



BUILDING YOUR ENERGY BALANCE

Improve your energy efficiency in your organization is possible only if you know where the energy is consumed. The significant consumers and the energy flows within the organization must be known through instant measurements of the consumed power. For this transparency it is in an essential task to build an energy balance by simulating the measured power through a daily/monthly/yearly time of operation of that equipment. As a result, Building the energy balance of an organization is a fundamental contribution to increase its energy efficiency.

01

Why do we need to build an energy balance?

The Commercial and Industrial (C&I) consumers in Ghana need to implement their

own energy balance to get the following advantages:

- Very good overview of the energy flows in the organization;
- With appropriate sub-meters: possible continuous controlling of significant energy consumption;
- Evaluation of the most suitable energy optimization measures;
- With appropriate software: possible measurement and verification (M&V) according to international standard (IPMVP, ISO 50015, etc.);
- Easy development of energy performance indicators (EnPI) (for example quantifying energy consumption per product, per area, per process, etc.);
- Easy estimation of the emission greenhouse gas reductions and their costs;
- Advantages against competitors.

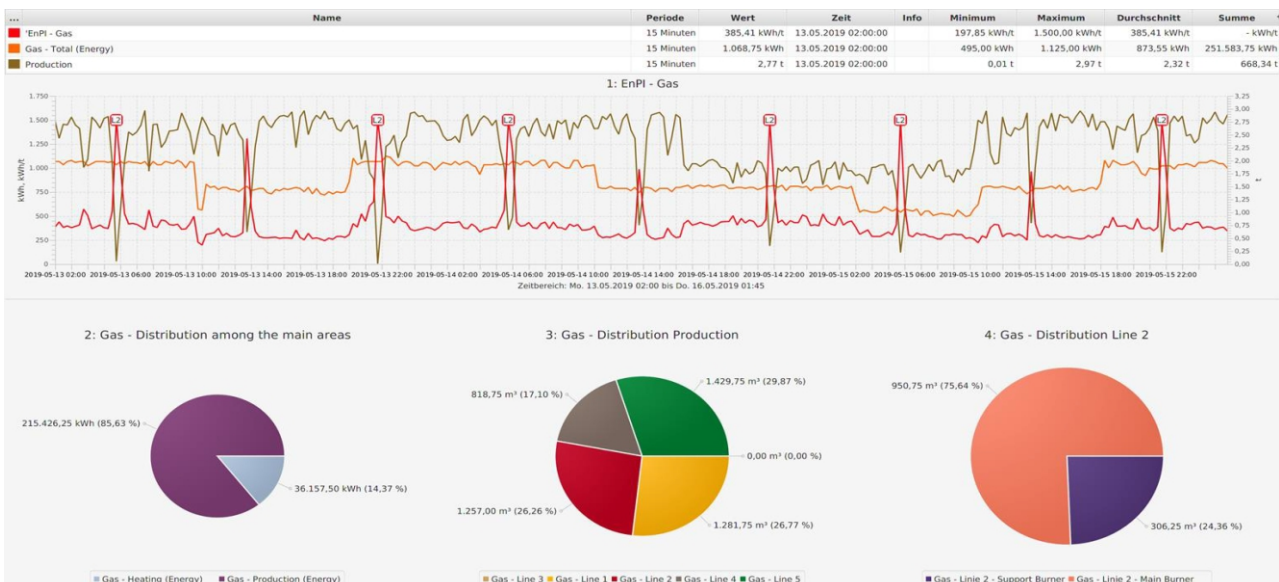


Figure 1 - Typical overview of a complex energy balance of an organization (Source: Envidatec GmbH)

02

Creating your energy balance

To create the energy balance, all significant consuming machines, buildings, and departments

in an organization must be considered and their energy consumption examined in their typical operating periods.

Operating periods can be very different: Office lighting is easy to analyze because operating times and energy consumption can be determined easily. An electric drive in a production process may be complex and only be in operation from time to time and then maybe not at full power as

represented in fig. 1. An air compressor has operating times, idle times and downtimes, all of these modes cause different levels of consumption. With such more complex consumers, a measurement over a reasonable period of time is usually essential.

03 What would be the measurement frequency?

Processes that always run in the same manner can be measured temporarily (for example for a typical week, for a typical day). Permanent measuring meters should be installed for processes that are very changeable. In the area of

electricity, measurement technology is not particularly expensive, but for example compressed air or steam measurements involves high costs and good planning.

04 The energy balance results

With the resulting load curves of electricity energy meters and data loggers, it is easier to identify the potential for optimization of the respective consumer. The energy expert can identify the deficient operating mode of a machine and improve the operating human behavior. Since the consumer behavior varies and the needed data are different (the accounting department wants the monthly costs, the energy manager a Sankey diagram showing the energy flows, etc.), there are usually different ways to visualize the data using several suitable software solutions available on the market.

05 Conclusion

Regular analysis and troubleshooting of the energy consumption can save 5% to 15% in energy costs for the Ghanaian C&I as unnecessarily high consumption can be detected and remedied quickly. The quality and intensity of the analysis should be based on the energy costs and its ratio compared to the total expenses of the facility.

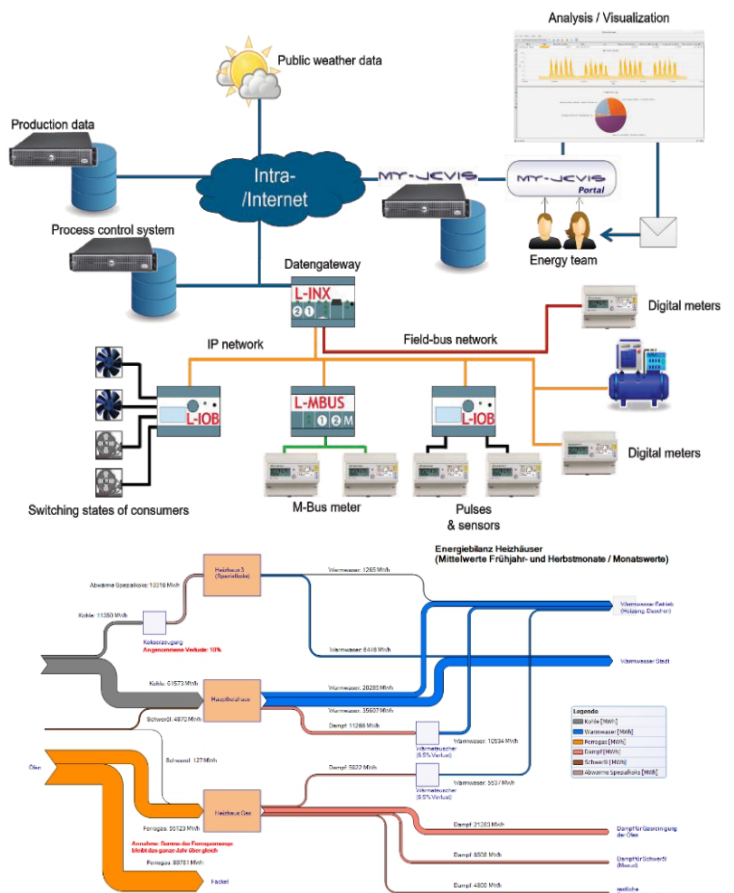


Figure 2 - Example of an energy data measurement and visualization system (source: Envidatec GmbH)

For additional information on this opportunity, please contact:



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