Care for the Environment

The Group is dedicated to working for a better environment through its contributions to environmental preservation. As a popular provider of public transport services, we recognise the potential environmental impacts associated with our services and are wholeheartedly committed to reducing these impacts in four main areas: environment-friendly buses, green use of consumables, environmental waste treatment and green workplace. Our environmental protection efforts have been recognised with Green Mark Certification from the Hong Kong Q-Mark Council.

Q-MARK COUNCIL RECOGNITION FOR KMB'S ENVIRONMENTAL MANAGEMENT

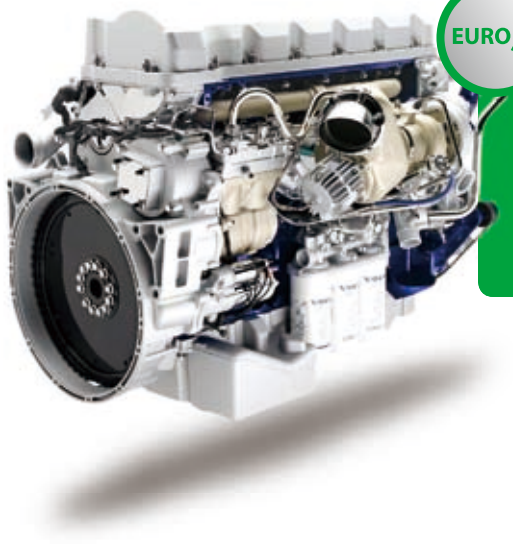
KMB's Sha Tin and Lai Chi Kok Depots were awarded ISO14001 certification from the Hong Kong Quality Assurance Agency in 2003. ISO 14001 is the internationally recognised standard for environmental management systems, providing a framework for organisations to manage aspects of their operations that affect the environment. In 2010, the company was recertified with Green Mark Certification by the Q-Mark Council of the Federation of Hong Kong Industries for the period from 1 May 2010 to 30 April 2013. Green Mark Certification attests that the delivery of franchised bus services and the repair and maintenance of buses at KMB's four main depots at Kowloon Bay, Lai Chi Kok, Sha Tin and Tuen Mun meet the prescribed standards under the Hong Kong Green Mark Certification Scheme. The first listed public transport organisation to receive this certification, KMB is subject to quarterly surveillance audits to ensure that the stringent environmental management standards are maintained throughout each certification period.

ENVIRONMENT-FRIENDLY BUSES

KMB and LWB are committed to building a better environment through continuous investment in the application of environmental technology. KMB and LWB's social responsibility is evidenced by their commitment to making improvements through continuous investment in the environmental area, as they progressively adopt innovative technologies and equipment. The regular purchase of state-of-the-art environment-friendly buses and the continuous upgrading of our fleets ensure compliance with all relevant environmental standards. Our new buses generally have environmental performances far exceeding the legal requirements in Hong Kong, making the Group an industry leader in the adoption of innovative technologies and equipment that improve environmental performance.

Euro IV and Euro V Engines

In recent years, we have introduced a number of new buses equipped with Euro IV and Euro V engines, which can reduce the emission of pollutants significantly, especially in terms of nitrogen oxides, as a result of the application of urea-based Selective Catalytic Reduction (SCR) technology. To tie in with the future growth of environment-friendly buses, KMB has installed 12 urea solution dispensing units at its depots in Lai Chi Kok, Kowloon Bay, Sha Tin, Tuen Mun, Yuen Long, Tai Po and Sheung Shui to simplify work processes and achieve higher efficiency. The units are able to top up the solution on more than 1,000 buses each day. The depots at Tseung Kwan O and Tsing Yi will be equipped with this facility in 2012, bringing the total number of urea solution dispensing units to 14.



Euro V Engine

The Euro V engine, when combined with urea-based Selective Catalytic Reduction technology, significantly reduces the emission of pollutants such as nitrogen oxides.

Supercapacitor Bus (or "gBus")

Powered by supercapacitor technology, the gBus is a zero-emission electric bus which can run for five kilometres per full charge without the need for continuous overhead cables. Following satisfactory road performance during its 8-month trial, we are working closely with our suppliers and the HKSAR Government to take the gBus to the next, wider level of implementation.

