



EPSON (CHINA) CO., LTD.

Adoption of Environmental Management Practices

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In the spring of 2002, Vincent Leung, the manager of the legal and environmental planning department of Epson (China) Co., Ltd., was reflecting on his progress in reducing the environmental impact of Epson's office operations in China. Under Leung's direction, Epson (China) had received ISO 14001 certification in September 2000. Since then, the office had achieved significant reductions in paper and energy use and was recycling solid waste. Leung was now focused on implementing a printer cartridge take-back system in China. He realized he needed to increase the number of used cartridges taken back from computer malls in four major cities in China in order to replicate the take-back system used by Seiko Epson- the parent company in Japan.

Seiko Epson Corporation

A private corporation headquartered in Japan, Seiko Epson Corporation had sales of \$11 billion in 2001. The company develops, manufactures, and markets information technology equipment (computers, printers and scanners, LCD projectors, and digital cameras, accounting for 64 percent of its business), electronic devices (semiconductors, LCD modules, and crystal devices, accounting for 28 percent of its business), and precision products (watches, lenses, and precision assembly robots, accounting for 7 percent of its business). In 2001, the company employed about 70,000 people and operated 102 companies, 35 in Japan and 67 overseas.

Epson (China) Co., Ltd. is the headquarters of Seiko Epson in China. By 2002, Epson had a \$5 billion investment in China,

operating 4 business centers, 10 production design facilities, and 12 sales and marketing office facilities. They were involved in design, production, marketing, and after-sales service of IT products and electrical components.

Seiko Epson Environmental Policy

Seiko Epson Corporation took great pride in its environmental activities. For example, it was among the first companies in the world to eliminate the use of chlorofluorocarbons (CFCs), chemicals that deplete the ozone layer. In 1998, Epson Group's Second Environmental Benchmark year, it established its General Environmental Policy, which included the major activities that would be pursued by the entire Epson Group in fulfilling its responsibilities as a good corporate citizen.

The environmental activities included:

- Creating and providing earth-friendly products
- Transforming all processes to reduce the burden on the environment
- Recovering and recycling used products
- Sharing environmental information and contributing to regional and international conservation efforts
- Continually improving the environmental management system

With regard to creating environmentally conscious products, Seiko Epson sought to reduce energy usage in its primary products, promote green purchasing, and establish lead-free mass production systems. To reduce the burden on the environment, the company sought to reduce emissions of greenhouse gases, reduce/recycle general and industrial waste, reduce usage of environmentally harmful chemical substances, and reduce total energy consumption. Seiko Epson designed and implemented a system for recovering and recycling finished products and consumables, initially in Japan, and then intended for implementation worldwide. All of its facilities were encouraged to conduct environmental tours and to support regional conservation efforts.

ISO 14000

Seiko Epson recognized that environmental impacts could arise from the entire range of business activities. It therefore sought to revamp and continuously improve its systems not only in its manufacturing activities, but also at its non-manufacturing bases, such as sales offices and software development facilities. All facilities, both manufacturing and non-manufacturing, had been required to seek ISO 14001 certification.

ISO 14000 refers to a set of voluntary environmental management standards that are designed to do for environmental management what ISO 9000 standards did for quality management. Standards include environmental auditing, environmental labeling, environmental performance evaluation, and life-cycle assessment. Companies that are ISO 14001-certified have an in-place environmental management system based on the Total Quality Management model of "continuous improvement." ISO 14001 certification requires companies to have a formal environmental management system in place, to

conduct regular audits, and to commit to continuous improvement. Aside from requiring compliance with regulatory requirements, it does not require specific performance levels to be met. ISO 14001 certification was increasingly a prerequisite for doing business globally, since it was required either by governments, regional groups such as the European Union, or purchasers.

Environmental Progress

By 2002, Seiko Epson was able to document success in most of the identified areas. Using its energy-saving technology, Seiko Epson developed energy-saving products and performed product assessments at the development and design stages to create environmentally conscious products. Energy efficiency was raised significantly in PCs, PC printers, liquid-crystal projectors, watches, POS printers, integrated circuits, liquid crystal panels for portable applications, real-time clock modules, and robots. Seiko Epson also initiated an effort to eliminate lead from its soldering process of electronic components to circuit boards. In fiscal 1999, Seiko Epson used 12 tons of lead worldwide in these processes; by 2002, they had eliminated lead entirely.

Seiko Epson also initiated a program of green purchasing, both in production parts and materials and, beginning in 1992, in general purchases of office machinery, stationery and writing materials, and utensils. Seiko Epson sought to make sure that its approximately 3,000 suppliers did not use banned chemicals, and that they either already had achieved ISO 14001 certification or adopted its required practices.

