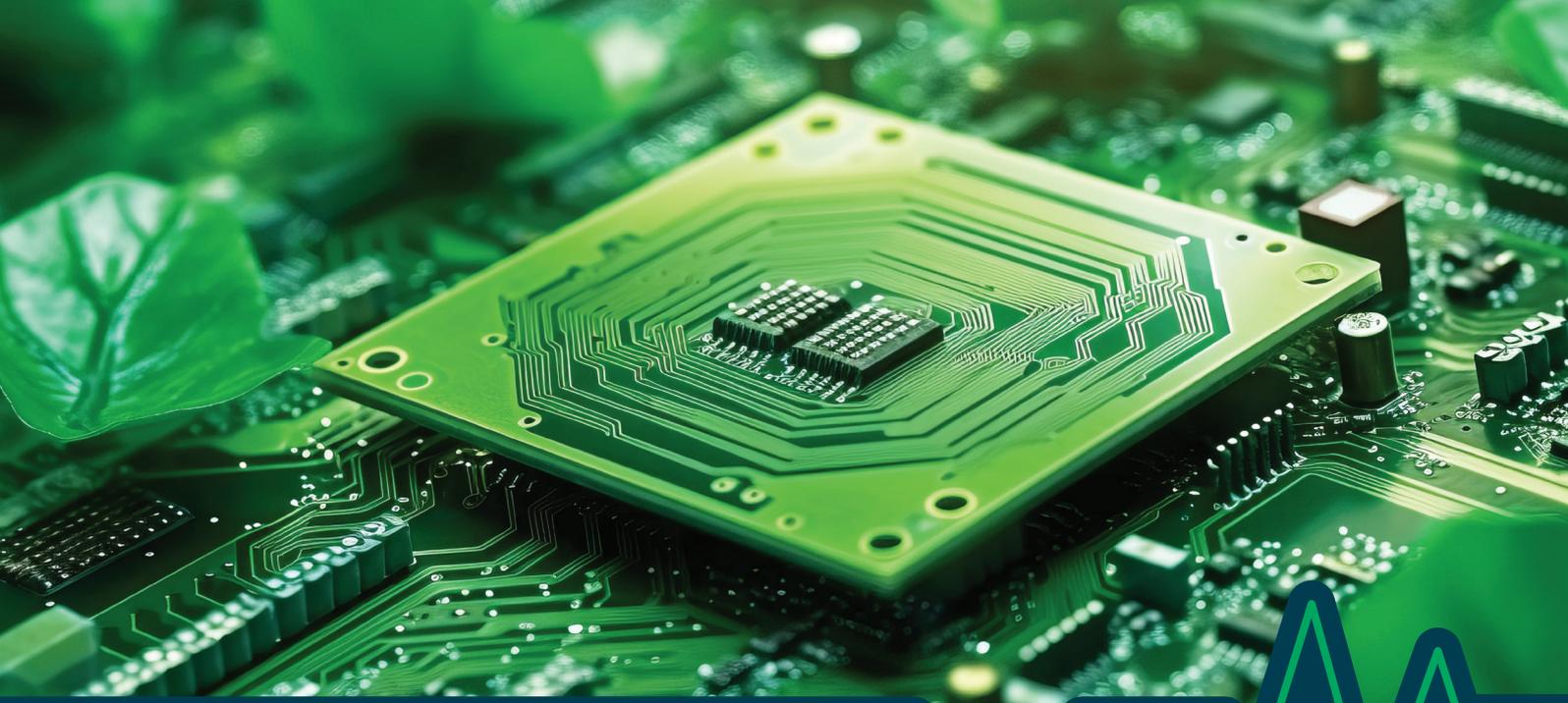


MEMS Energy Management System

MEMS
— 
MESH ENERGY MANAGEMENT SYSTEM

 **MESH**
GLOBAL



MEMS



MESH ENERGY MANAGEMENT SYSTEM

Introduction

At MESH Global, we are dedicated to delivering innovative solutions that align with the evolving needs of our clients. With a more significant global focus on environmental aspects, many industries are taking further steps to drive their carbon footprint down, while also becoming more energy efficient. In response to this, we proudly introduce the MEMS Energy Management System – MEMS. A solution that enables data-driven decisions to directly influence your carbon emissions.

