

Think GAIA
For Life and the Earth

SANYO

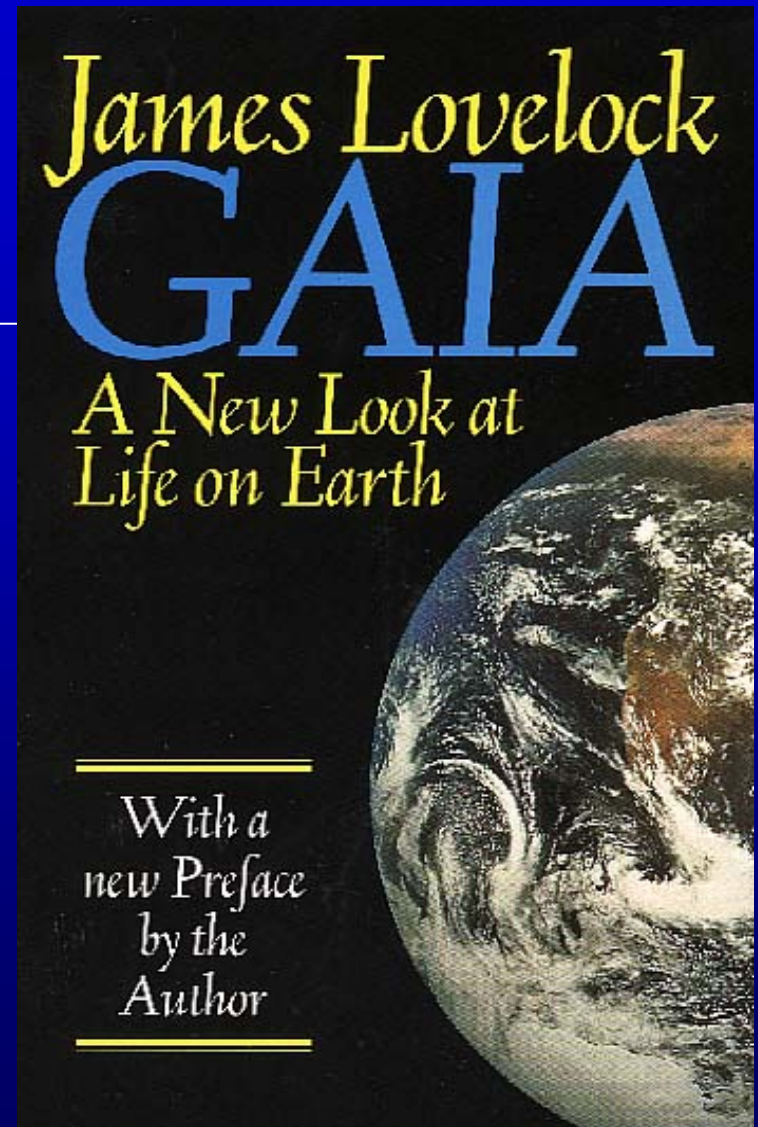
SANYO
Commercial Solutions
Think GAIA Think GREEN



*Deepak M. Mistry
Marketing Manager
SANYO Commercial Solutions*

GAIA Theory

- Proposed by
Dr. James Lovelock
in 1970s
- Considers the Earth
as a living organism





SANYO's Corporate Mission

- Think GAIA = Think Green
 - Life friendly environmental technology for people and future generation
 - Comfortable and safe experience for people
 - Energy savings and environmentally friendly technologies
 - Benefits of lower energy cost for business and society
 - Less CO2 consumption, smaller footprint and lower operational costs



