Delta and the Environment

"Care for the Environment, Energy-saving and Our Green Earth" is a major theme of Delta's corporate social responsibility. This phrase sums up just how important the issue of environmental protection is to everyone at Delta. In the following sections we provide a brief outline of our environmental management system and Green Map efforts. We also present statistics on our resource consumption/procurement, greenhouse gas (GHG) emissions and waste generation in 2006. In addition we offer a graphical overview of Delta's environmental performance that shows trends over the past three years in the intensity of Delta's electricity consumption, water consumption and GHG emissions and provides a basis for future improvements.

Delta's Environmental Management System

"Develop environmentally-friendly, energy-saving products and implement sound practices to reduce our impact on the environment" is Delta's commitment. Our factories in Taiwan, Dongguan, Wujiang, Thailand and Delhi (India) have all received ISO 14001 environmental management system certificates and are now taking a systematic approach to managing environmental issues.

With the increasing international attention to global warming, product design and substances used, we are closely monitoring the latest developments in relevant statutory and customer requirements (such as Taiwan's GHG Reduction Act, the EU's "Eco-Design Requirements for Energy Using Products (EUP)", and halogen free requirements), communicating with our customers, suppliers and employees at appropriate points in time, and providing necessary training. The goal of continual improvement is now being realized through the implementation of the PDCA (Plan, Do, Check, Act) cycle that forms the core of ISO management systems.

Green Map and Training

In 2006 we published the world's first company-wide "Green Map [3] " project that introduces sites, facilities, and accomplishments in terms of environmental friendliness, energy conservation and ecological value. Covering Delta's 13 locations around the world, it was a pioneering effort in corporate environmental education.

Delta initiated the world's first company-wide Green Map project.

Delta's employees are enthusiastic about producing green maps.

3. For details about Green Maps please see http://www.delta.com.tw/csr/greenmap.asp

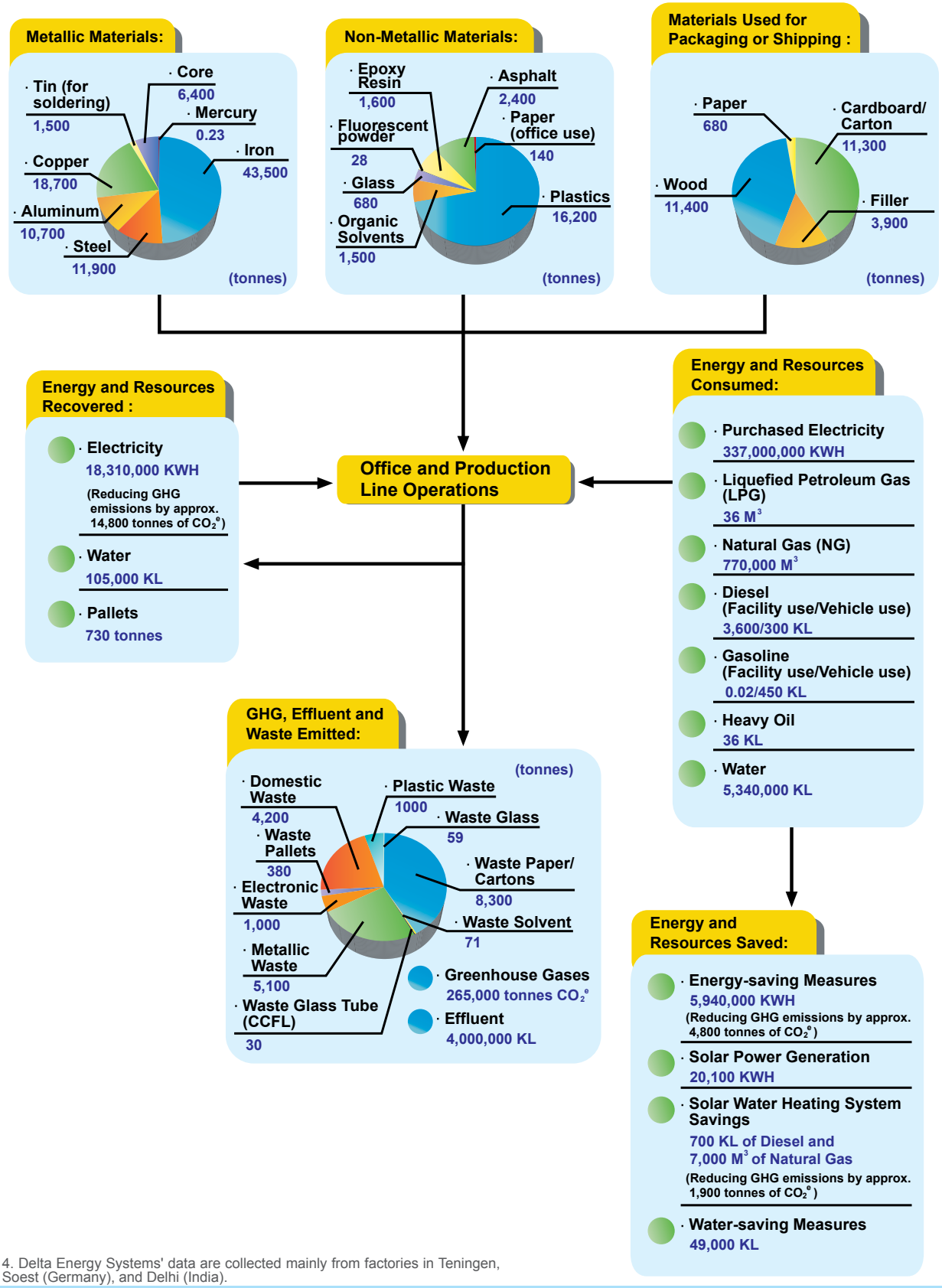
The Human Resources Department has designed an interactive digital learning program called ”Come Close and See Delta’s Green Maps” based on our Green Map project. Delivered through the e-Learning platform on our intranet along with matching training CD, employees can see the process and results from the factories’ participation in the Green Map project. This shows them how to design a Green Map and even to manage a more environmentally-friendly life. The goal is to give every Delta employee around the world an understanding of the Green Map’s ideals and to instill in every employee the values of environmental protection and energy conservation. This will help promote the Green Living concept to our employees' families and communities.

Through Delta’s e-Learning system, employees can learn about the spirit and content of Delta’s green maps.

Examples of Delta’s green maps and employee-created icons.

Primary Materials and Resources Flow in 2006

In 2006, the main materials used in Delta's manufacturing and operations, energy/resource conservation and reuse results, as well as the volume of waste generated [4] were as shown in the diagram below. These are explained in greater detail further on.



4. Delta Energy Systems' data are collected mainly from factories in Teningen, Soest (Germany), and Delhi (India).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Energy and Resource Inputs

Energy and resource consumption statistics give us an understanding of Delta's eco footprint and further, our utilization efficiency. The energy and resources used in Delta's production and operations are divided into four categories: Metallic Materials, Non-metallic Materials, Materials for Packaging or Shipping Purposes, as well as Energy and Water. The statistics for 2006 are as follows [5]:

I. Metallic Materials

1. Iron: Mainly for cases and screws. Approximately 43,500 tonnes were purchased in 2006.

2. Steel: Mainly for Power Factor Correction units (PFC), transformers and fan blades. Approximately 11,900 tonnes were purchased in 2006.

3. Aluminum: Mainly for cases and heat sinks. Approximately 10,700 tonnes were purchased in 2006.

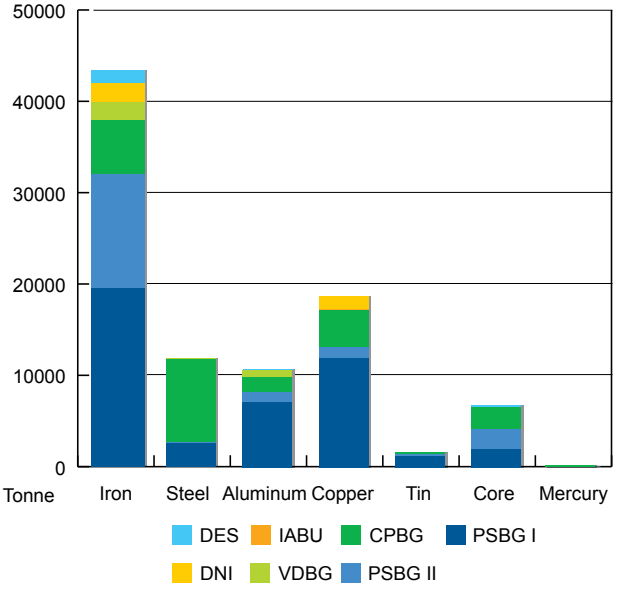
4. Copper: Mainly for wires, printed wiring boards and cables. Approximately 18,700 tonnes were purchased in 2006.

5. Tin: Mainly for solder wires, bars and pastes. Approximately 1,500 tonnes were purchased in 2006.

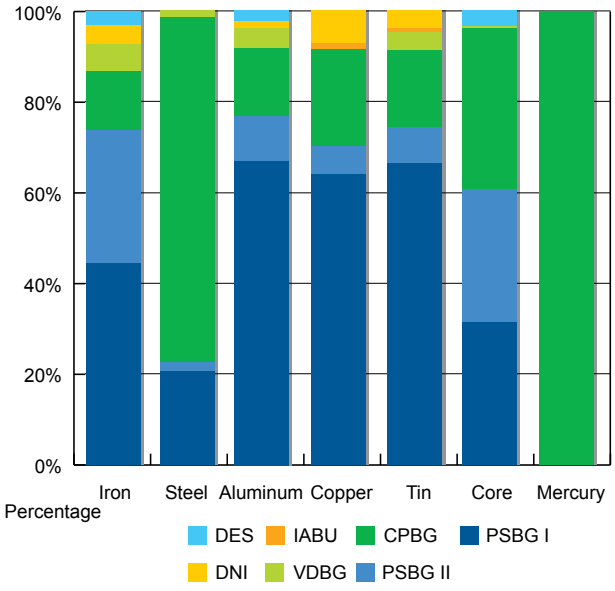
6. Core: Magnetic components made from a mixture of iron, manganese, zinc and nickel, used in electronic products. Approximately 6,400 tonnes were purchased in 2006.