Today's changing landscape presents new challenges for businesses. Balancing growth and profitability whilst navigating the need to reduce carbon emissions demands proactive measures. The MEMS Energy Management System empowers you to navigate these often-conflicting factors with confidence and clarity.

The MEMS captures real-time data on your energy consumption, showing you the exact patterns of usage that drive your operations. Armed with these insights, you can take full control of your energy consumption, uncover inefficiencies, and streamline processes to optimise energy consumption.



Key Benefits of the MEMS Energy Management System

Meeting Environmental Challenges

Environmental pressures and responsibility are now at the forefront of business and governmental decisions. By becoming an early adopter and committing to reducing your carbon emissions, you create a competitive advantage for your business. Regardless of industry or location, the MEMS allows you to align profitability with environmental requirements.

Data Driven Decisions

The MEMS gives you real-time and comprehensive data on energy consumption. With precise data, you can make informed decisions that uncover consumption patterns, identify potential areas for improvement, and implement targeted strategies that allow you to optimise your processes and reduce your carbon emissions. This will not only increase operational efficiencies and enable cost savings but will also allow you to comply with increasingly strict environmental compliance requirements.

Existing Integration, or Stand-Alone System

The MEMS can be seamlessly integrated with your existing infrastructure and software. Our system's flexibility ensures assimilation with a wide range of software and data platforms. This integration enables greater control over your energy consumption. Alternatively, the MEMS can be supplied as a stand-alone system with its own software and interface.