With regard to waste, Seiko Epson established a goal of “zero emissions,” meaning the recycling of 100 percent of wastes generated by business activities, both in industrial or production areas, and in general business, such as mixed paper, paper drink containers, and garbage from employee cafeterias.

With regard to recycling and reuse, the company built a system in Japan to actively promote recycling of its finished products as well as its consumable products. It reduced waste by making its products smaller, resource-efficient, and easy to upgrade. By making products easier to disassemble, reducing disassembly time, and labeling the materials used, it improved the rate of reuse and recycling. In Japan, Seiko Epson began recovering and recycling laser-printer toner cartridges in fiscal 1995 and cartridges from inkjet printers in fiscal 1999. Recovery and recycling of other used equipment began on a test basis in Japan in fiscal 1999.

Remaining Challenges

By 2001, there were only two areas where Seiko Epson had failed to reach its environmental objectives. First, it was not able to reduce total energy consumption. Although the proportion of energy used to total sales did decrease, the failure to reduce total consumption reflected increased levels of production. Further efforts were needed in device manufacturing (semiconductors, LCDs, crystals), which accounted for a majority of energy consumption. These business areas required a great deal of energy because of high-spec clean rooms and complicated production and system cleaning processes. Secondly, the company took longer than expected to fully develop and implement an environmental auditing system.

Epson (China) Co., Ltd. Environmental Initiatives

With the support of Epson (China) Co., Ltd. (set up in 1998 as the wholly-owned China area headquarters), each company in China developed its own environmental programs in line with Seiko Epson's environmental policies.

Vincent Leung joined Epson (China) in Beijing in 1999 as the manager of its corporate planning division after working as general manager of a 25-person Epson Hong Kong Ltd. facility in Shenzhen. One of the major challenges he faced was bringing Epson (China) some of the same environmental success that the parent company had achieved in Japan.

Motivation

As Epson began implementing these changes, Leung cited several key issues:

“People ask us why Epson (China) does all these things to reduce our impact on the environment...particularly when we don't have to. I think there are four reasons. First, our corporate office has already made a major commitment to protecting the environment. They were the first to realize that even if you are doing what is required by law you are still polluting. They feel that they have a social responsibility to taking these actions, and they are our parent company.”

Secondly, Leung noted that, although Epson (China) had made the same environmental commitment as Seiko Epson in Japan, there were vast differences in China's environmental problems as compared to Japan's. Beijing, for example, suffered from frequent sandstorms and water shortages. Ningxia Province near Mongolia was a source of the sandstorms: over 60 percent of Ningxia had become desert wasteland, which was constantly deteriorating and moving closer to Beijing. Japan, noting China's individual environmental problems, had already contributed to a number of environmental projects there, in partnership with the region and with the Chinese government. For instance, there was a China/Japan Friendship Forest. Already 60 million Japanese yen (\$500,000) had been invested to plant 15 hectares of trees. Epson was considering contributing about 4 million RMB (\$500,000), which, together with China's contribution, would help them expand the forest over the next 5 years by 40 hectares. Leung stated, “We think we have to practice what we say...the tree plantings are a concrete example of our actions. Our 14001 certification is another example of our actions.”

A third reason for the company's activities was that they wanted to be proactive to avoid unknown future risks. Epson (China) had launched a comprehensive risk management project that included the environment. All of the typical functions—manufacturing, sales, distribution, and R&D—interacted with the environment. Along with China's robust economic growth in the 1990s, international speculation increased as to whether China would also improve its performance in the environmental realm. Between 1998 and 2001, both the municipal government of Beijing and the Chinese local, provincial, and national governments began introducing—and enforcing—measures designed to improve energy efficiency, reduce emissions and pollution, implement clean energy, and otherwise benefit the environment. Rather than eventually facing fines or remediation work, Epson wanted to focus on preventing problems before they occurred. A few years before, Seiko Japan had contracted with a third party to dispose of solid waste. Leung remembered that situation very clearly,

“That company, without our knowing it, dumped the waste in the wrong area. When the waste was discovered by the community, it had Epson packaging in it. That just shows us that we have to be vigilant everywhere...have closer supervision, better contracts, better reporting systems. We don’t want to be blamed by society for violating the environment. Instead, we want to gain the trust of our customers and the public at large.”

Fourth, Leung acknowledged that Epson (China) could get a strategic advantage if its environmental innovations helped its products become more efficient and more effective. With an emphasis on continuous improvement, Epson (China) looked forward to making IT devices more and more efficient, consuming less energy, and using fewer batteries.

