

# DISCOVER A SOLUTION

An Efortech Magazine - Industry 4.0



## Plug & Play

Plug and Play Technology  
with Faster and Easy  
Development



## Integrated

Support to Integrate with  
Existing Systems or  
Machines



## Easy Customization

Web-based Dashboard with  
Easy Customization  
Free Client

*Digital transformation may aid in the  
advancement of your manufacturing processes.*

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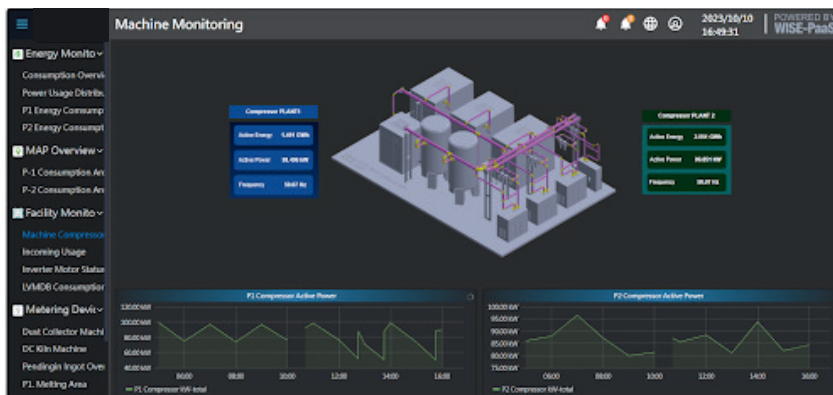
# Digitalisasi Energi di Industri Otomotif: Meningkatkan Efisiensi dan Akurasi dengan Energy Monitoring System

**Efortech** has implemented digitalization in an automotive company that primarily focuses on the metal processing industry. Before the digitalization system was applied, the company faced several issues.

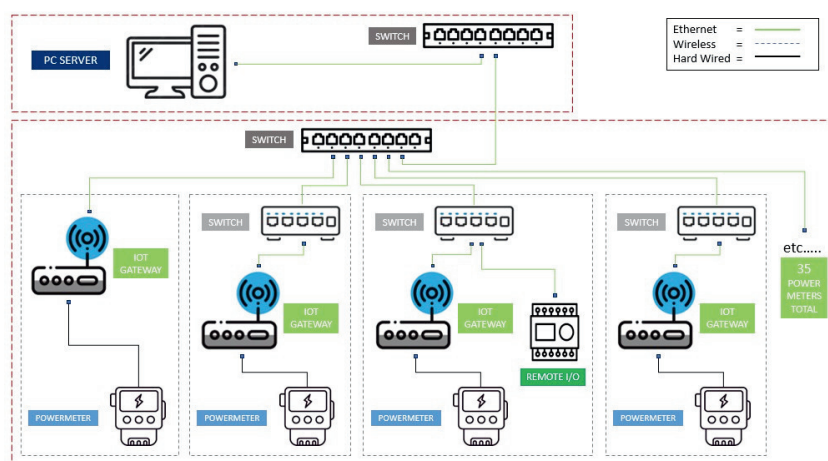
*First*, each machine area had a power meter, but the readings were recorded manually. *Second*, there was a deviation between the bills that needed to be paid and the manual recordings. *Third*, to see the real-time energy usage, one had to visit the machine area directly. *Fourth*, the results from this process still needed to be processed and adjusted before being reported to the higher-ups or management. *Fifth*, the company couldn't conduct an analysis to determine which machines were consuming energy beyond the standards set by the company.

Therefore, the implementation of a digitalization system is expected to address these issues, improve the accuracy of recordings, enhance operational efficiency, and provide better analytical capabilities for more optimal energy management.

The solution used in this project is the implementation of an **Energy Monitoring System (EMS)** as the core of data processing. The **EMS** will function as a hub for collecting, analyzing, and visualizing energy usage data. Additionally, the EMS will act as a bridge for integration with the existing systems in the company. The application of the energy solution with Web-Based visualization will optimize the results achieved.



## System Diagram



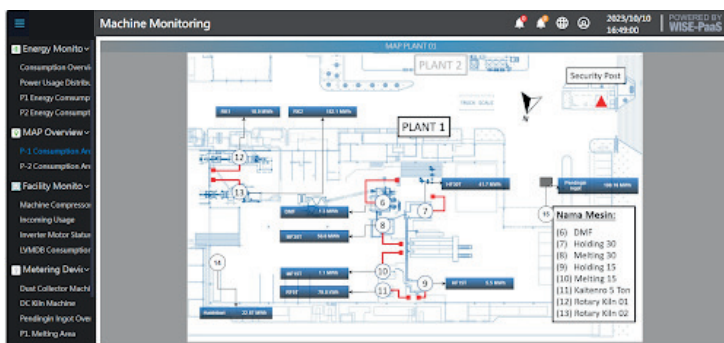
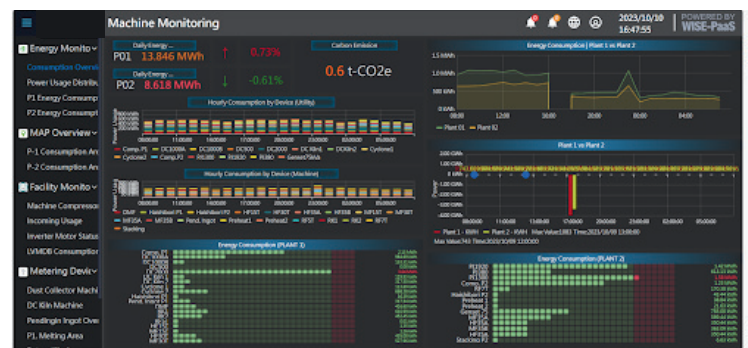
There are 35 Electric Meters or Power Meters distributed across several locations. All Power Meters are equipped with the Modbus RS-485 protocol, allowing data from the Power Meters to be integrated with an IoT Gateway. The IoT Gateway is used to map address parameters being monitored, such as Voltage-3phase, Current-3phase, Power (Watt), Power Factor, Frequency, THD (Total Harmonic Distortion), and Energy (kWh). Data visualization and processing are handled using a **Web-Based SCADA** solution, which greatly simplifies user interaction. This system not only allows for Drag and Drop functionality but can also be integrated with existing software. This makes it easy for users to view actual values as well as historical data trends, whether it's energy usage per hour, day, week, month, or even year.

The results from the dashboard can be directly extracted in Excel or PDF format, making it very convenient for management to monitor energy usage across various departmental locations. The software used is free for clients and comes with a mobile dashboard (Android/iOS).

The benefits gained from implementing this system include increased efficiency and effectiveness in operations due to real-time monitoring with historical traceback. Additionally, the ease of data processing for management reporting has improved, paper usage has decreased, work has been optimized with centralized data, and the displayed values are more accurate. Furthermore, the system includes early detection for potential energy loss.

## Conclusion

The implementation of the **Energy Monitoring System (EMS)** in the automotive company is a strategic step to address various issues related to manual recording and energy inefficiency. The **EMS** will automate data recording, provide real-time visualization through a web-based solution, and facilitate the creation of more accurate and faster reports. Additionally, the **EMS** will enable in-depth analysis to identify machines that have energy consumption exceeding company standards, allowing for appropriate corrective actions. Thus, the implementation of **EMS** is expected to improve accuracy, operational efficiency, and overall energy management, supporting sustainability and long-term cost savings for the company.





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