Compared with Euro III engines, Euro IV and Euro V engines reduce the emission of nitrogen oxides by 30% and 60% respectively (in terms of grams per kilowatt-hour). Euro IV and Euro V buses equipped with a SCR catalytic converter can reduce the emission of nitrogen oxides, since ammonia formed from the urea solution can convert nitrogen oxides into nitrogen gas and water vapour. At 31 December 2011, there were 345 buses of this kind in the KMB fleet. KMB is currently working with the Environmental Protection Department to explore the feasibility of retrofitting SCR devices on existing Euro II and Euro III buses to further reduce nitrogen oxide emissions.

A total of 322 buses in the fleets of the Group's Non-franchised Transport Operations Division, comprising the SBH Group and New Hong Kong Bus Company Limited, are equipped with Euro III, Euro IV or Euro V engines.

Green Fleet

At the end of 2011, KMB and LWB operated a total of 4,055 buses, all of which met the strict exhaust emission standards of the European Council of Environmental Ministers. Of these buses, a total of 3,348 was either equipped with catalytic converters ("CRT") or Diesel Particulate Filters ("DPF"), bringing their exhaust emission levels to higher Euro standards in terms of particulate matter. The average particulate emission levels of the entire KMB bus fleet had been reduced by 92% compared with 1992, the year when Euro I emission standard was first introduced in the European Union.

As at 31 December 2011, the number of KMB and LWB buses that met the respective emission standards was shown in the table on page 71.

EXPLORING ZERO-AND LOW-EMISSION BUS TECHNOLOGIES

KMB is rigorously exploring and trialling the most advanced zero- and low-emission bus technologies. We introduced the zero-emission supercapacitor bus (the "gBus") for trial in Hong Kong from August 2010 to April 2011, during which a satisfactory result was achieved. The gBus only took about 3 minutes to fully charge its supercapacitors after travelling 2.8 to 4.0 kilometres with air-conditioning at fully loaded operating conditions on different duty cycles. Those who took a ride on the gBus during trials at our Lai Chi Kok Depot, including representatives from the HKSAR Government, political parties and green groups, have shown a keen interest in exploring the gBus's deployment potential. We continue to work closely with potential suppliers and the Government with a view to starting trial deployment of gBuses on actual bus routes to serve our customers. At the same time, we continue to explore other zero-emission technologies, including the battery-electric bus, which has made significant advances in its operating range. The Government has earmarked HK$180 million for Hong Kong franchised bus companies to purchase 36 electric buses for trial runs on a number of routes to assess their performance under different conditions.

With funding support from the Government, we also plan to introduce diesel-electric hybrid double-deck buses on busy corridors to test and record their operational efficiency and performance in local operating conditions. The specifications of the diesel-electric hybrid double-deck buses which KMB would like to acquire for trials have been drawn up, and the project is currently at the tendering and acquisition stage.

	Number of Buses			Emission Level (in terms of particulate matter)			
Engine Type	**KMB**	**LWB**	**Total**	**Euro I**	**Euro II**	**Euro III**	**Euro IV/V**
Pre-Euro [1]	1		1	1			
Euro I [1]	855		855		855		
Euro II	200		200		200		
Euro II [2]	1,319	99	1,418				1,418
Euro III	43		43			43	
Euro III [2]	1,056	18	1,074				1,074
Euro IV	108	32	140				140
Euro V	309	15	324				324
	3,891	**164**	**4,055**	**1**	**1,055**	**43**	**2,956**

Notes:
1. Equipped with CRT.
2. Equipped with CRT or DPF.

The entire KMB and LWB fleet uses Near Zero Sulphur Diesel, containing just 0.001% sulphur, significantly reducing the exhaust emission levels of sulphur oxides and particulates.

We will continue to work with the Government to explore the feasibility of deploying green buses in areas that are especially suited to such services, in particular, busy corridors and the Kai Tak Redevelopment. Given that zero-emission buses are more operationally flexible and require significantly less capital investment than other zero-emission mass transport solutions such as rail, we remain committed to working closely with our manufacturers and suppliers to develop zero-emission buses for Hong Kong's unique operating environment.

GREEN USE OF CONSUMABLES

Near Zero Sulphur Diesel

Since 2009, all buses in KMB and LWB fleets have been using Near Zero Sulphur Diesel ("NZSD"), which contains only 0.001% sulphur. NZSD significantly reduces the exhaust emission levels of sulphur oxides and particulates, thus contributing to a healthier environment.

Synthetic Transmission Oil

Introduced in 2001, synthetic transmission oil was extended to all KMB and LWB double-deck buses in 2005. The move has seen an 80% reduction in waste oil and an increase in the oil drain interval from 30,000 to 150,000 kilometres.