7. Mercury: Used in Cold Cathode Fluorescent Lamp (CCFL) tubes. Approximately 0.23 tonnes were used in 2006.

Amount of Purchased/ Consumed Metallic Materials



Proportion of Purchased/ Consumed Metallic Materials



5. Mercury consumption was estimated based on the production volume of CCFL in 2006. Consumption of metallic, non-metallic and materials for packaging/shipping purposes was estimated by purchase amount in 2006.

II. Non-Metallic Materials

1. Plastics: Mainly for cases, insulators and sockets. Approximately 16,200 tonnes were purchased in 2006.

2. Organic Solvents: Including thinners, cleaners and flux. Approximately 1,500 tonnes were purchased in 2006.

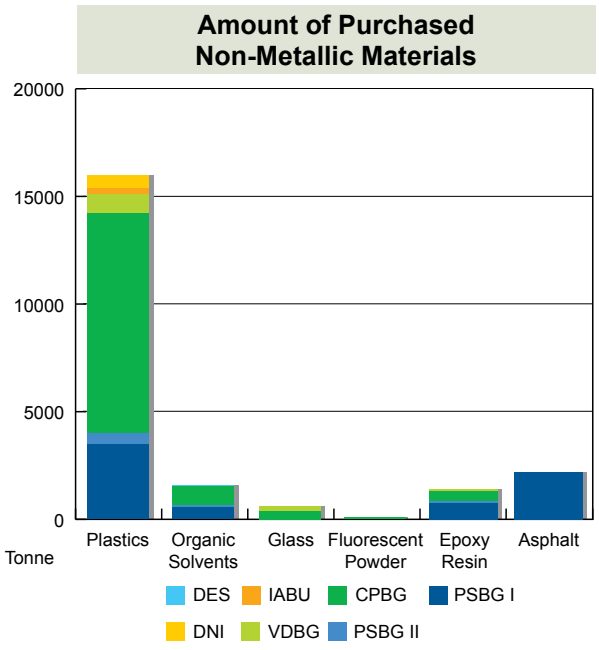
3. Glass: Mainly for visual display products and CCFL tubes. Approximately 680 tonnes were purchased in 2006.

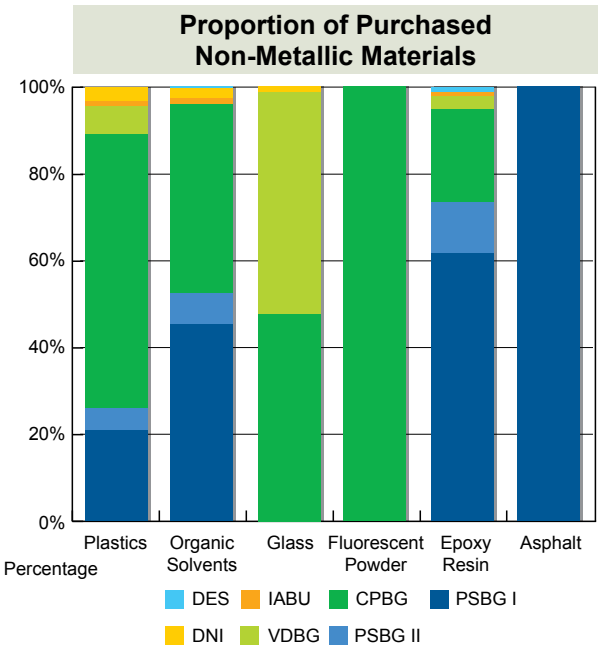
4. Fluorescent powder: Used in Cold Cathode Fluorescent Lamp (CCFL) tubes. Approximately 28 tonnes were purchased in 2006.

5. Epoxy Resin: Mainly used for adhesion and insulation in electronic parts. Approximately 1,600 tonnes were purchased in 2006.

