where the product is located and the temperature of the environment itself. TEG is used while doing this. TEG is a component made of ceramic that is hot on one side and cold on the other. This component, which generates energy from the temperature difference, is placed inside the product.

TEMPERATURE MEASUREMENT

Accurate temperature measurement is critical in industrial processes. Reliable and high quality measuring devices are required for these measurements. ESCOM-ES continues its efforts to always be at the top of reliability and quality. LiTeM is a product that demonstrates its quality with instant and continuous temperature measurement. It works wirelessly and without batteries. It has dual sensors and one of them works as a backup. When one of the sensors fails, the other sensor is used.

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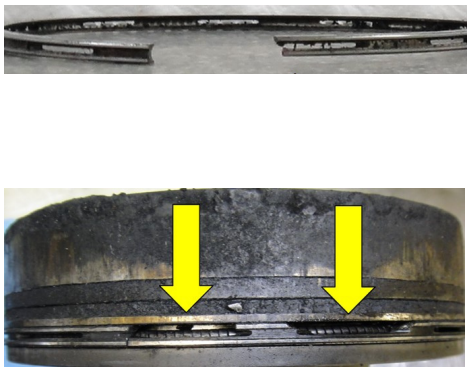
LiTeM Liner Temperature Monitoring

In power plants with internal combustion engines; An increase in cylinder liner temperature is observed for various reasons, such as oil film breakage between the liner and piston rings, loss of cooling, broken or collapsed piston rings, and subsequent seizure. Power plant shutdowns caused by these unexpected failures cause serious time, production and income losses.

Cylinder liner damage due to poor cooling



A broken oil control ring

Damaged cylinder liner which can be a result of lack of lube oil

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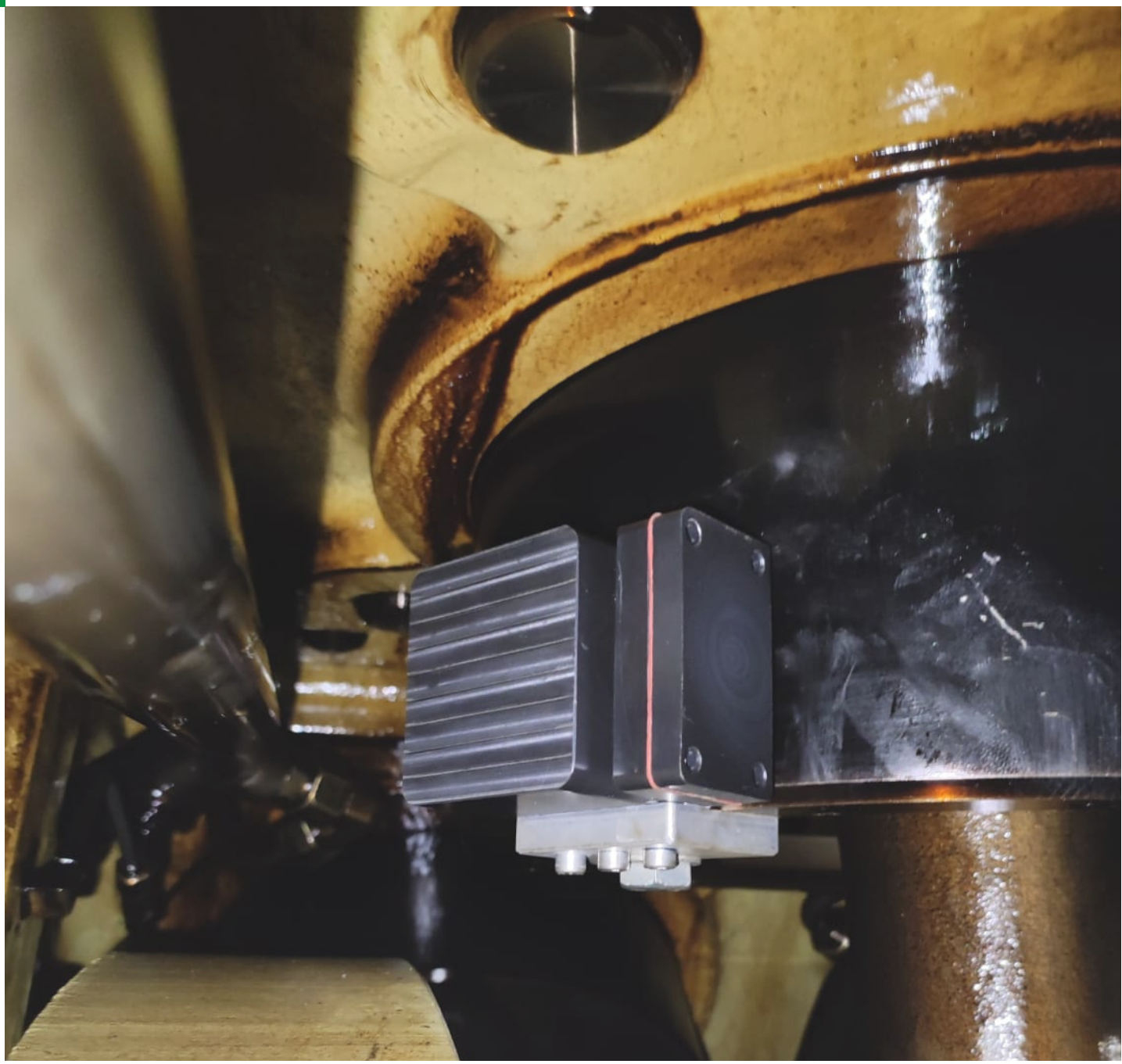