Eco-Driveline System

The Eco-Driveline System, which has been a standard feature on all our new buses since 2003, reduces fuel consumption by integrating a high-torque engine, a six-speed double-overdrive automatic gearbox controlled by a sophisticated gear-shift programme and an optimised final drive. The system provides a 6-10% improvement in fuel consumption and emissions in comparison with conventional drivelines.

Electrostatic Filters

To further improve the air quality inside buses, KMB is equipping its air-conditioned buses with electrostatic filters, which provide even more effective filtration of very fine particles with minimal noise. At the end of December 2011, 1,229 KMB buses had been equipped with this device. By means of electrostatic precipitation, the electrostatic filter is able to capture micron-sized contaminants and particles such as dust and pollen. The multi-layered design of the collecting plates enables the removal of airborne contaminants with greater efficiency than traditional air filters. Tests of the effectiveness of electrostatic filters showed that they can filter out 80% of fine dust, enabling passengers to enjoy an even more comfortable journey on KMB buses.

Foam-element Air Filters

KMB and LWB are progressively replacing traditional paper-element air filters with high performance foam-element air filters with an average life span of about 12 months, six times longer than that of conventional paper filters. The use of foam-element air filters maintains the operating performance of our buses while significantly reducing the amount of solid waste for disposal.

Variable Capacity Air-conditioning Compressor

Power-saving variable capacity air-conditioning compressors are installed on all KMB buses ordered after 2008. The compressors provide more adaptive and refined thermal control in the bus compartment in the most fuel-efficient manner, while handling the dynamic urban operating environment in all weather conditions.

Tyre Retreading and Recycling

Extending the life of a bus tyre through retreading is cost effective and environmentally friendly, as it reduces the amount of industrial waste and saves resources. The life of a new bus tyre, which can typically be used for seven months, can be extended by around 14 months through retreading, as each tyre can be retreaded two times on average. In 2011, 31,000 used tyres were retreaded in KMB's retreading workshop, bringing the total number of tyres retreaded since 1972 to more than 720,000. Additionally, more than 17,000 scrapped tyres and 190 tonnes of tyre chips, which would otherwise have been disposed of in Government landfills, were collected by an agent for recycling into various rubber products.

Cartridge Recycling Programme

KMB has supported Friends of the Earth's (HK) cartridge recycling programme since 2001, collecting cartridges from printers and fax machines with the objective of saving natural resources and protecting the environment. At the end of August 2011, KMB had collected a total of 4,733 cartridges for recycling. Not only does this help reduce the amount of solid waste disposed of in landfills, it also saves natural resources used in producing the cartridges. Over the past ten years, the cartridges collected by KMB have added up to a reduction of four tonnes in solid waste, as well as saving 2,780 litres of petroleum that would have been used to produce the same number of cartridges. This amount of petroleum is enough to power a double-deck bus 184 times up and down Route 3 between Hong Kong Island and Yuen Long.

Urea Solution Dispensing Units at Depots

KMB has equipped 12 depots with urea solution dispensing units, which can top up more than 1,000 buses each day with the environment-friendly solution.

Dedicated green facilities that promote energy conservation at our depots include waste water treatment systems, water recycling facilities and environment-friendly fire service systems. Energy-saving features are also incorporated in the lighting, air-conditioning and ventilation systems.

ENVIRONMENTAL WASTE TREATMENT

KMB implements a company-wide waste reduction programme aimed at reducing the amount of solid waste needing disposal. Positive results were again achieved in waste reduction and recycling in our daily operations, including plastic cartridges used in fax machines and printers, rechargeable batteries, fluorescent tubes and waste paper. Since 2009, around 1,200 kilograms of printed circuit boards, which would otherwise be disposed of in Government landfills, have been collected by a recycling agent. In recognition of our achievements in environmental preservation, KMB was once again granted the "Class of Excellence" WasteWi$e Label by the Environmental Campaign Committee in 2011.

Environmental Treatment of Waste Oil and Chemical Waste

During 2011, some 764,000 litres of waste oil were collected from our depots and other bus maintenance sites by a registered waste oil recycling agent for recycling or disposal in accordance with the statutory standards. In addition, about 290,000 kilograms of solid chemical waste were first treated and stored by type in special areas at bus depots and then disposed of by a registered chemical waste collector at the Government's Chemical Waste Treatment Centre.