6. Asphalt: Used as filler in electronic ballasts. Approximately 2,400 tonnes were purchased in 2006.

7. Office Paper: Mainly photocopying or printing paper. Approximately 140 tonnes were purchased in 2006.





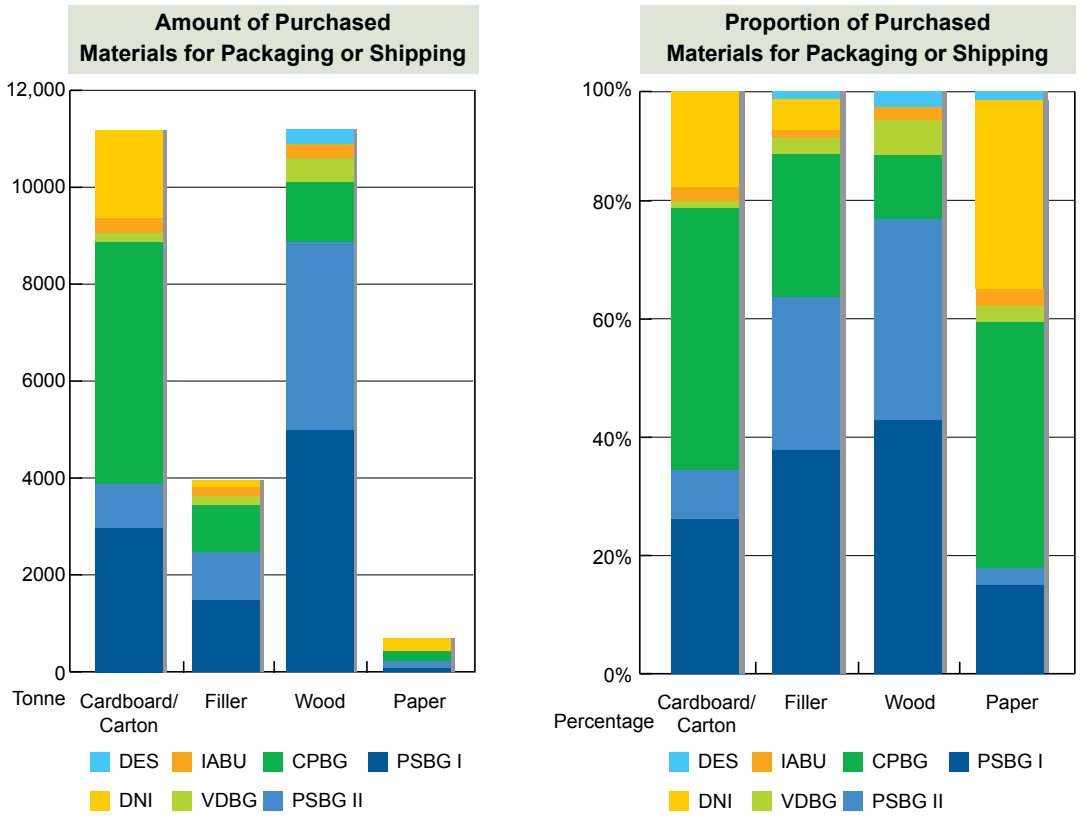
III. Materials Used for Packaging or Shipping

1. Cardboard/Carton: Mainly used for packaging when shipping products. Approximately 11,300 tonnes were purchased in 2006.

2. Filler: Mainly extruded polyethylene foam (EPE foam) and polyethylene foam (PE foam) used as buffer materials during product shipping. Approximately 3,900 tonnes were purchased in 2006.

3. Wood: Used for pallets and packaging when shipping products. Approximately 11,400 tonnes were purchased in 2006.

4. Paper: Used for product user manuals etc. Approximately 680 tonnes were purchased in 2006.



IV. Energy and Water

Energy used by Delta offices and factories come from purchased electricity and a variety of fossil fuels, depending on availability and needs [6]. The relevant statistics for 2006 are as follows:

1. Purchased Electricity:

In 2006 Delta purchased approximately 337 million KWH of electricity from external sources. The three main factories at Dongguan, Wujiang and Thailand accounted for about 80% of total electricity consumption.

6. Fuel used by leased vehicles was not included in calculations. Fuel used by employee cafeterias (provided by catering contractors) was not counted either.

2. Liquefied Petroleum Gas (LPG)

In 2006 Delta's Dongguan and Wujiang factories consumed approximately 36M^3 of LPG in total.

3. Natural Gas (NG)

In 2006 Delta consumed around 770,000M^3 of NG in total with the Wujiang factory accounting for nearly 60% of all NG use.

4. Diesel

In 2006 Delta's factory facilities (e.g. power generators) consumed around 3,600 KL of diesel, and Dongguan, Wujiang factories accounted for nearly 80% of the consumption. Around 300KL of diesel were used by Delta owned vehicles.

5. Gasoline

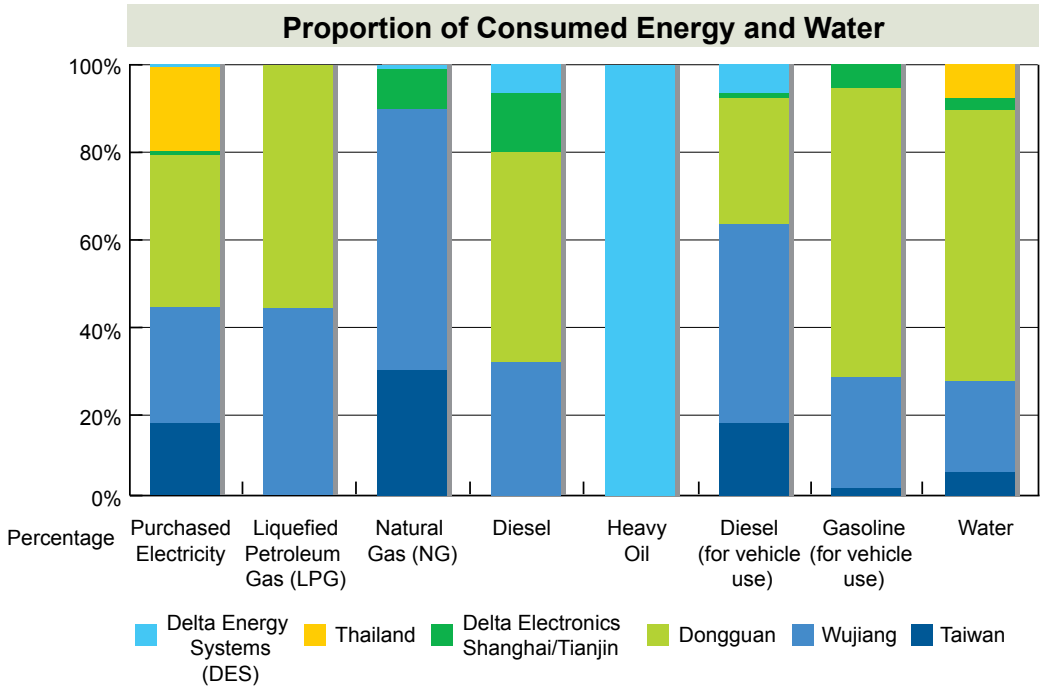
In 2006 Delta's factory facilities (e.g. power generators) consumed an insignificant amount of gasoline while around 450KL were used by Delta owned vehicles.

6. Heavy Oil

In 2006 Delta's factory facilities used approximately 36KL of heavy oil with most of it used at the Teningen factory in Germany.

7. Water

In 2006 Delta's total water consumption was around 5,340,000KL.



Energy Conservation, Recovery and Effects of Solar Power Application

In addition to the energy/water conservation and resource recovery programs at all Delta factories, the factories at Dongguan (China) and Taoyuan II (Taiwan) use solar water heating systems for their employee dormitories. Solar panels are installed at our Taipei head office, and at our factories in Tainan (Taiwan) and Teningen (Germany). The results from energy/resources conservation, recovery, and solar power applications in 2006 are as follows [7]:

1. Air-Conditioning Upgrades

Examples include the replacement of old equipment, and the addition of timers or converters. These measures are estimated to save around 1,300,000KWH of electricity a year.

2. Lighting Upgrades

Examples include the replacement of old lighting modules, the use of electronic ballasts, or the addition of timers and sensors. These measures are estimated to save around 3,150,000KWH of electricity a year.

Electronic Ballasts

3. Equipment Insulation

Having appropriate insulation not only reduces the ambient temperature around the machinery and makes the work environment more comfortable, but it also reduces the heat emitted, resulting in saving electricity used for air-conditioning. Equipment insulation is estimated to save around 900,000KWH of electricity a year.

4. Other Electricity-saving Measures

The addition of inverters to elevators and compressors is estimated to save around 590,000KWH of electricity a year.

5. Electricity Recovery

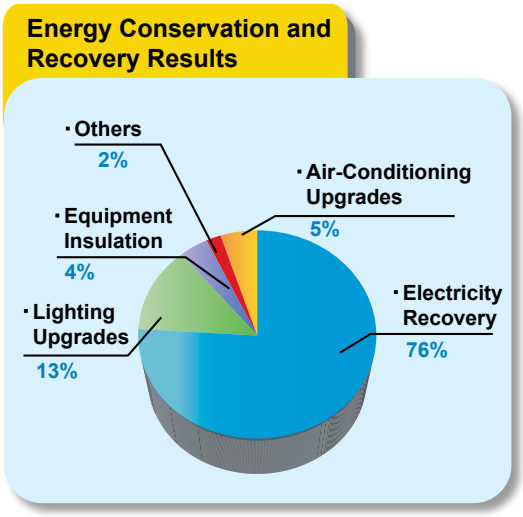
Delta saved an estimated 18,310,000KWH of electricity in 2006 by recovering over 70% of the electricity expended in the product burn-in process. The total benefit from electricity conservation and recovery measures implemented in 2006 was therefore around 24,250,000KWH, or 7.2% of the 337 million KWH actually consumed in 2006.

Energy recovery system installed at one of Delta's factories.

6. Water conservation measures

In 2006 Delta saved about 154,000 KL of water through water conservation and recovery measures, or around 2.9% of the 5,340,000 KL actually used. The amount recovered was approximately 105,000 KL. These measures included recovery of rainwater and condensation as well as water-saving faucets and toilets.

7. Figures for pallet recovery, electricity recovery, solar water heating system and solar power generation are all based on actual results for 2006. Figures for other energy/water saving or water recovery measures are projections for one year.



The light well at the underground parking lot at Tainan Plant is not only designed for lighting and ventilation, but is also used for rainfall recovery.

Recycle bins made of recovered wooden pallets.

7. Wooden pallet recovery and reuse

In 2006 Delta factories recovered 730 tonnes of wooden pallets, which were converted into wooden products for reuse.

8. Solar power

In 2006, solar water heating systems at the Dongguan (China) and Taoyuan II (Taiwan) factories saved around 700KL in diesel and 7000M^3 of natural gas. Solar panels installed at the Taipei head office, and the Tainan (Taiwan) and Teningen factories (Germany) generated 20,100KWH of power during the year.

