MATICS

Different Approaches for **Energy Savings in Manufacturing**

From auxiliary systems to process equipment, manufacturing consumes a lot of energy. That energy comes at a cost for manufacturers, one of the three largest alongside raw materials and labor. A manufacturer can have a significant impact on its bottom line with the right energy savings approach. Here are some of the most effective initiatives that can be put into place on the factory floor to make those energy savings a reality.

Increasing the Resolution of Energy Consumption Data

Any given manufacturing operation may have access to a wide range of information on their energy consumption and costs. However, this information could present only the appearance of genuine insight into energy use and potential savings. Without the appropriate resolution, energy consumption data is of little use to manufacturers.

Some manufacturing facilities could have their access to energy consumption data restricted to individual utility meters that account for the entire facility rather than individual machines, production lines, or processes. This presents information in the lowest possible resolution, a single value for the entire operation.

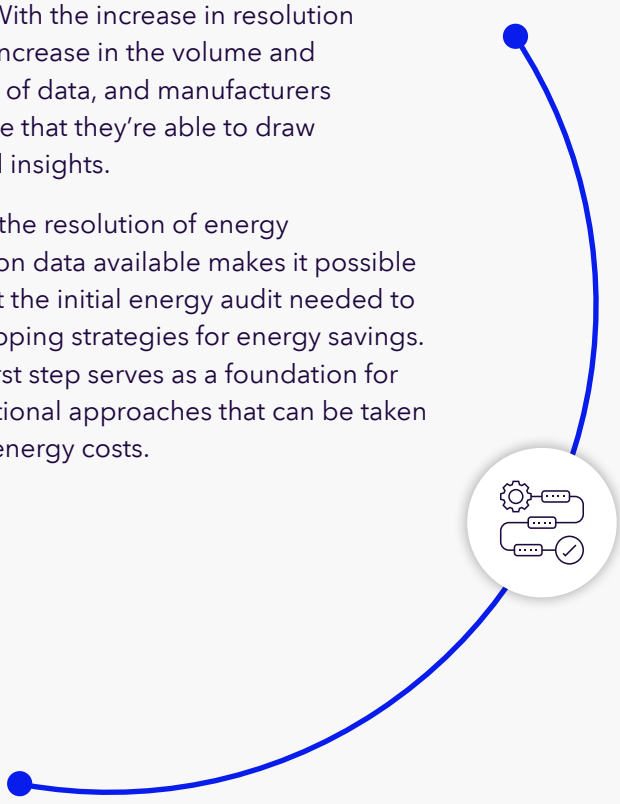
Whether assessed in terms of days or months, this low-resolution data doesn't provide any useful insights. It may play an important role in quarterly accounting, but it doesn't serve any use in identifying, diagnosing, and resolving issues that contribute to energy waste.

In order to identify potential energy savings, a manufacturer must be able to carry out an energy audit. This means breaking down energy consumption based on processes, production lines, and individual machines. That takes high-resolution data, where manufacturers can drill down through energy consumption to develop a more precise understanding.

In the past, the implementation of metering at this level has been a challenge. However, the required equipment has made significant advances in affordability. Today, installing metering for processes, production lines, and even individual machines is a negligible cost compared to the potential energy savings that high-resolution energy consumption data can provide.

Instead, manufacturers must focus on ensuring that they have the right solution in place to aggregate and analyze high-resolution data from the many sources available. With the increase in resolution comes an increase in the volume and complexity of data, and manufacturers must ensure that they're able to draw meaningful insights.

Increasing the resolution of energy consumption data available makes it possible to carry out the initial energy audit needed to start developing strategies for energy savings. This vital first step serves as a foundation for many additional approaches that can be taken to reduce energy costs.



Implementing Real-Time Monitoring

Another effective approach that manufacturers can take to address energy costs is to implement real-time monitoring for energy consumption. Any manufacturer that only monitors energy consumption based on monthly utility bills isn't paying close enough attention to address potential energy savings on the factor floor.