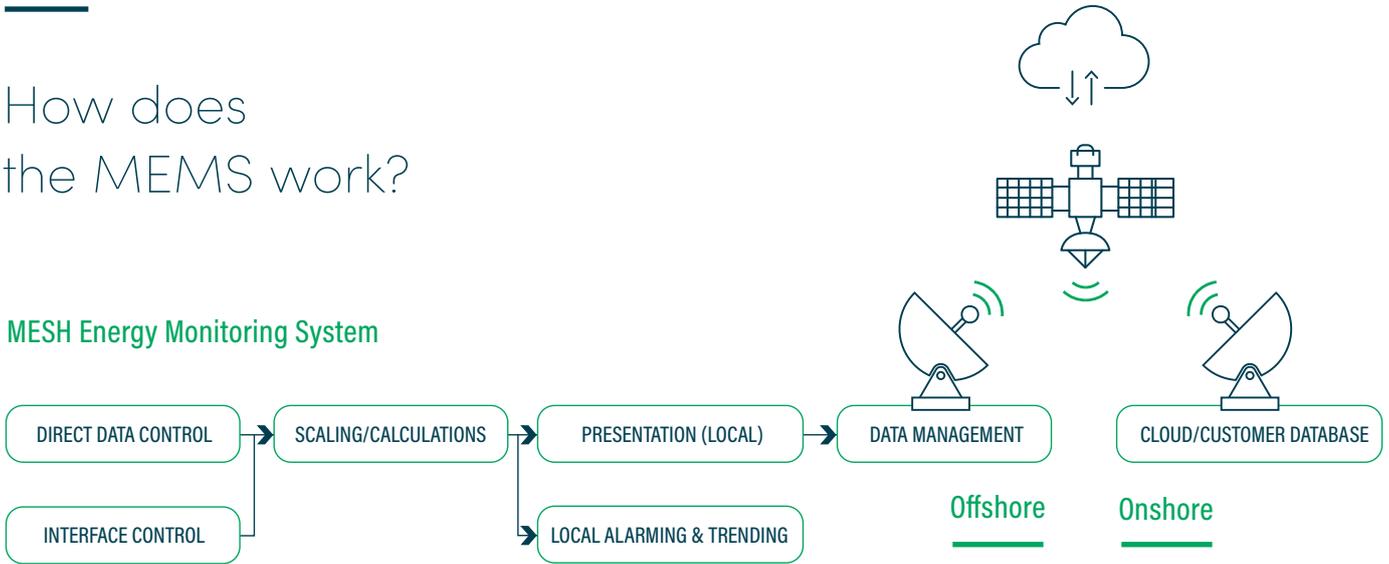
Customised Solution

Recognising the unique challenges found in each industry and organisation, the MEMS is designed to be flexible and customisable. Whether you are a multinational corporation or emerging SME looking to monitor specific equipment or an entire asset; our system can be tailored to align with your operational objectives and sustainability goals.



How does the MEMS work?

MESH Energy Monitoring System



Within a client asset, data is collected from energy producers and consumers. These data points are collected either via MESH installed field instrumentation, or from a client’s existing infrastructure. The data is then displayed through a MESH developed interface.

Monitoring this data gives clients an understanding of both real-time and historical energy consumption. The effect of operations on energy consumption can be understood by summarising these data points into meaningful groups and averages.

This data can then be viewed on a local operator interface, whilst also being transmitted via the cloud for remote analysis. This remote connectivity can utilise industry standard data engines, or a client’s existing bespoke system. Dashboards can also be created to customise the presentation and analysis of information.

Overview

The MEMS collects data from various energy consumers and producers across a designated area. This can be from specific systems / equipment or incorporate an entire asset. This data is then validated, grouped and summarised. It is then presented to a local operator panel, and also passed to an onshore system via the cloud to be stored, analysed and presented.

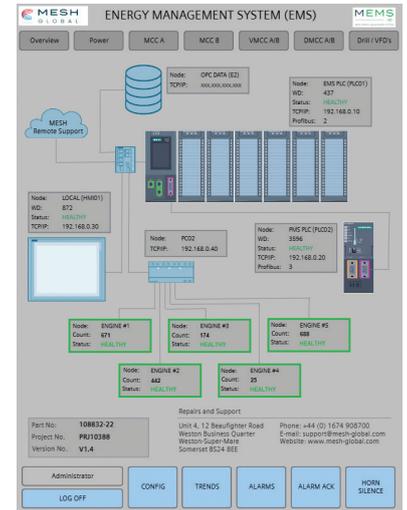
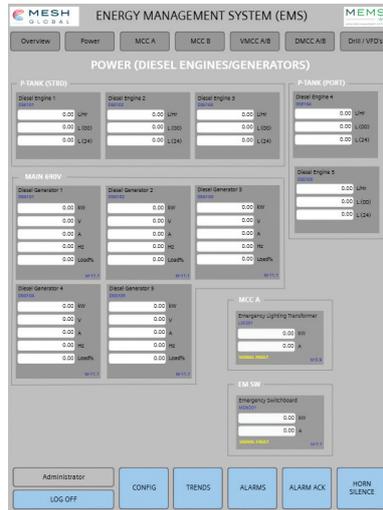
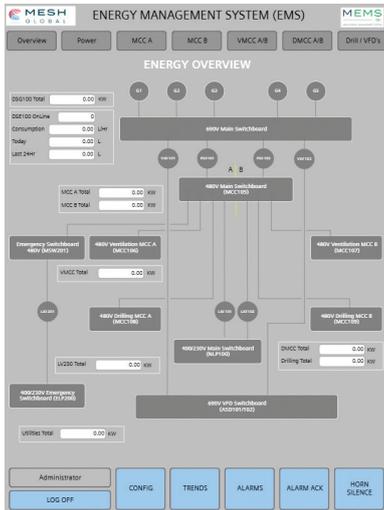
Data Aggregation

The MEMS collects energy consumption data via field instrumentation. This can be achieved in multiple ways depending on the application.