Epson (China) Co., Ltd. and ISO 14001

One of Leung’s first assignments was to obtain ISO 14001 certification for the China corporate office. Of the first 253 locations in China to be ISO 14001 certified, 53 were facilities of Japanese parent corporations, including Epson (China), Panasonic, Canon, Sanyo, Sony, Sharp, and Toshiba. Seven were facilities of European companies, including ABB, Volkswagen, and Philips. Another seven were facilities of U.S. companies, including Lucent, DuPont and General Motors. The rest were Chinese companies from a wide range of industries, including electronics, construction, telecommunications, utilities, chemicals, steel and iron, mining, textiles, and pharmaceuticals.

The process Leung followed reflected on his many years of experience as a human resources manager in other companies before he joined Epson:

“First we researched China’s environmental conditions, legal requirements, and our own business activities and their environmental impacts. We decided that we needed to reduce the consumption of electricity, to reduce the consumption of paper, to classify solid waste and dispose of it differently, and to replace all the fire extinguishers.

Obviously we needed to get as much support as possible. Personnel visited between Beijing and Japan. Department managers were briefed about the program during management meetings. A project committee was formed, with team members from different departments, and we developed a budget and a timetable for certification. We hired an outside consultant, and we also teamed up with three other Epson office facilities (one software, one research and development, and one logistics) who were also going through the certification process.”

Epson (China)’s president held an ISO 14001 kickoff ceremony at the end of 1999 and shortly thereafter approved the proposed environmental policy. It was announced internally to all Epson (China) employees, the parent company Seiko Epson, and also to related sister companies. In addition, all employees carried a small card with the environmental policy written on it, and the policy was very apparent on the website (Exhibit 1).

The environmental management team members quickly started working. They received a special training course, and then set about developing objectives and targets in specific areas. They also developed the first edition of the company's ISO 14001 Environmental Management System Handbook.

Employee Education and Involvement

From the start, Leung found that Epson (China) employees supported the corporate environmental policy but needed extensive education and motivation to understand the business logic underlying it and to incorporate environmental responsibility into their own activities. China had strong environmental laws, and few Chinese saw any business reason to go beyond compliance. Consequently, Leung and his team had to work hard to get all employees to participate in improving office operations. They organized many activities such as employee suggestion competitions, talks, training, legal questions and answers, internal email, environmental news-clips, and international environmental day campaigns.

Leung explained how energy savings were accomplished:

“When it is lunch-time most employees go out of the office to eat. But they don't switch off the lights. Maybe there were only one or two people at their desks, working or reading the newspaper. So we made a policy that the lights must be switched off. At first, there was a lot of resistance. We would go switch off the lights, and then they would switch them back on.

Also, some of the employees would forget to switch off their PCs or printers. Again, we had to go around to check and remind people.”

Leung tried to educate people to change their behaviors by putting on training meetings and sending out e-mails. At first, when people received environmental e-mails, they would simply delete them without reading them. Gradually, the receptivity to e-mails improved. In fact, the IT department reported that more and more e-mails with topics on the environment were opened and read.

Despite the growing interest in this area, Leung was realistic in realizing that people were busy with their regular jobs. Often, employees signed up for training, but suddenly had to be out of the office on business and missed the training meetings. Leung began to consider using e-learning instead of the traditional in-house method in order to reach more employees.

Leung identified various other ways in which employees were positively participating in the program. For instance, in 1999, Epson (China) held a suggestion contest. Despite only having seven participating responses, Leung judged the contest to be a success. To reward the efforts of those thinking about environmental issues, all seven participants received a prize at the annual staff meeting. Epson (China) even ended up implementing several of the suggestions, such as one involving tree planting. Over 100 Epson (China) employees, including the chairman, president, and general manager, took a trip to the Elk Garden to plant trees.

Leung was also proud of the environment corner in the Epson (China) office. This special spot was used to post news and messages about the environment. Leung had the impression that people frequently stopped by to read the messages.

Office Improvements

Along with employee education, Leung began working on the office operations themselves. All fire extinguishers that used CFCs were replaced. Separate solid waste collection systems were established for newspapers, magazines, dry batteries, waste papers, etc. Contracts were made with companies to collect the separated solid waste for recycling. For example, used paper was sent to Beijing No.7 Paper Mill for recycling, which gave Epson (China) free paper in exchange.

Paper usage was reduced by 20 percent, primarily through increased reuse of paper and by double-sided copying. Leung identified some problems in implementing this policy. He noted that at first the employees disliked using paper that had already been used on one side. He changed one of the company's two copiers so that the only paper supplied was already used on one side. To ensure that employees were actually using both sides, Leung used the financial department to monitor progress. The financial department checked their received paperwork (such as applications for reimbursement) to see whether people used both sides of paper.

