AGI ENERGY SERVICE CENTRE
Sustainable Energy for Profitability

BENCHMARKING THE ENERGY CONSUMPTION CREATES AWARENESS AT THE MANAGEMENT LEVEL

Most of the industrial and commercial (C&I) electricity consumers would like to reduce their energy bills without spending much - finding the solution that allows them to cut 80% of their energy costs by spending only 20% of what is needed technically and financially. One of the best solutions is to perform a benchmarking of their energy consumption.

01 How useful are detailed energy bills?

The most common question asked by the C&I managers is, what to do with their electricity bills when they receive it monthly? After checking if all the data are correct based on their actual meters' indication, the benchmarking of the energy consumption is applied.

02 Metrics for assessing your busines

Virtually all businesses have some recognized ratios or metrics that they use to express their overall production or operation efficiency. Industrial facilities generally focus on the ratios of resource use (i.e., electricity, fuel and water consumption) relative to their product production. These ratios are commonly referred to as key performance indicators or KPI's (*).

Indicator	Description	Unit
Energy Consumption (Total)	Absolute value	kWh, MWh, Euro, Dollar
Energy Consumption (Specific)	Total Energy Consumption/ Total Production	kWh/kg, kWh/m³
Share of an Energy Source	Share of Energy Source / Total Energy Consumption * 100%	%
Energy Strength	Energy of a Process or Location / Total Energy Consumption * 100%	%
Efficiency	Usable Energy / Delivered Energy * 100%	%
Economic Indicator	Total Energy Consumption / Turnover	kWh/Euro, kWh/Dollar

Simple KPI examples might be a retail shopping center which has a KPI for dollar sales per square meter of retail floor space, while a container glass production facility will have a KPI for liters of fuel used for each ton of glass containers produced. KPI's can be set for any time period, however annual KPI's are generally the most common. Annual KPI's also compensate seasonal differences, such as air temperature, air humidity or different production outputs. However, if a company manufactures different products at different seasons of the year, it may be necessary to define monthly KPI's.

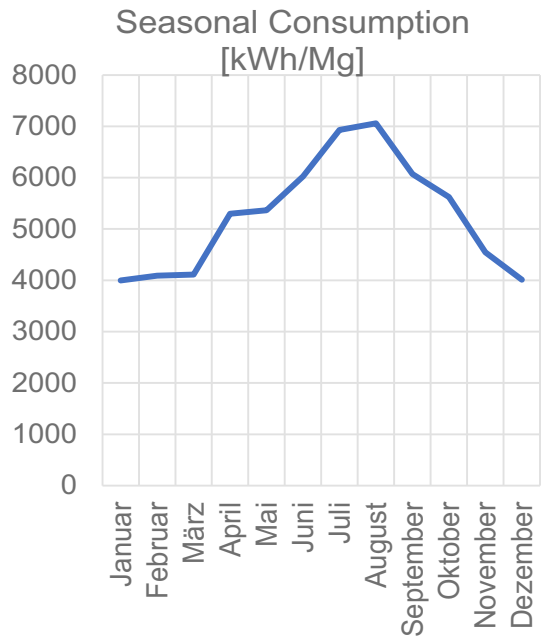
03 Guides for best practice values

Several guides give an indication of best practice values for energy and water usage in industrial processes and buildings based on a literature survey. Since the benchmark values in the literature may deviate substantially from actual energy and water usage at specific site, type of technology, and time, senior managers and benchmarking responsible need to upgrade their references and benchmarks continuously to allow them being on the leading sits.

(*) In Europe, KPIs are also called Energy Performance Indicators (EnPI) when it concerns energy.

04 How benchmarking can improve the energy audit?

The following observations have been made in some energy audits performed in Ghana and prove that it makes sense to develop benchmarks in the premises of C&I electricity consumers, even before simulating the energy balance:



1-Setting monthly benchmarks for a facility will allow the managers to act immediately without any further overconsumption if the benchmarks are declining from the average ratios of the facility.

2-Providing such valuable information to the senior management of a C&I client will encourage the management to act immediately on RE/EE project development, considering that the competition will be ahead if no action is taken. Thus, RE/EE projects can benefit from a higher prioritization at the consumer level.

3- Data on energy benchmarks is scarce in Ghana. Partial data, or data from other ECOWAS countries will need to be used to estimate the baseline efficiency and energy consumption of your industrial and commercial sub-sector or branch of activity. Benchmarks may need to be adjusted for the Ghanaian context.

05 Example of benchmarks for hospitality sector

A Ghanaian hotel with an electricity consumption ratio of 110 KWh/m2/year has a very poor efficiency ratio when compared to hotels from his category in the region.

However, abnormal occupancy ratios were observed for the years 2019/2020/2021 due to the COVID-19 pandemic. During these years, KPIs became worst pushing the tourism and hospitality industry worldwide including in Ghana to look for more accurate benchmarks for their energy and water consumptions as an entry point for renewable energy and energy efficiency urgent action plan.

Efficiency rating	Good	Fair	Poor	Very poor
C) Small hotels (4-50 rooms) without laundry, with heating and air conditioning in some areas				
Electricity (kWh/m² year)	< 60	60-80	80-100	>100
Fuel (kWh/m² year)	< 180	180-210	210-240	> 240
Total (kWh/m² year)	< 240	240-290	290-340	> 340
Hot water (kWh/m²/year)	< 120	120-140	140-160	> 160

Source: Energy Efficiency and Conservation in Hotels- Towards Sustainable Tourism- 2001.

For additional information on this opportunity, please contact:

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