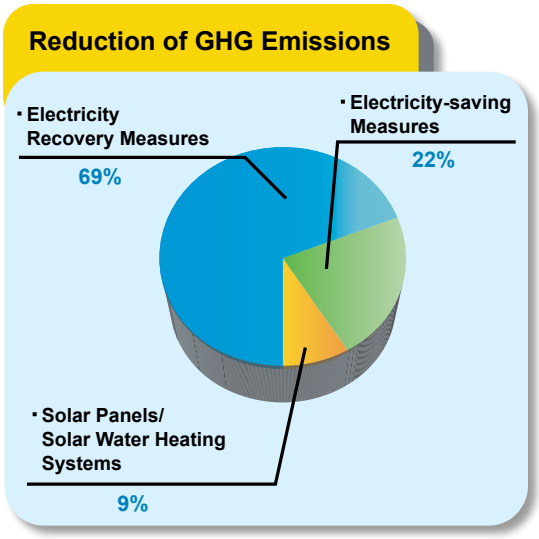
Through energy saving and recovery measures as well as the use of solar panels and solar water heating systems, we reduced our GHG emissions by around 21,500 tonnes CO_2^e (carbon dioxide equivalent) a year.

Solar panels installed on the roof of the Tainan factory.

Solar water heating system installed at the employee dorm of the Dongguan factory.

Greenhouse Gas Emissions, Effluent and Wastes

In 2006 the main types of waste generated by Delta's offices and production lines included greenhouse gases (GHG), effluent, and solid wastes.



1. Greenhouse Gases

The GHGs specified by the Kyoto Protocol are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6). Carbon dioxide emissions associated with externally purchased electricity are the main source of GHG emissions from Delta Group. Our current GHG calculations only include externally purchased electricity and fossil fuels used by Delta, giving a total of 265,000 tonnes CO_2^e for 2006 [8, 9].

2. Effluent

In 2006 Delta's total effluent volume was around 4,000,000 KL with most being domestic sewage. The effluent was discharged into the sewer system or industrial park treatment plants in accordance with regulations.

3. Domestic Waste

In 2006 Delta generated around 4,200 tonnes of domestic waste, which was disposed by outside contractors through landfilling or incineration.

4. Electronic Waste

Electronic waste includes scrap electronic materials, waste wires, cables and printed circuit boards (PCBs), etc. Disposal was handled by outside contractors and approximately 1,000 tonnes were generated in 2006.

5. Metallic Waste

Metallic waste includes waste silicon steel, scrap iron, scrap aluminum, mixed metal, solder residues, etc. Disposal was handled by outside contractors. Approximately 5,100 tonnes were generated in 2006.

6. Plastic Waste

Plastic waste includes scrap plastic reels, cases, etc. Disposal was handled by outside contractors. Approximately 1,000 tonnes were generated in 2006.

7. Waste Glass Tube (CCFL tube) and Waste Glass

Waste glass tubes containing fluorescent powder or mercury are generated from CCFL

8. To calculate GHG emissions associated with electricity purchased in Taiwan, the 2005 emission factor (0.62 kg CO_2^e / KWH) suggested by the Bureau of Energy, Ministry of Economic Affairs, was adopted. For factory sites outside Taiwan, the International Energy Agency's 2004 emission factors, cited by GHG Protocol's calculating tools, were used.
9. To calculate GHG emissions from fossil fuels, we used the energy industry's GHG emission factors published by the Energy Industry and Greenhouse Gas Information Center (operated by the Bureau of Energy, Ministry of Economic Affairs), based on data released by IPCC in 2006.

production process at the Taoyuan II (Taiwan) and Wujiang (China) factories. Disposal was handled by outside contractors. Approximately 30 tonnes were generated in 2006. Waste glass refers to glass tubes without fluorescent powder or mercury. Approximately 59 tonnes were generated in 2006 with disposal handled by outside contractors.

8. Waste Solvents

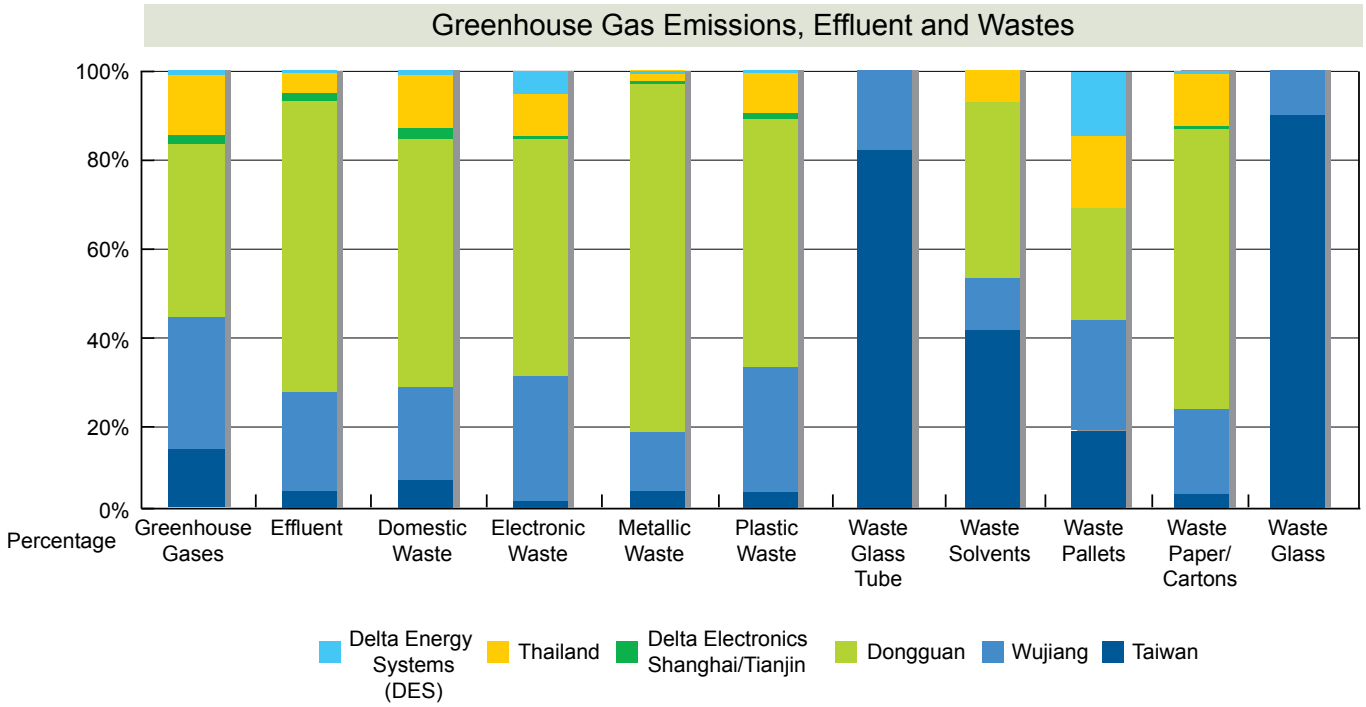
In 2006 Delta generated around 71 tonnes of waste solvents. Disposal was handled by outside contractors.