Orientation of Business Evolution

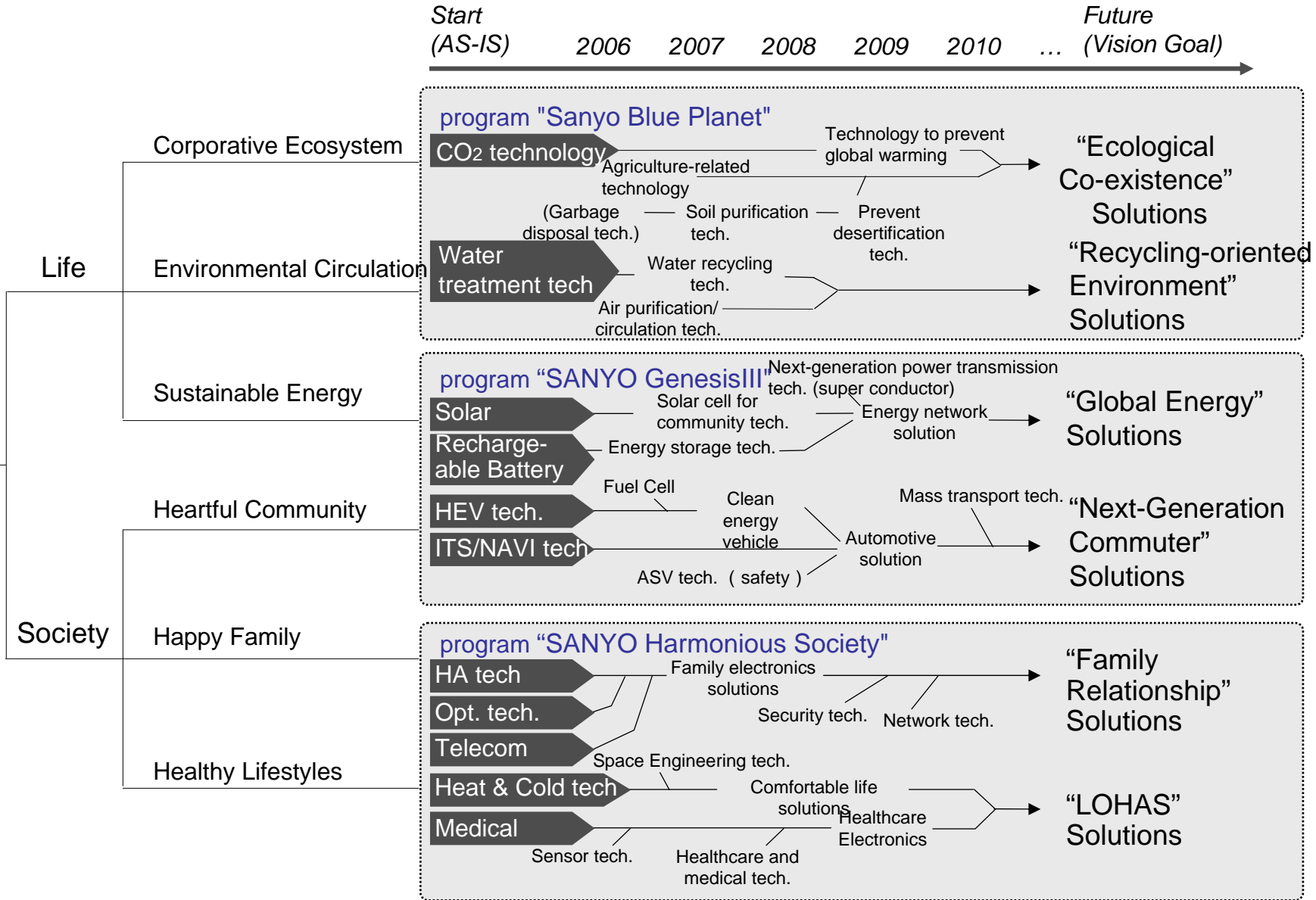
General Consumer-electronics Manufacturer

New Vision
Think GAIA

**Leading Provider of
Biomedical Laboratory Equipment**

Programs for our Vision Goal

**Think
GAIA**





Think GAIA - Corporate Initiative

- SANYO has established a corporate-wide initiative – Think GAIA – to emphasize the company’s commitment to energy conservation and environmental integration.
- GAIA, which stands for “the living earth”, suggests that the earth is a green organism where mankind and all living things exist in harmony.
- In practice, GAIA is a threefold approach consisting of action on environmental, energy and lifestyle fronts. In each of these areas, SANYO is redefining conventional ideas and taking advantage of unique technological resources to propose global solutions for the Earth and all living things.



Think GREEN, Think GAIA

- ***In the United States and in a number of other countries around the world, LEED certification is the recognized standard for measuring building sustainability.***
- ***Achieving LEED certification is the best way for you to demonstrate that your building project is truly "GREEN."***
- 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.



Sanyo Biomedical History

- 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.
- The company's expertise in air conditioning and refrigeration has provided core competency for the development of a range of biomedical product lines.
- Sophisticated refrigeration compressor design and state-of-the-art electronics are employed in the manufacture of its ultralow and cryogenic freezers, refrigerators, incubators (CO₂, CO₂/O₂), plant growth chambers, and environmental chambers.



- SANYO Biomedical Advantage - Think GREEN, Think GAIA

SANYO Corporate Position

- *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.*



Thinking Green, Thinking Safe

What elements of the SANYO ULT design reflect GREEN initiatives ?

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



Thinking Green, Thinking Safe

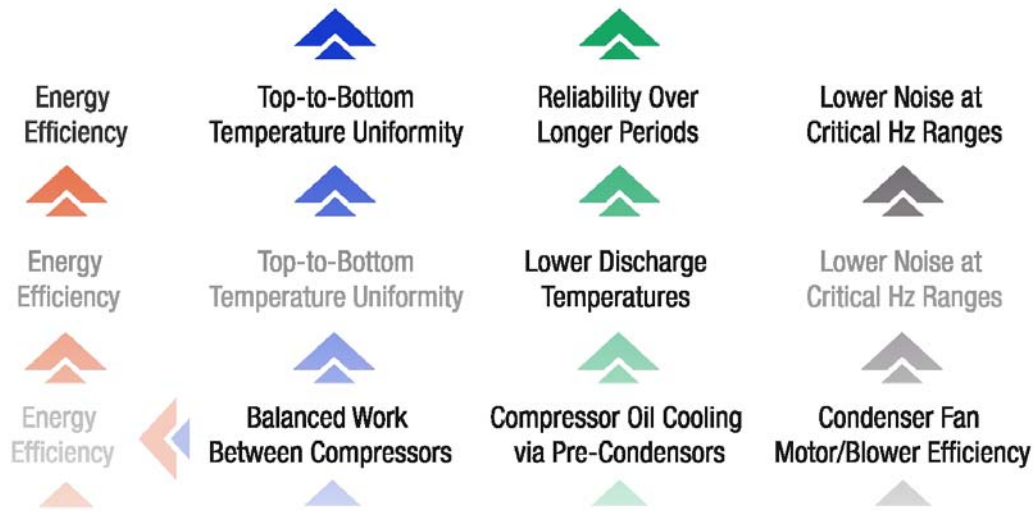
How is SANYO conscious of the need to protect our environment and conserve energy ?

- This commitment was demonstrated when SANYO took the initiative to revamp and redesign newer refrigeration systems that would employ new, environmentally-friendly refrigerants throughout the laboratory without compromising performance.



SANYO Ultra-Low Freezer GREEN Advantage Diagram

ENERGY EFFICIENCY



SANYO Ultra-Low Refrigeration Technology = ENERGY EFFICIENCY



- SANYO GREEN Advantage - CFC Free Refrigerants

- SANYO was the first ultra-low freezer manufacturer to employ non-HCFC R508 low-stage refrigerant, now recognized as today's industry standard and widely available. This non-proprietary refrigerant is available to refrigeration service professionals on the open market.
- The high stage refrigeration system is a mixture of R134a and R410a (Puron®), available to refrigeration professionals on the open market as well.
- **Positioning itself aggressively as a leader in environmentally friendly technology, Sanyo refrigeration products use commercially available HFC refrigerants and CRC-free insulation.**



- SANYO GREEN Advantage - SANYO High Density Storage



- The cost per cu.ft. (or liter) of interior storage space is significantly lower in a SANYO ultra-low freezer
- VIP® vacuum insulation panel cabinet, SANYO can offer more useable storage volume within the same sq.ft. of floor space than competitive models
- Provides an immediate return on investment based on first costs, operating costs and maintenance costs over time
- Placement of evaporator surfaces within the cabinet walls achieve exceptional documented ultra-low temperature uniformity



- SANYO GREEN Advantage - Noise Reduction

- Ultra-low freezers are often located within research and hospital laboratories or production facilities. Users prefer close proximity for easy access to valuable stored products.
- If operating noise from refrigeration compressors is excessive, and/or compounded by installation of multiple freezers in adjacent locations, the working environment is severely compromised.
- **SANYO has included advanced noise abatement in all contemporary ultra-low freezers and noise reduction levels are well below those of competitive freezers.** *Data is available upon request.*



- SANYO GREEN Advantage - ISO 14001 – Environmental Standard

- **SANYO products are ISO 14001 Certified**
- *ISO 14001 is often seen as the corner stone standard of the ISO 14000 series. However, it is not only the most well known, but is the only ISO 14000 standard against which it is currently possible to be certified by an external certification authority. Having stated this, it does not itself state specific environmental performance criteria.*
- This standard is applicable to any organization that wishes to:
 - implement, maintain and improve an environmental management system
 - assure itself of its conformance with its own stated environmental policy (those policy commitments of course must be made)
 - demonstrate conformance
 - ensure compliance with environmental laws and regulations
 - seek certification of its environmental management system by an external third party organization
 - make a self-determination of conformance



Electrical Standards

- All SANYO products including ultra-low temperature freezers are tested and certified by Entela 5 NRTL (National Recognized Testing Laboratory) to assure compliance with US and International standards for electrical safety prescribed in 29 CFR 1910.7(c).
- SANYO has selected Entela for independent testing to accelerate testing on new products while maintaining the highest standards for quality, safety and performance.



- SANYO GREEN Advantage - Vertical Component Integration

- Evaluates and improves its own components without third party involvement
- Manufactures its own VIP panels, oil separators and circuit boards
- SANYO's integrated supply chain assures component quality from source to application



SANYO Optimized Cabinet Design

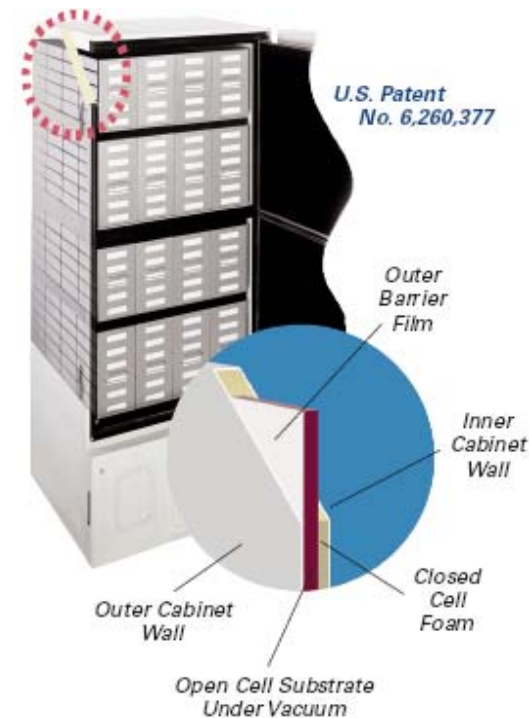
- SANYO pioneered the development of a composite cabinet wall based on a combination of conventional, high-density foamed-in-place insulation and new, state-of-the-art vacuum insulation panels (SANYO VIP®)*
 - Permits a thinner wall profile and increased interior volume.
 - This design optimizes use of available laboratory space by permitting more storage in the same footprint
 - Evaporator coils within the thin-wall SANYO cabinet are arranged for optimal interior uniformity and best heat removal (energy transfer), further reducing the burden on the cascade refrigeration system
 - The byproduct of the design mitigates the build-up of moisture to prevent ice formation or mold on external services

**SANYO VIP®, U.S. Patent No. 6,260,377*



SANYO patented V.I.P.®

- SANYO patented V.I.P.® vacuum panels are formed individually into a unitized composite of panel sections, sealed with reflective barrier film, arranged within the steel inner and outer walls, then pressure laminated with high-density, closed-cell injected foam to form this high technology freezer wall.





