



AGI
ENERGY
SERVICE CENTRE
Sustainable Energy for Profitability

ENERGY EFFICIENCY FOR THE FOOD PROCESSING AND COLD STORAGE ROOMS INDUSTRIES

As a rapidly-urbanizing middle-income country, Ghana is experiencing diet changes that are spurring a growing demand for processed foods. The main constraint to a vibrant processing sector is the low production and productivity, high cost, and poor quality of local raw materials (1).



Some of these constraints can be easily improved with an energy audit targeting the reduction of the energy costs while improving the quality of the food processing and cold storage rooms services, with solutions to their operational issues.

01

Renewable energy solutions can be heavily improved with energy efficiency!

The food processing and cold storage rooms facilities can easily use both electrical and thermal energy for their production process. As electrical energy sources, diesel generators (standby), solar PV, in addition to the grid supply can be used, while as the thermal energy sources are biomass, biogas and a combined heat and

power (CHP) system generator could be an option. However, most of the renewable energy sources are intermittent. Energy efficiency and demand management can improve the picture and make several renewable energy power generation projects profitable.

02

Cold storage rooms are very useful but are energy intense!

Cold storage rooms are an essential equipment for a country and the food processing industries as they secure food and sensitive products during off-season and during emergencies like the COVID-19 pandemic period. However, they are energy intensive and



must be close to power sources. Several energy efficiency measures are applicable to cold storage rooms and are dependent of the products rotation, freezing and refrigeration temperatures, optimal usage of the spaces, air circulation, and more importantly the operating mode and human behavior.

03

Energy Audit

Significant reductions of the energy consumption of a food processing and cold storage room industry cannot be achieved unless a measurement campaign is conducted and the energy balance is analyzed, challenged, and

optimized. Doing an energy audit is a task that requires significant expertise and knowledge regarding the performance of the buildings, the production, and the requirements of the operation.

04 Benchmarking

Setting monthly the 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. Data on energy consumption 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 the targeted industry sub-sector or branch of activity. Benchmarks may need to be adjusted to the Ghanaian context.

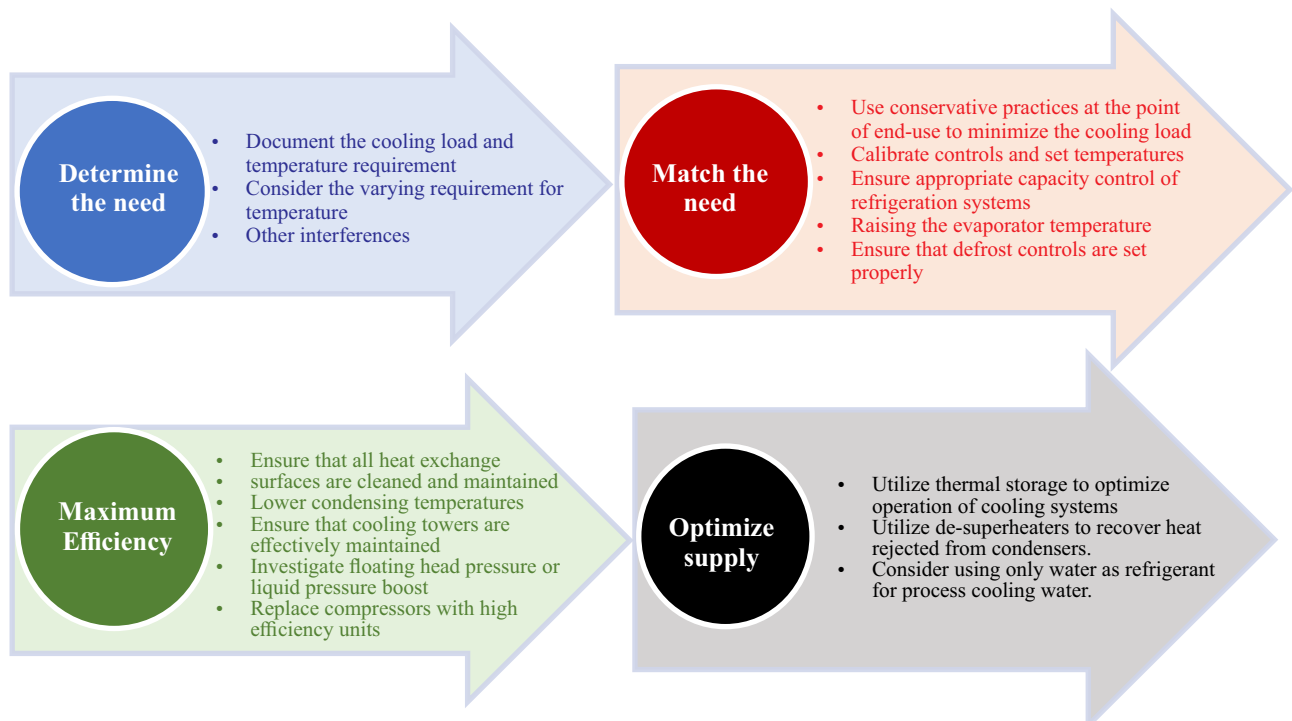
05 What to do for the improvement of the EE of your refrigeration system?



Refrigeration systems are used in many different environments – residential, commercial and industrial. All these systems are designed for one basic purpose: to move heat from a lower temperature (heat source) to a higher temperature (heat sink) medium, using a transfer fluid (refrigerant). Refrigeration systems are

relatively complex, and their efficiency is affected by the operating conditions. While a system is typically rated for a particular maximum or design cooling load, it usually operates for most of its life at some fraction of that output, or at partial load.

The efficiency of a cooling system can vary significantly with load, depending on the capacity control method employed. Consequently, it is important to evaluate system performance and efficiency over the range of actual loads.



For additional information on this opportunity, please contact: