

SANYO Commercial Solutions, A Division of SANYO North America Corp.

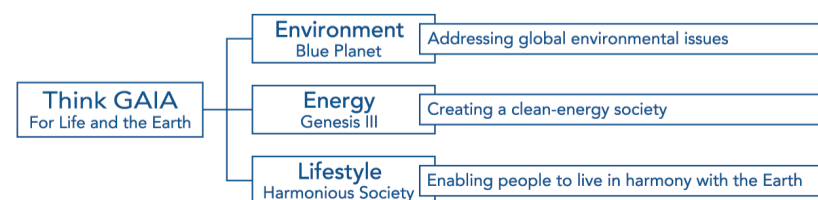
SANYO was founded in 1947 by Toshio Iue and was incorporated in 1950. The company's name, meaning "three oceans" in Japanese, specifically the Atlantic, Pacific, and Indian Oceans, refers to the founder's dream of building an international company trading worldwide, and it turns out that this dream has been largely fulfilled. Today, the company's logo shown below is well known throughout the world.



A few months ago, I met with Mr. Toshiaki Inoue, President of SANYO Commercial Solutions, a division of SANYO North America Corp., and Mr. Deepak M. Mistry, Marketing Manager at the company's office in Bensenville, IL, to learn about SANYO's background and products, particularly those that relate to the laboratory marketplace.

The company's first product was a bicycle lamp driven by a dynamo; in 1952 the company manufactured the first plastic radio, followed in 1954 by Japan's first pulsating washing machine. SANYO is now Japan's leading supplier of domestic washing and drying machines. SANYO manufactured the first rechargeable battery and today is the leading producer. The company supplies the nickel-metal hydride batteries used in hydride automobiles, such as the Ford Escape Hybrid and the Honda Accord Hybrid. In a recent promotion, the company is stressing the importance of using rechargeable batteries out of concern for the environment. Every year, many tons of toxic metals and chemicals go into landfills from disposal of single-use batteries. The European Commission's 1991 Battery Directive was the first attempt by a government to mandate the recycling of industrial, automobile, and consumer batteries. Since then, the scope of this Directive has been increased. While no parallel legislation exists at the moment in the U.S., it is hard to believe that it is not on its way.

SANYO is a major player in the field of consumer electronics. Battery technology is an important business area for SANYO, one that has become increasingly important as the world faces the challenges of environmental conservation and competition for oil supplies from depleted reserves. SANYO manufactures a wide range of products requiring refrigeration technology, including building air conditioning units, retail food display cases, commercial refrigerators for the food industry, and laboratory refrigerators and freezers. The technology that has been developed to produce such a broad range of products provides a valuable resource from which all product lines benefit.



SANYO is pursuing three programs to make the "Think GAIA" vision a reality.

Core technologies

SANYO core technologies, patents, and intellectual properties are represented in every product line. President Inoue emphasized the importance of Vertical Component Integration™ in its approach to manufacturing in order to ensure careful control of the quality of products. The company's core technologies are a key resource for all its market sectors and find application in critical components and processes such as refrigeration compressors, microprocessor electronics, and patented V.I.P.® Vacuum Insulation Panels engineered to exact specifications. These components find use in many product lines, including those for life science, pharmaceutical, biotechnology, clinical, and industrial laboratories. As a leader in consumer electronics, refrigeration, energy, and environmental products, SANYO draws on vast corporate resources to develop laboratory products to meet the needs of contemporary medical and scientific research. Based on robust core technologies and in-house manufacturing of most key components, SANYO's products are earning a reputation for dependability, safety, energy efficiency, and ergonomic operation.

GAIA and concern for the environment

SANYO supports the GAIA concept proposed by James Lovelock in 1972. Lovelock played an important role in the early days of the environmental movement through the invention of the Electron Capture Gas Chromatography Detector in 1957. This highly sensitive device permitted the measurement of halogenated environmental pollutants and nitrous oxide at the parts-per-trillion level. The ability to measure these pollutants revolutionized our understanding of the atmosphere and its pollutants. In an early statement of the GAIA hypothesis, Lovelock postulated that the earth as a whole was a living organism, hence the name "Gaia," the name of the goddess Earth Mother in Greek mythology. Lack of understanding or concern about the impact of human activity on the planet will inevitably lead to changes in the nature of the planet, such as global warming, that will have an adverse effect on human existence. However, through understanding and modification of our impact on the planet, it should be possible to maintain the climate and chemical composition of the earth at levels comfortable for its life forms through natural self-regulating mechanisms. "Think GAIA" is SANYO's corporate vision, and the company urges its customers and employees to work to

create solutions for sustainability and harmony with all other living organisms. In practical terms, this means that SANYO is conducting its business to conform to the spirit of "GAIA" and will be leveraging its core technologies to create solutions that are

in keeping with the goal ensuring sustainability of the living planet. All Sanyo's corporate communications include the following message as a statement of commitment. "Think

Think GAIA For Life and the Earth

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. Positioning itself forcefully as a leader in environmentally friendly technology, SANYO refrigeration products use commercially available HFC refrigerants and CRC-free insulation. All operate at low noise levels and are CFC-free and RoHS (Restriction of Hazardous Substances)-compliant. Energy-efficient design ensures lower operating costs.

ECO-i™

SANYO recognizes that the world is changing because of the urgent need for resource conservation. An area in which conservation efforts can be very effective is in the design of buildings. Air conditioning buildings to make them comfortable workplaces has traditionally been very energy-intensive. The proprietary core technologies described in this article give SANYO a leading position in commercial air conditioning. The company has undertaken a critical examination of the process of building air conditioning, and they prefer to call their solution "Human Conditioning" rather than "Air Conditioning." The company's ECO-i modular HVAC system is a suitable approach for office and industrial buildings. Architects and builders appreciate the flexibility of the ECO-i system. Not only is it space-saving; it is also very efficient and fits easily into building plans.

Through its businesses in building plant components and air conditioning, SANYO has a significant opportunity to act on its commitment to the GAIA philosophy. The company provides components that are engineered to be nonpolluting and highly efficient in the use of energy and other resources, such as water. Today, progressive architects and contractors are looking for ways to construct buildings that conserve energy and resources in ways that are recognized in LEED (Leadership in Energy and Environmental Design) certification. In the United States and in other countries, LEED certification is a recognized standard for measuring the sustainability of buildings. Achieving LEED certification demonstrates that a company's building has been designed with due consideration of "green" principles.



RoHS-compliant products

All of SANYO's biomedical products are RoHS-compliant. RoHS legislation originated in the European Union (EU) and took effect on July 1, 1996 (EU Directive 2002/95/EU). RoHS is concerned with reducing the amount of hazardous materials and pollutants in the environment, such as the metals lead, cadmium, mercury, and chromium (VI). With the legislation, the EU has banned the use of a number of hazardous metals in electrical equipment. The flame retardants PBB and PBDE are also banned under RoHS. Products must be RoHS-compliant in order to be sold in the EU. Accordingly, RoHS has become a *de facto* standard in many countries worldwide. SANYO embraced the RoHS legislation in the manufacture of its products as part of its commitment to environmental responsibility. RoHS excludes category 8 and 9 products, which are medication devices and monitoring and control instruments. Such products are generally manufactured in small numbers and have long lifetimes. Often these products are found in mission-critical applications where their failure could have tragic consequences. Notwithstanding the waiver provided by this exclusion, SANYO welcomed RoHS legislation and chose to comply with it rather than hide behind the Article 8: Medical Product Exemption. RoHS does not include batteries. These are covered by a different European Directive.

Biomedical equipment

The laboratorian's "toolbox" contains more than just instruments for the measurement of physical and chemical properties and chemical separations. All the associated products that are essential for the operation of a modern laboratory must be included, such as refrigerators, incubators, and freezers. It is important to recognize the critically important role these products play in the laboratory, and they should not be viewed merely as commodities. 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. The company employs sophisticated refrigeration compressor design and state-of-the-art electronics in the manufacture of its ultralow and cryogenic freezers, refrigerators, incubators (CO₂, CO₂/O₂), plant growth chambers, and environmental chambers. This technology, together with advanced control features, sets a high standard

for performance that is necessary to compete in the health-care and life science laboratory marketplace.

The company's refrigeration technology is found in many work areas. In medical applications, its refrigerators and freezers provide effective storage of life-saving fresh and frozen blood supplies and vaccines, as well as samples for diagnosis. In the biotechnology installations, they provide effective storage of enzymes for genetic research, as well as culture media, reagents, and samples for testing. In the industrial field, they are used for aging and temperature tests on electronic components, precision devices, and compound resins.

To underscore the importance of reliable performance, let's consider the storage of refrigerated biological samples. In many facilities, the samples may range in value from very costly to replace to irreplaceable. Moreover, some samples need to be stored for a very long time. Drug manufacturers, for example, are often required to keep the samples from clinical trials for 25 years and sometimes longer. This places a heavy demand on the refrigerated storage unit. A high-quality product can be expected to perform trouble-free for a long time, but inevitably service will be required. Accordingly, the quality of the service is of paramount importance to ensure the integrity of the samples. President Inoue stressed the important commitment that SANYO makes to customer service to minimize any disruption in its customers' work flows and to ensure the integrity of their samples.

Refrigerators and freezers for the biomedical market require efficient insulation to ensure accurate temperature control and even temperature distribution. The patented vacuum insulation panel technology used in SANYO V.I.P. freezers was developed and is manufactured by the company for exclusive use in its refrigerated cabinets. Cellular freezer construction of vacuum panels and polyurethane foam provide structural stability and the highest insulation values required for extreme temperature differentials between ambient and the interior chamber. Independent panels are vacuum-sealed, open-cell foam substrate enclosed within a barrier film; the substrate matrix strengthens the panel and eliminates hollow areas. Lamination of multiple insulation components creates an effective R-value-to-volume coefficient that reduces wall thickness by nearly 50% over conventional ultralow-temperature construction techniques. Downflow evaporator coils are helium leak-tested and positioned against the interior surfaces for efficient heat exchange. SANYO's commitment to the GAIA concept requires all refrigeration devices to be CFC-free.

In the case of incubators, it is important to maintain an environment that is free from contamination, not only in the air inside the incubator, but on all interior surfaces. Sterilization and contamination control in the SANYO MCO-SERIES of

incubators is provided by a Patented SafeCell™ UV system with a programmable narrow-bandwidth ultraviolet lamp, which is isolated from the cell cultures. It efficiently sterilizes conditioned air and the humidity water reservoir to prevent contamination without affecting the cell cultures. The interior chamber and inventory components are fabricated from polished, copper-rich stainless steel to provide natural germicidal protection without rust or corrosion. Heating is provided by a patented air jacket system, which provides accurate temperature control, quick recovery, and uniform stability without condensation. After door opening, a fast-acting ceramic-based infrared CO₂ sensor provides accurate CO₂ control. A gentle, blower-assisted air circulation system automatically ceases when the inner door is opened. PID microprocessor controls mounted in the door ensure safe, secure operation with alarm and monitoring for all functions, plus system programming for individual protocols or performance. The concept of Active Background Contamination Control™ in the SANYO MCO-20AIC (optional in the MCO-18AIC, MCO-18M, and MCO-5AC) cell culture CO₂ incubator is a combination of unique design features that yield a significant benefit in reducing chamber contamination without down time.

The important issues relating to the design and performance of refrigerators and incubators were discussed at a recent roundtable session involving two managers from SANYO and two distinguished scientists, who both emphasized the importance of reliability and dependable service. A transcript of the discussion was published in a white paper that is available from the company.¹

The future

SANYO has stated that overseas expansion is one of its most important policies for the years ahead. In 2006, its share of foreign sales was 39%; the plan calls for 10% in 2010, according to Mr. Akira Kan, Executive Officer. A key step in achieving this goal is to set up globally distributed manufacturing centers in Japan, North America, China, Europe, and Asia. With a global distribution in production, it is possible to shift the distribution of products according to changes in sales volume. However, as SANYO continues to develop its business operations, its plans call for solid commitment of R&D to provide technology solutions that are compatible with its "Think GAIA" corporate vision.

Reference

1. White Paper, Cell Health, Incubation and Ultra-low Preservation. SANYO North America Corp.

Dr. Howard is Publisher and Editor in Chief, International Scientific Communications, Inc.

Patented V.I.P.™ Vacuum Insulation Panel Freezers, U.S. Patent No. 6260377
 Patented SafeCell™ ultraviolet contamination control, U.S. Patent No. 6255103
 inCu saFe™ germicidal effective copper-enriched stainless steel incubator interior
 P.I.D./R™ infrared CO₂ system with rapid recovery
 Patented Direct Heat and Air Jacket™ (DHA) incubator heating technology, U.S. Patent No. 5519188
 Active Background Contamination Control™ cell culture environment

