

Total Lab Solutions



GREEN Performance Criteria – Performance & Technical Justification Document

SANYO Corporate GREEN Position – Think GREEN, Think GAIA

For over 30 years, SANYO has established a reputation as a leading manufacturer of precision biomedical equipment for life science, pharmaceutical, biotechnology, clinical, and industrial laboratories. SANYO has established a corporate-wide initiative – Think GAIA – to emphasize the company’s commitment to energy conservation and environmental integration.

- SANYO is conscious of the need to protect our environment and conserve energy.
- SANYO remains committed to providing the best possible laboratory equipment for research and clinical needs.

GREEN Lab Focus

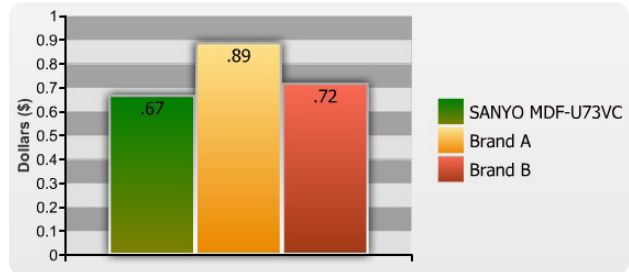
Laboratory facilities present a unique challenge for energy efficient and sustainable design, with their inherent complexity of systems, health and safety requirements, long-term flexibility and adaptability needs, energy use intensity, and environmental impact. The typical laboratory is about five times as energy intensive as a typical office building and costs about three times as much per unit area. Any effort to reduce energy use and environmental impact are heavily influenced by special functional and health and safety requirements, which need to be considered in rating and benchmarking the overall environmental performance of a laboratory.

SANYO took the initiative to revamp and redesign a new refrigeration system that would employ environmentally-friendly refrigerants throughout the laboratory without compromising performance. Elements of the SANYO ULT design that reflect GREEN initiatives

- CFC Free Refrigerants
- RoHS Compliance
- Energy Efficiency
- Noise Reduction
- Operating Costs
- High Density Storage
- Storage Volume Efficiency

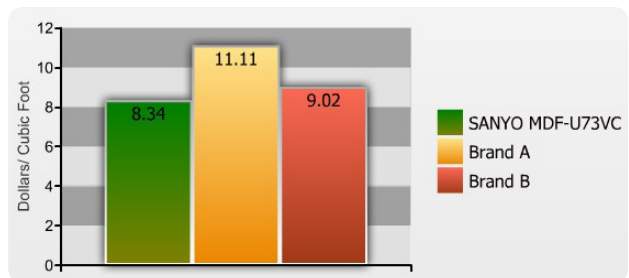
SANYO GREEN ultra-low freezers:

- Minimize carbon footprint with less impact on the environment.
- Maximize lab space with smaller footprint for ultra high density storage.
- Reduce operational costs through high storage volume efficiency.
- Allow for minimized HVAC loads and air handling requirements in facilities.
- Emit less heat into the laboratory environment, minimizing air conditioning costs.



Annual CO₂ Emissions

SANYO Freezers help the environment by reducing carbon footprint.*



Total Annual Cost

SANYO Freezers emit less heat into the laboratory.*

Criteria for Energy Efficient Laboratory Equipment

- Lower energy use – More research buildings are conforming and adopting to energy conscious directives such as LEEDs with the recommendation of energy efficient lab equipment
- Efficient space utilization – Biomedical – High density storage is strongly advocated as lab design is focusing on making researchers share ULT storage space.
- Selecting energy efficient and low-demand lab equipment is thus one of the most effective and immediate ways to reduce energy consumption.
- Energy, electrical and ventilation systems can benefit from recapture and reuse potentials.

LEED Potential

Achieving LEED certification is the best way for you to demonstrate that your building project is truly “GREEN.”

LEED is a green building rating system that was developed by the U.S. Green Building Council in 2000 through a consensus based process. LEED is a tool for buildings of all types and size. LEED certification offers third party validation of a project’s green features and verifies that the building is operating exactly the way it was designed to. LEED is a point based system where projects earn LEED points for satisfying specific green building criteria.