Interface

In addition to gathering data directly from an energy consumer / producer, the MEMS can interface with other 3rd party systems to collect data. Some examples include:

- Power Management Systems
- Diesel Engine Management Units
- RS232/485 Comms (Modbus)
- Vessel Management Systems
- Well Site Information Transfer (WITS) Devices



Scaling/Calculations

The data is then conditioned, scaled, and summarised into groups. Some examples include:

- Scaling signals into engineering data values (i.e. l/min, USG, Kw etc.)
- Generating groups (i.e. Power Generation Totals, Drilling Consumption, Utility Power Usage)
- Data Integration (i.e. Fuel in rolling 24 hour period)
- Counts (i.e. No engines running)
- Statistical Data (i.e. Average Power, Highest, Lowest etc.)

Local Presentation/Alarming & Trending

- Local Access to all Producer and Consumer Data
- Summary Group Information
- Calibration and Scaling can be undertaken
- Local Alarming and Trending available

Data Management

The data is then assimilated via your own server based system, or via a tailored solution provided by MESH Global before being transferred via the cloud for further management and analysis.

Cloud/Client Database

Once the data reaches onshore, there are two options available.

1. MESH Global can provide a bespoke dashboard interface utilising an industry specific framework.
2. MESH Global can assimilate the data with a clients existing / preferred Data Management Analysis System.

The Process

MESH Global can provide a full Turnkey solution for your Energy Management requirements. An example of the process can be seen below:

1. **Initial Survey** - Engineering resource to undertake a full rig survey to determine equipment status, connection points, additional sensors, 3rd party equipment, cable runs and containment.
2. **Reporting and Specification** - post survey, a report will be generated with recommendations and costs.
3. **Design and Manufacture** - Definition of energy data points along with groups, summary information and statistical data. Design of all electrical enclosures, cable / wiring detail, software development and data configuration.
4. **Factory Acceptance** - Full system setup to test electrical and software systems. Client or 3rd party witness welcomed and recommended.
5. **Installation** - Equipment is shipped and personnel mobilised to complete the installation.
6. **Commissioning** - We will provide the commissioning test procedure and the Electrical/Software resource to complete this critical scope.
7. **Data Management and Dashboard** - we will provide data point mappings and assist your own IT on retrieving this data. We can also offer a dashboard setup and full data management system if required.
8. **Remote Support** - As part of the installation, a firewall device for remote access is provided. With your permission, we can provide ongoing support of the system and, if required, onshore data.



Why MESH Global?

Multi-Disciplined Engineering Solutions Provider

MESH Global offer a diverse range of solutions across mechanical, electrical, software, and hydraulic disciplines. Our track record of success and repeat business speaks volumes about our expertise and commitment to delivering exceptional results. In addition, we already have major clients utilising the MEMS to their benefit.

A History of Software and Data Aggregation Expertise

MESH Global have a vast array of expertise in software, data collection, aggregation, and analysis. From advanced condition monitoring and event logging to fully bespoke solutions, we deliver impactful results for our clients. With a proven track record, MESH Global are well placed to provide effective solutions.

We Build Lasting Partnerships

At MESH Global, our client relationships are the bedrock to our business. Beyond just delivering systems, we build lasting relationships built on trust, transparency, and reliability. We ensure continued support and guidance throughout your sustainability journey.





Next Steps

To schedule an initial chat and discuss how the MEMS can help you manage your carbon reduction strategies, please get in touch.

Together, we will design a tailored solution that aligns with your organisation's goals and industry-specific requirements.

Email: info@mesh-global.com

Call: +44 (0) 1674 908700

Website: www.mesh-global.com



Mesh House
Brent Avenue
Montrose
Scotland
DD10 9PB

T: +44 (0) 1674 908700
E: sales@mesh-global.com

Unit 4, 12 Beaufighter Road
Weston Business Quarter
Weston-super-Mare
Somerset
BS24 8EE

T: +44 (0) 1674 908700
E: info@mesh-global.com