First, real-time monitoring makes it possible to react to specific instances of energy waste. Without real-time data, manufacturers can only make changes long after the fact, with significant energy costs having accrued in the meantime. There are many instances where being able to respond immediately can resolve energy consumption issues.

Real-time energy consumption monitoring can identify excess energy consumption caused by equipment malfunctions and other machine issues. The right solution can provide alerts to the appropriate production team members and technicians immediately, letting them address the issue and stop that instance of energy waste.

Identifying these types of issues by monitoring energy consumption has other benefits as well. Responding to a problem earlier can reduce the potential damage to the equipment caused by the issue. There's also a significant chance that any energy consumption issues could also indicate corresponding material consumption or quality issues. Identifying and addressing these events can provide savings beyond the reduction in energy waste.

Monitoring energy consumption per amount of production in real-time opens up even more opportunities for energy savings. When these values begin to rise, it indicates that something is wrong with the process overall. This could be mistakes in production scheduling, leaving the wrong equipment idling, bottlenecks slowing production throughout the line, or other events.

Having access to real-time data reduces the latency between energy-wasting events occurring and the response to resolve them but also allows for continuous improvement. Having a stream of real-time data for every work order and shift makes it possible to analyze performance over time. Instead of having only the overall energy consumption, manufacturers can create detailed energy profiles to better understand performance and improve energy consumption management.

Treating Energy Like Another Raw Material

For most manufacturers, the impact of raw material use is very intuitive, direct, and relatively straightforward to monitor. This allows for careful optimization of raw material consumption to reduce costs. One approach to reduce energy costs is for a manufacturer to treat energy consumption the same way they do raw material consumption.

One of the first steps in this approach is to quantify benchmarks for energy consumption. Any manufacturer will have clear benchmarks for raw material consumption in their processes. With recipe management and quality controls in place, they develop and monitor these benchmarks to identify sources of waste and opportunities for improvement.

These same methods can be applied to energy management by using the right KPIs and having a solution in place to monitor, track, and manage those KPIs. For energy, it's important to implement KPIs that address both overall consumption and consumption tied to production. This can take the form of kWh/kg of production or per individual unit produced, depending on the specific process at hand.

With those KPIs and the means to monitor them, manufacturers can create benchmarks for how much energy their processes should use when the process is operating properly. Those benchmarks can then provide insight into performance across individual production lines, machines, and shifts. Manufacturers will have an accurate way to compare energy use, letting them identify sources of waste and achieve energy savings.

Those same benchmarks provide insight into how energy management is progressing over time. Manufacturers can identify issues when they occur and establish goals that they can make continuous progress toward. Just like with material management, having well-defined energy benchmarks enables manufacturers to take a more deliberate and effective approach to reduce costs.

While many manufacturers have taken steps to improve raw material management, energy consumption is an area that is often neglected. Choosing the right solution to handle energy consumption management can impart the same benefits possible through raw material management and the ensuing cost savings.

Accurately Reflecting Energy Costs in Pricing

Like with any other cost, manufacturers must ensure that their pricing and negotiations accurately reflect their energy costs. When determining pricing strategies, manufacturers take into account a wide range of factors, both internal and external. Increased accuracy and precision in the data the y use to evaluate those factors lets manufacturers ensure that their prices are competitive while still accounting for their own costs.

However, energy is one area where the necessary precision and accuracy are rarely available to manufacturers. They often lack the ability to accurately assess the impact of energy costs on individual products and work orders. This leaves them unable to incorporate energy costs into their pricing strategies effectively.

Understanding the connection between actual production and energy costs is essential to reflecting energy accurately in pricing. Manufacturers must be able to see how changes in overall consumption and consumption per amount produced correlate with specific products and work orders. Doing so requires real-time data at sufficient resolution rather than monthly reports of energy use by the entire facility.

