

Advanced Technologies: CHP Systems or Cogen

Strategy: CHP (combined heat and power) Systems are those that provide simultaneous cooling, heating and power generation, also known as Cogeneration or Cogen. In supermarket applications, microturbines integrated with a double-effect absorption chiller convert waste heat to provide cooling in summer, heating in winter, sub-cooling for refrigeration, power for electrical needs, and desiccant regeneration.

Relevant Store Scale/Type: L/New

Operator Benefits:

1. Provides high efficiency cooling, heating and power, providing energy savings.
2. Extremely efficient as compared to conventional refrigeration options.
3. Integrates HVAC with Refrigeration for greater efficiencies.
4. Uses waste heat.
5. Provides power continuously on site, reducing dependency on the power grid and helping minimize power interruption for higher productivity.
6. Uses no ozone depleting fluorocarbons and has ultra low CO₂ emissions.

Initial Cost:

1. Initial costs are significantly higher than conventional systems

Return on Investment:

1. Reduces utility bills up to 50%.

Technical Considerations:

1. A Cogen system has the capacity to significantly lower operating costs. However, with its high first costs as compared to conventional systems, it is currently cost prohibitive for all but larger supermarkets with high operating costs.

Product/Manufacturer Suggestions, Resources & Examples:

UTC Power Pure Comfort 240M

www.utcpower.com

ElectraTherm

www.electratherm.com

Applying a Microturbine/Desiccant CHP System to a Supermarket:

<http://www.cdhenegy.com/presentations/ASHRAE%20Anaheim%202004%20Supermarket%20Microturbine-Desiccant%20System.pdf>

Examples:

Waldbaum's Supermarket, Long Island, NY:

http://www.chpcentermw.org/rac_profiles/Northeast/Waldbaums_CHPPProjectProfile.pdf

A&P Fresh Market, Mount Kisco, NY:

<http://files.harc.edu/Sites/GulfCoastCHP/CaseStudies/APFreshMarketMountKiscoNY.pdf>