Policies on paper usage began from the source. All paper purchased contained recycled fiber, even name cards. Recycled paper was less expensive than virgin-fiber paper.

Epson (China) Co. Ltd. used a data management system in order to identify the savings in environmental impacts. Every month data was collected, such as how many kilowatt-hours of electricity were used, how much paper was purchased, and what kind and amount of waste was disposed of.

Leung acknowledged that not all the best practices used in Japan could be implemented in China. For example, Seiko Epson turned off the air conditioning every Friday in the summer in order to save energy. An added benefit was that on Fridays, every employee could dress informally. However, in China, unlike in Japan, it was impossible to open the windows.

Still, not all the employees were positive about the steps taken in the office to protect the environment. A few employees resisted participating in the environmental program even after a long period of education. In response to this, Leung considered making environmental performance part of the incentive compensation plan. For good environmental thinking, employees could be rewarded with bonuses as high as two and a half months salary. Leung recommended that from five to ten percent of the bonus calculation be awarded for the individual's environmental responsibility and activities. However, Epson (China)'s human resources department had not yet accepted and implemented Leung's idea.

ISO 14001 Certification & Continuing Progress

Epson (China) received ISO 14001 certification in September 2000, at a cost of over 100,000 RMB (about \$13,000). In fiscal 2000, Leung felt that the Beijing office had accomplished a number of its objectives. For example, the office had achieved a 4.2 percent reduction in power consumption compared with the previous year, while increasing employment by more than 20 percent. Energy efficiency saved 5,000 kilowatt-hours, with a cost savings of 15,000 RMB (about \$1,875).

In the year following certification, Epson (China) was able to achieve some of the goals it had set for 2001 with regard to the consumption of energy and paper, the disposal of waste, and the replacement of 1211-type fire extinguishers in all the branches. Compared with the previous year, electricity

consumption during 2001 dropped by 11 percent and consumption of paper by 18 percent. In addition, collection systems for solid waste like bottles, cans, magazines, and newspapers had been initiated.

Remaining Challenges

The most pressing problem for Epson (China) was to get each of the office branches operating at the same standard as the head office. Unfortunately, the branches outside of Beijing and Shanghai did not have professional and trained environmental internal auditors. In the Beijing office, there were ten employees who were certified as internal environmental officers. Leung would have liked to have one person in each office certified and have a seminar for them so that they could understand Seiko Epson, and thus Epson (China)'s objectives. Only then could they begin to benchmark for each other.

Even though, at that time, the branch offices had the same objectives and procedures as Beijing, they often complained that they weren't capable of implementing the programs, either due to staffing or lack of expertise. Leung stated that two locations—Xi'an and Shanghai—were very diligent about keeping in tune with the head office. But Chengdu and Guangzhou still had problems. The managers needed to manage their marketing activities, so they would leave the environmental program to the financial and administrative departments, who were also "too busy" to take care of the environmental issues. Leung reacted by proposing to include environmental performance in the employee's compensation packages. In the same vein, Leung also began encouraging top management—the Epson (China) chairman, president, and general manager—to talk more about the environment when they traveled to branch offices. Leung reflected, "Last year, Hideaki Yasukawa, then the president and now the chairman of Seiko Epson, visited China...he not only talked about sales performance, but he also mentioned the environment. That made a big impression!"

Cartridge Take-back and Recycling Programs

Another of Leung's key projects in promoting environmentally friendly business practices emulated a success story originally achieved by Epson's Japanese parent company. Epson (China) sought to introduce a cartridge take-back and recycling system in China, much like the one that Seiko Epson had introduced in Japan. In Japan, Seiko Epson began to recycle laser printer toner cartridges in 1995, expanding this to include cartridges from inkjet printers in 1999. The primary environmental concerns were the plastic and other solid waste. The main purpose in starting the program was to save resources by recycling and reusing cartridges. A second objective was to provide options for consumers who wanted to recycle their used cartridges.

In Japan, Seiko Epson placed over 2000 collection boxes in stores of retailers who sold cartridges. Seiko Epson promoted the program through advertising, point-of-sale promotion, on their homepage, and with leaflets. In Japan, there was no material reward offered for participation; people returned the cartridges and toner in order to benefit the environment. Epson picked up the returned cartridges and shipped them to one central recycling location. There, retired and other part-time employees broke the cartridges apart and washed the insides to dilute and recapture inks for further processing in a water treatment plant. The cartridges were broken down into component parts, including cartridge case, cartridge lid, filter, sponge, ink, yellow label, inner package, plastic film, spring, spring seal, module board, etc. The parts that could be reused were checked for wear and defects and then reused. Plastics and metals that could not be

reused or remanufactured were recycled. Parts that could not be recycled were used as blast furnace reducing agents.