- SANYO GREEN Advantage - Storage Capacity Vs Power Consumption

Test Conditions ambient 30°C→-86°C)

Model (Power Source)	SANYO MDF-U73VC (220V 60Hz)	BRAND R (220V 60Hz)	BRAND F (220V 60Hz)
2" box capacity	576	480	400
Total Power Consumption	1,241 W	1,188 W	1,305 W
Power consumption per 2" box	2.18 watts	2.48 watts	3.26 watts



- SANYO GREEN Advantage - A Better Compressor Yields Better Uniformity and Improved Reliability

SANYO's Application Specific Compressor

- SANYO's new ultra low temperature compressor employs a unique orientation of conventional components to reduce discharge temperatures and compressor heat
- **Heat reduction results range from as low as 25°C *below* previous SANYO compressors and more than 40°C *below* leading brand compressors used by numerous competitors.**



SANYO Comparison Chart

- No matter where you store your samples in a SANYO freezer, cell viability stay the same, top to bottom, front to back, side to side
- The industry's best ultra-low temperature uniformity assures biological integrity
- From short-term storage to long-term archiving as low as -86°C, SANYO ultra-low freezers maintain stable temperatures at all levels for post-thaw reproducibility.

PERFORMANCE	SANYO	Brand N	Brand R	Brand F
Temp Uniformity Range @-80°C	4.2°C	9°C	12.5°C	7.7°C
Chamber Temp. Top	-86.0°C	-77.5°C	-81.4°C	-81.4°C
Max Warming Point, 10 sec. Opening	-75°C	-34.3°C	-57.7°C	-76.8°C
Noise Level, 1 meter	43.8 dBA	51.7 dBA	52.0 dBA	72.0 dBA



Solution to Low voltage in Labs = SANYO Status Alert

Why is low voltage a problem in laboratories ? How does SANYO Status alert detect and correct this issue ?

- Low voltage is common in many laboratories due to increased power demand in clinical and research environments, drug discovery, storage and processing. These conditions are most common in older institutions or those that have been retrofitted for laboratory use.
- To protect the valuable stored product, SANYO ultra-low freezers with voltage enhancement systems will automatically correct the voltage through an internal transformer and boost the voltage to the proper level.



- SANYO GREEN Advantage - SANYO Ultra Low Refrigeration System Benefits

- Greater system longevity & reliability
 - Minimizing compressor operating temperatures
 - Efficient location of evaporator systems around the interior chamber
 - Balanced refrigeration system
- Better temperature uniformity, permitting the entire interior volume to be used for long-term storage.
- Reduced noise at critical Hz ranges.
- Enhanced viability of stored product.



- SANYO GREEN Advantage - RoHS Compliance

- In 2006, RoHS (Restriction of Hazardous Substances) legislation (EU Directive 2002/95/EC) became effective. RoHS relates to the restriction of hazardous substances and reductions in environmental pollution.
- Through RoHS legislation the EU and other participating countries are banning toxic substances in electrical equipment such as lead, cadmium, mercury, chromium 6+, PBB and PBDE.
- While compliance with this legislation has posed a significant challenge for SANYO, all SANYO ultra-low freezers and components are now 100% compliant to RoHS standards.



“Think GREEN, Think GAIA”

- “Think GREEN, Think GAIA” expresses Sanyo’s commitment to run its business and product development in a way that recognizes the need to protect the environment and conserve energy.
- As a corporate pioneer in the life science and commercial equipment industries, and a global source of solutions ranging from energy management to solar power and alternative energies, Sanyo remains committed to providing the best possible laboratory equipment for research and clinical needs.