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Laboratory Equipment Efficiency

Equipment loads in laboratories are typically much higher than commercial buildings and can vary widely, from 2 W/sf to 15 W/sf. In addition to direct consumption, equipment loads also affect cooling energy use. Equipment loads are often overlooked as an area for increased efficiency. The EPC (Environmental Performance Criteria) adds two credits to encourage reducing equipment loads. Credit 8 encourages the selection of energy efficient laboratory equipment. There is little if any laboratory equipment that has an EnergyStar™ rating. The credit reflects the EnergyStar™ approach by requiring the selection of equipment that is above the 75th percentile in terms of efficiency. Obviously, this will only apply when there is a choice of functionally equivalent equipment.

Improve Laboratory Equipment Efficiency

Intent

Save energy with efficient laboratory equipment.

Requirement

Credit 8.0 (1 Point) Use Energy Star™ compliant equipment or equipment in the top 25th percentile for at least 75 percent of new Class 1 and Class 2 equipment and at least 30 percent of all Class 1 and Class 2 equipment. Acceptance of equipment in the 25th percentile requires a minimum of 4 different models that meet the functional needs of the research. If only 2 or 3 functionally equivalent models are available, acceptance requires selection of the most energy efficient model.

Another issue pertaining to equipment loads is that HVAC designers often overestimate the equipment loads and consequently oversize HVAC systems (chillers, fans, etc.). This can be avoided by getting a more accurate estimate of equipment loads by metering similar laboratory spaces, as required in credit 9.1. An additional credit is given for provided for metering.

Right-size Laboratory Equipment Load

Intent

“Right-size” mechanical equipment by improving estimates of heat-gain from laboratory and process equipment.

Requirements

Credit 9.1 (1 point) Measure base usage of equipment electrical loads in a comparable laboratory space for each functional type of laboratory space and design electrical and cooling systems based on these measurements.

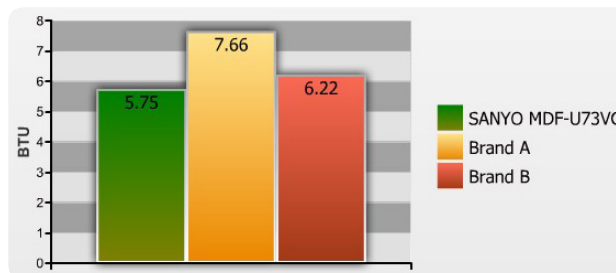
Credit 9.2 (1 point) Design electrical distribution system to provide for portable or permanent check metering of laboratory equipment electric consumption. Design for safe access to electrical feeder enclosures and provide sufficient space to attach clamp-on or split core current transformers.

Whether your facility is seeking LEED certification or incorporating more sustainable practices, SANYO offers laboratory equipment to meet a more energy efficient environment. SANYO ultra low freezers provide energy savings while minimizing carbon footprint throughout the laboratory without compromising performance.

REFERENCES

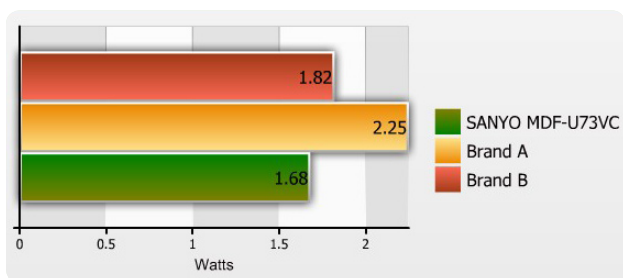
ASHRAE/IESNA Standard 90.1 –1999. Energy Standard for Buildings Except Low-Rise Residential Buildings. ASHRAE, Atlanta, GA.
LEED™ Rating System Version 2.0, U.S. Green Building Council. June 2001.

**Based on internal performance data. Tested in 25°C ambient environment. Freezer cycling at -80°C. Cabinet volume, 25 cu. ft. Average cabinet temperature based on temperature mapping (17 thermocouples).*



Heat Rejection

SANYO freezers reduce your air conditioning costs and allow you to reduce the size of air handling requirements.*



Power Consumption by Capacity

SANYO freezers provide reduced operational costs for highly efficient sample storage.*



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