Epson had a 29 percent share of the inkjet printer market in China, which represented the largest market share. They had slightly over a 50 percent share of the inkjet printer market in Japan. It was estimated that three million Epson cartridges were sold each year in China. Leung did not know what other cartridge companies had take-back programs in China.

In November and December of 2000, Epson (China) had experimented with a laser-printer toner cartridge take-back system of their own, implementing a two-month trial in most of the authorized shops in five major cities in China. Consumers were offered 10 RMB if they returned a cartridge. Leung was disappointed in the results. Only 40 cartridges were returned in two months in all five cities. The marketing staff was also disappointed. They had hoped to get some promotional value out of the program.

Leung proposed restarting the take-back system for China in June of 2001 for all of their consumable products, including cartridges, ribbons, and laser printer toners. His proposal called for the program to be implemented in four cities, with 20 collection boxes placed in computer malls. The cities would be Beijing, Shanghai, Guangzhou, and Shenzhen. For this particular project, the budget was not Leung's—it was a part of the Marketing and Sales department's budget. Leung's department had to work closely with Marketing and Sales, which had a 100,000 RMB (about \$12,000) budget.

The program would need strong operational support from Marketing and Sales, both in terms of recommending individual stores as well as promoting the program. Marketing and Sales, however, while supportive, wanted to start with a smaller program in three cities and with 14 boxes. Recycling collection boxes had to be designed and manufactured, and locations had to be secured. Arrangements needed to be made to collect and transport the collected materials, and agreements had to be concluded regarding the recycling factory, authorized by the State Environmental Protection Agency (SEPA).

When Leung began implementation of the limited program, he visited each shop that Marketing and Sales recommended. All were privately owned shops in computer malls—shops that only sold Epson products. He met with individuals in each location in order to emphasize the importance of the project to Epson (China). Each store would have to keep the collection box near the cash register, and they would have to keep the box clean.

Following the launch of the limited take-back program, Marketing and Sales became enthusiastic about the potential public benefits of this voluntary program and wanted to expand the project to 99 locations, all by December 1, 2001. In November, each of the 99 locations had to nominate one “responsible person” who would be called a “green ambassador.” They were to be responsible for taking care of the box, and would also call when the box was full and had to be picked up. Epson (China) employees held a design competition for the collection boxes, giving the Chinese employees ownership for the program. Promotion included posters, press releases, homepage announcements, and announcements in the corners of each Epson print advertisement. The goal for the program was established at one percent of the consumable products.

Progress and Remaining Challenges

By the end of January 2002, boxes had been placed in 99 locations, and 2,500 cartridges had been picked up. One problem that had emerged with the program involved the treatment of the returned cartridges. In Japan, the cartridges were dismantled and the parts and materials were reused in other products. In China, however, there was not yet enough volume to treat the parts for reuse. The recycling center recommended by SEPA only collected the cartridges and other consumables, compressed them, and then buried them.

Another problem had to do with the appearance of the collection boxes, which proved difficult to keep clean.

Finally, it was decided that all the authorized repair centers had to be involved. This would likely involve another 150 sites, with a total of 300 sites by the end of the program.

In spring 2002, both Leung's office and Marketing and Sales were trying to think of ways to increase the collection rate, both by increasing box locations, and by getting more materials deposited in each box. They were considering paying rewards to consumers, but couldn't decide how much would be rebated or how the program would work. They also considered giving small gifts to consumers. The postal service did not seem to be a reliable source of returns because postage-paid returns did not exist in China. Department stores and supermarkets like PriceSmart might be used.

Leung was also concerned about copier cartridges that were being used in offices. Epson (China) had designed a program beginning in July 2001 to take back the big cartridges used in professional, high-volume copiers. Distributors collected the used cartridges when they delivered new cartridges to offices with large copiers.

Leung wanted to continue to upgrade the company's environmental management system. He wondered what else he might do, both to increase his group's adoption of good management practices, and to improve implementation. His attitude toward the environment was illustrated in a presentation he gave during an environmental forum held in April of 2001:

“Environmental management of an enterprise is to harmonize its activities, products and services with the environment, with sustainable development as the ultimate goal. Any organization should treat this as a long-term effort, involving all the employees, with achievement based on facts and figures and not mere promises. We should all contribute to relieving Mother Earth's burden and to benefit mankind for generations to come.”

ISBN 1-56973-512-3



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