The purpose of the Liner Temperature Monitoring (LiTEM) system is to detect the temperature imbalance of the cylinder liner. The cylinder liner temperature monitoring system consists of two temperature sensors for each cylinder placed on the cylinder liners. LiTeM is wireless and battery-free and generates its own energy from the temperature difference, so it does not need external wiring and energy. Sensors monitor the liner temperature and connect to the engine control system. If the liner temperature deviates from the limit values, the system will go into an alarm state and automatically shut down the engine to prevent damage.

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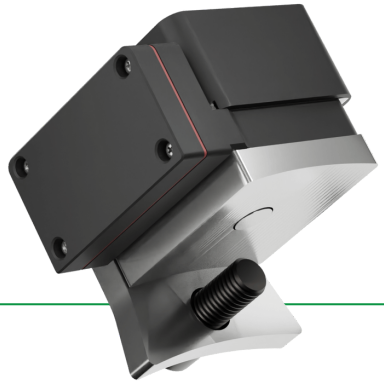
TECHNICAL SPECIFICATIONS



Measuring Ranges	0°C / +150°C
RF Transmission Power	+8dBm
Sampling Refresh Rate	500ms - 5s
Data Transmission	Wireless / BLE / Wi-Fi
Communication Protocols	Modbus RTU - Modbus TCP - Profibus - TCP/IP - RS232 - Cloud - Wi-Fi
Power Consumption	138 µW
Operation Temperature	0°C / +105°C

Innovative Energy Harvesting for the Enhanced Industrial Sensing Solutions

Our innovative energy harvesting, *ultra low power* consumption, and wireless data transmission technologies are paving the way for a smarter, more connected future. Explore our cutting-edge solutions and revolutionize the way you collect and process data in your industrial systems

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COMPLEMENTARY EQUIPMENTS
For Wireless Control Systems

Temperature
Wireless Charging

Wi-CaM
Wireless Charging and Monitoring

Wi-CaM is a versatile wireless charging and monitoring solution for self-powered sensors like WiT-es and WiPr-es. It enables efficient initial commissioning and energy harvesting when fluid temperature is insufficient, charges the sensor in just 2 seconds, and offers real-time monitoring.

Wireless Gateway

Wi-Gate
Wireless Gateway

Wi-Gate is a wireless gateway for WiT-es and WiPr-es sensors, transmitting data to PLC and SCADA systems. It supports RS485, Modbus, Profibus, Profinet, Wi-Fi, and BLE communication, with a 30dBm transmission power and capacity for 128 MAC addresses, offering a reliable and scalable solution for wireless sensing applications.

Wireless Control

Wi-CoRe
Wireless Control Relay

Wi-CoRe is a wireless control relay designed to work with WiT-es sensors, switching according to the received temperature information. It features adjustable upper and lower limits for set and alarm values, a minimum 500ms sampling time, a 220V supply voltage, a 0-20mA output, and two NO/NC relay outputs (10A).