Using low-resolution values for pricing results in numerous downsides for the manufacturer. They cannot accurately assign energy costs to specific products to determine their specific value. This can lead to some products being overpriced relative to producers who are capable of making such a distinction, reducing the competitiveness of the manufacturer. Other products will be underpriced based on the actual energy costs involved in the production, reducing a manufacturer's margins on those products.

Access to high-resolution data for pricing resolves these issues. Manufacturers can ensure that their prices are as competitive as possible without unintentionally cutting into their margins. This helps maintain better customer relationships while still ensuring the longevity of the manufacturer.

Establishing accurate pricing also lets manufacturers assess which specific products should or should not be offered in the future. With more insight into energy costs tied to specific products, manufacturers can more precisely pinpoint under which conditions those products become unprofitable. This high-resolution energy data provides a powerful tool for both short-term and long-term production strategies.

Ensuring the accuracy and validity of energy consumption data is vital to realizing the associated cost benefits. With the right solution, manufacturers can obtain the insight they need to ensure that their energy costs are accurately reflected in their pricing strategies.

Finding the Right Partner to Work With

Each of these approaches can deliver significant energy savings on its own, and together they can provide a holistic transformation in how manufacturers manage their energy consumption. However, realizing these benefits isn't something that manufacturers can do alone.

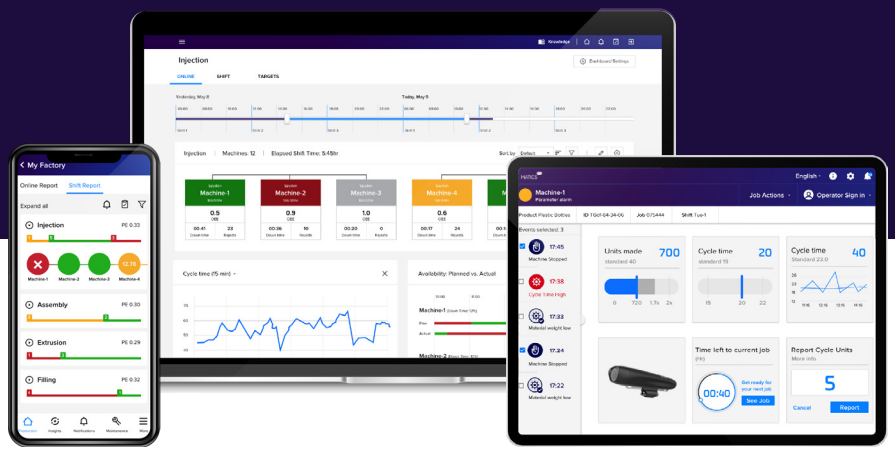
Matics Real-time Operational Intelligence (RtOI) is a solution that helps manufacturers realize their operational potential on many fronts, including energy savings. The insight provided by real-time data aggregation and analysis makes it possible for manufacturers to establish more effective strategies for energy savings. Alerts, communications, and work management tools within the platform enable manufacturers to put those strategies into action.

If you're interested in taking the best possible approach to energy savings for your manufacturing operations, reach out to the team at Matics for a demo of our RtOI solution.

About Matics

Matics is a Real-Time Operational Intelligence (RtOI) solution that was designed to enable rapid industry 4.0 best practice adoption via user-friendly non-disruptive digitalization platform. The Matics RtOI solution instantly improves visibility and shop-floor management, reducing response time to critical events, and increasing OEE and profitability.

The Matics solution continually aggregates data in real-time, transforming it into knowledge manufacturers can use to optimize key metrics in their shop-floor. Matics provides manufacturers with powerful work management tools that deliver notifications when attention is needed, and enables remote tasks management, process automation, and more.



Over 80% of manufacturers do not have real-time solutions on their shop-floor. Here are a few leading manufacturers who choose to digitalize their plant with Matics:

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ALPHA
GRAFOPACK
KraftHeinz
Arkal Automotive
DON
PEPSICO
PFF Group
National Gypsum
RIMAX
plassim
RIMONI
Rivulis
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