9. Waste Pallets

In 2006 Delta generated around 380 tonnes of waste pallets. Disposal was handled by outside contractors.

10. Waste Paper/Cartons

In 2006 Delta generated around 8,300 tonnes of waste paper and cartons. Disposal was handled by outside contractors.

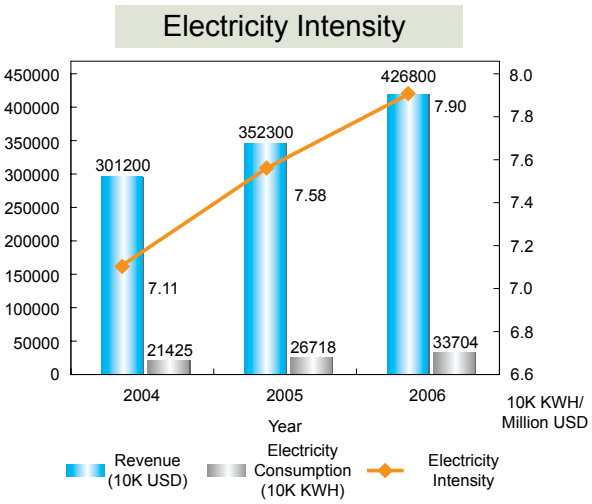


Trends in Electricity/Water Consumption, Greenhouse Gas Emissions and Intensity

As Delta has grown over the years our electricity and water consumption have grown as well. The question is whether our use of water and electricity has become more efficient over time. We used Delta Group's revenues as a parameter to calculate electricity/water consumption and GHG emissions generated per millions of USD in production output between 2004 and 2006. The results of these calculations are provided below:

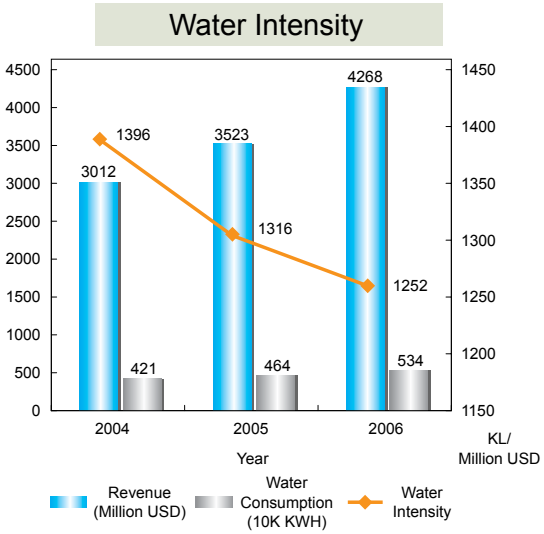
1. Electricity Intensity

Delta's electricity consumption and intensity trends between 2004 and 2006 are shown in the graph. Electricity consumption per million USD of production grew from 71,100KWH in 2004 to 79,000KWH in 2006, with the increase between 2004 and 2005 being higher than the increase between 2005 and 2006. This indicates that our electricity consumption has outgrown our revenues so we must pay attention to how efficiently we use electricity.



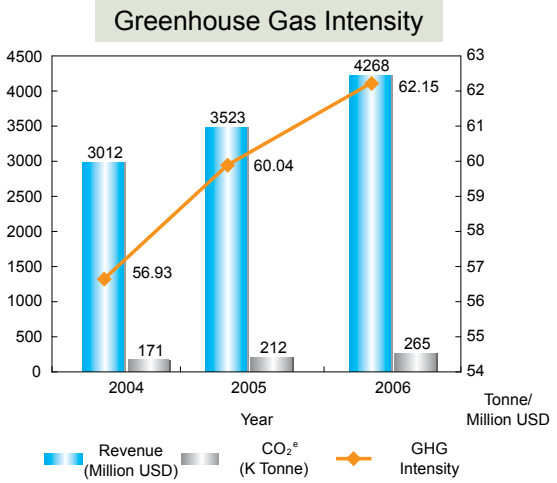
2. Water Intensity

Delta's water consumption and intensity between 2004 and 2006 are shown in the graph. Water consumed per million USD of production decreased from 1396KL in 2004 to 1252KL in 2006. This indicates that our revenue has outgrown our water consumption over the three years, representing around a 10% improvement in our water efficiency.