Waste Water Recycling

Environmental protection has always been an important consideration in KMB's operations, and a great deal of effort is dedicated to conserving resources. In 2011, water consumption at KMB headquarters and depots recorded a 6% reduction compared to 2010. Apart from launching the "Save Water" campaign to remind staff to save water, KMB also adopts a number of environment-friendly measures in its daily operations. The water that is used every day to clean the KMB bus fleet is treated and recycled through the water recycling system. KMB's depots are equipped with a total of 11 automatic waste water treatment systems with a daily treatment capacity of 520 cubic metres. Following the addition of chemicals to separate solid impurities from the waste water that is produced during the daily operations of the depots, the impurities are disposed of in a landfill and the treated waste water is discharged into the public drainage system. 70% of the water that is used every day to clean the bus fleet is treated and recycled, thus significantly reducing water consumption.

Waste Scrap Metal Recycling

In 2011, more than 1,160 tonnes of scrap metal from aged and damaged bus parts, replaced at the daily, monthly, half-yearly and annual professional inspections, were collected from KMB depots for recycling, considerably reducing the amount of solid waste needing disposal. Approximately 95% of that metal was scrap iron. All types of scrap metal, including

non-ferrous metals, can be recycled repeatedly at a lower cost and with less energy consumption, when compared with the refining process from ores. To enable more effective scrap collection, KMB has set up five collection points at Lai Chi Kok Depot, Kowloon Bay Depot, Sha Tin Depot, Tuen Mun Depot and the KMB Overhaul Centre. The collected scrap metal is handled by waste collectors appointed by KMB through its annual tendering process for recycling and future re-use.

Merchandising from Scrap Parts

According to Group practice, retired buses have been sold to scrap merchants for export or recycling. In order to promote environmental protection and generate non-farebox revenue, local universities were approached and in 2011 KMB entered into a sustainable collaborative project with the Hong Kong Design Institute ("HKDI"), a leading regional design education institution, to recycle obsolete and used parts. Higher Diploma in Product Design students at the HKDI are now able to use their skills to transform obsolete materials into useful products including furniture, lighting and hi-fi. As the first local public transport operator to launch this kind of project, the Group is sending out a clear message to the general community and engaging the younger generation in particular on the importance it attaches to social, environmental and educational responsibilities.

GREEN WORKPLACE

The dedicated green facilities promoting energy conservation installed at all our depots include waste water treatment systems, water recycling facilities and environment-friendly fire service systems. Energy-saving features are also incorporated in the lighting, air-conditioning and ventilation systems. Regular air sampling in depot areas ensures that a healthy work environment is maintained. Since 2009, when KMB carried out a pilot scheme at Sha Tin Depot to replace high bay lamps with long-life energy-saving fluorescent tubes, leading to a 12% saving in electricity consumption, the company has continued to adopt energy efficient lamps in its depots as part of its commitment to promoting a low carbon economy. In 2011, the use of energy saving induction lamps at Kowloon Bay Depot cut monthly electricity consumption by 17%. Lamp replacement work is currently being undertaken at KMB's other depots.

Since becoming in 2006 the first organisation in Hong Kong to participate in the fluorescent tube recycling campaign, KMB has set up five collection points at Lai Chi Kok Depot, Kowloon Bay Depot, Sha Tin Depot, Tuen Mun Depot and the KMB Overhaul Centre to gather used fluorescent tubes from around 3,800 buses, more than 2,000 bus-shelter light boxes at bus shelters, and the bus depots themselves. Whenever a fluorescent tube is replaced, the packing material of the new tube is used to wrap the old tube. The used fluorescent tubes are stored in a designated area, from which a licensed contractor regularly collects them for recycling. The contractor will remove the mercury from the used tubes before crushing them into glass granules, allowing the retrieved mercury, glass granules and other metal parts to be reused. In 2011, around 80,000 used fluorescent tubes were sent to the Government's Chemical Waste Treatment Centre for recycling, bringing the total number recycled to around 465,000.

The Green Office concept informs the design, refurbishment and practices of the Group's Lai Chi Kok headquarters. Air-conditioning thermostats are set to 25.5°C to conserve energy and benefit air quality in support of the Government's Action Blue Sky Campaign, while pre-set timers switch off lights when they are not needed or when there is sufficient natural light. We have also introduced lower-energy LED lighting in common areas of the headquarters building such as the main lobby to reduce both electricity consumption and the demand for air-conditioning.

Self-developed Filter Compressing Machine

The use of the in-house developed Filter Compressing Machine at KMB's Sha Tin Depot has led to a reduction of 60% in the volume of solid chemical waste formed by disposed fuel or oil filters. Additionally, the waste oil squeezed from the filters during the compressing process can be recycled.