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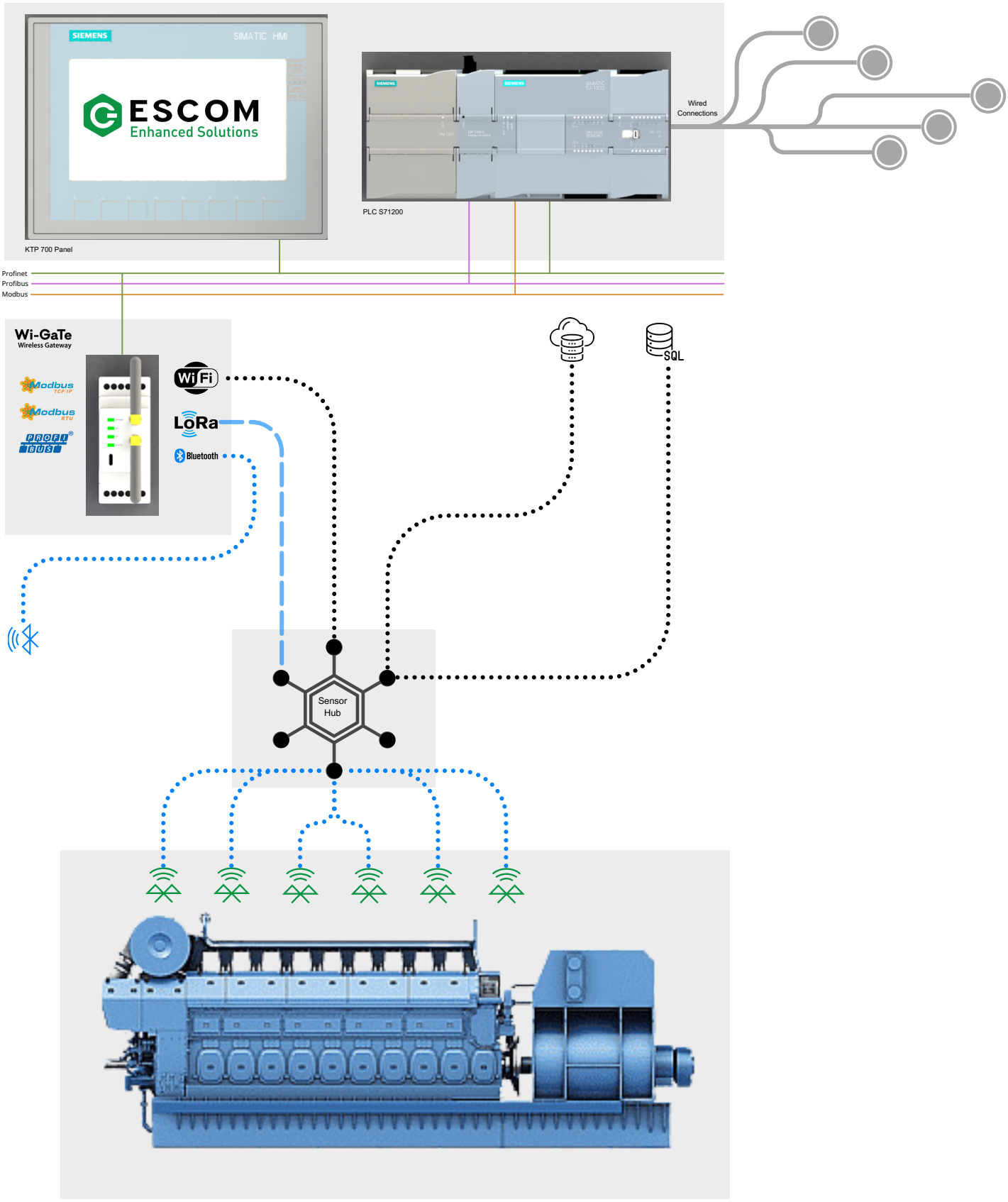
INDUSTRIAL IoT

Wireless BatteryLess Sensors & Network



innovative

ideas

development

imagination

technology

vision

inspiration

teamwork

research

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