3. Greenhouse Gas Intensity

Delta's GHG emissions and intensity trends are shown in the graph. The amount of GHGs emitted per million USD of production output increased from 56.93 tonnes of CO_2^e in 2004 to 62.15 tonnes of CO_2^e, with the increase between 2004 and 2005 higher than the increase between 2005 and 2006. This corresponds to the previously stated electricity consumption and intensity trends and tells us that the amount of our GHG emissions is increasing at a faster rate than our revenues. This is a reminder that more effort is required.



Environmental Performance of Products

Delta's Power System Business Group I (PSBG I) accounts for more than 40% of Delta's revenues. In 2006 it shipped over 100 million power supplies. If we consider only the PSBG I products used in notebook computers and assume 8 hours[10] usage every day during the year, then it is easy to calculate that over 5 billion KWH is consumed, which is a staggering amount of power. As Delta continues to increase the efficiency of our power supplies even an improvement of 1% amounts to substantial energy savings. With improved efficiency of products from Delta's other business divisions, greater energy savings and decreases in GHG emissions can be achieved. The environmental performance of several eco-friendly products shipped by Delta in 2006 is described below:

1. ADP-60 NH B Adapter for Notebook Computers (U.S. Energy Star Version 1.1 Qualified)

This product has a power output of 60W and an average efficiency of 87.9% [11]. For comparison, the threshold value for Energy Star is 84%. If average output during use is assumed to be 40W and the product is used for 8 hours every day, after one year the sum of the output of all products shipped in 2006 saves more than 6 million KWH of electricity beyond what the Energy Star standard calls for.

High Efficiency ADP-60 NH B Adapter

2. DPSN-186 & 216 Series Adapters for Game Consoles

Energy Star Version 1.1 requires products in this category to have a standby power consumption of under 0.75W. However, Delta's product achieves greater savings by reducing standby power consumption to under 0.35W. If each unit spends 20 hours in standby mode each day, the sum of the output from all products shipped in 2006 saves more than 20 million KWH of electricity over a year.

Low Standby Power DPSN-186 and 216 Series

3. DC Fan Series (Larger or equal to 6cm in diameter)

The DC Fan Series launched in 2006 was at least 4% more energy efficient than the previous series. Fans larger or equal to 6cm in diameter in the new series made up around a quarter of all product shipments. If all fans of this series that were shipped in 2006 are used for 8 hours each day, over 220 million KWH of electricity can be saved after one year.

High Efficiency DC Fans

10. Assuming that out of 8 hours, 4 hours is at full load and 4 hours is at 20% load.
11. Average efficiency at 115V and 60Hz

4. Solar Cells (DelSolar)

Improvements in the conversion efficiency of solar cells lower electricity and silicon consumption during the process.

Improvements in the conversion efficiency of solar cells meant that more power can be generated by solar cells while consuming the same amount of electricity to produce the cells themselves (the amount of electricity needed to produce each watt of solar cell was reduced – as low as 6KWH per watt). Use of silicon materials was also reduced by around 3%. Based on production capacity for 2006, this represents around 4.6 million KWH of electricity and nearly 7 tonnes of silicon materials saved.

For products launched in 2007, Delta's environmentally-friendly or energy-saving examples include: more efficient high-voltage Uninterruptible Power Systems (UPS), LCD TV power supplies and CCFL tubes, reduced mercury in CCFL tubes, higher energy intensity for power systems used in communications devices, super slim and highly efficient adapters for notebook computers, mercury-free flat backlight modules, solar power inverters with a conversion efficiency of over 95% and concentrating solar cell receiver assemblies with a conversion efficiency of over 35%.

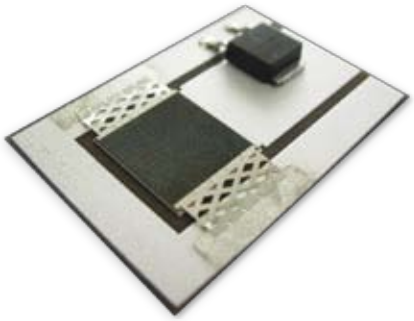
Comparing the energy saved by our products as mentioned above with the energy conservation measures of Delta's factory sites, we can see that developing more efficient products delivers better results than the energy-saving measures at our daily operations. For the future, we will continue to evaluate and implement eco-friendly and energy-saving measures at Delta's offices and factories, and devote even more effort to developing innovative energy-saving products. This is essential to Delta's mission: "To provide innovative energy-saving products for a better quality of life".

Mercury-Free Flat Backlight Modules

LCD TV Power Supplies

Super Slim Adapters
(for Notebook Computers)

Solar Power Inverters



Concentrating Solar Cell
Receiver Assemblies

Uninterruptible Power Systems (UPS)