



EARTHCHECK

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COEX SEOUL, KOREA

The Coex Center is a vibrant city landmark that's located in the heart of Seoul's bustling downtown business district. It is Korea's top convention and exhibition location, in the heart of the Korean World Trade Center complex.

Every year, more than 35 million visitors choose Coex and the surrounding facilities as their destination, with an average of 100,000 people arriving each day.

In addition to the public convention and exhibition center, Coex hosts an array of on-site tourism and transportation amenities, including Asia's largest underground mall, three 5 star hotels, Seoul's only city air terminal, two popular performance theatres, and more than 100 restaurants featuring cuisines from every corner of the globe.

Coex also boasts first class catering services and an extensive green operations program, guaranteeing that event attendees can enjoy the highest service in a modern, globally conscious environment.

Since initiating their official Green Campaign in 2004 at the 4th Korea-Japan-China VIP Forum, the Center has aggressively pursued a policy of holistic environmental stewardship in order to achieve the ultimate goal of becoming a leader in the Green MICE industry.

Despite the massive volume of guests and activities at the complex, Coex has become a pioneer in Korea's green growth industry, achieving many environmental management firsts in Korea and keeping pace with the latest emerging eco-friendly technologies.

The use of alternative energy sources reduces Coex's CO₂ generation by approximately **9 tonnes yearly**.

The following results were taken from the **EarthCheck benchmarking report covering October 2009 - 2010**:

Energy Consumption was 557.9 MJ / m², which was **37.0% better than the Best Practice level**.

Total CO₂-e Produced was 55.4 kg CO₂-e / m², which was **73.5% better than the Best Practice level**.

Greenhouse Gas Emissions (Scope 1) were **9.5 kg CO₂-e / m²**.

Greenhouse Gas Emissions (Scope 2) were **45.9 kg CO₂-e / m²**.

Potable Water Consumption was 812.5 L / m², which was **33.7% better than the Best Practice level**.

Waste Sent to Landfill was **4.5 L / m², which was 93.2% better than the Best Practice level**.

ENERGY EFFICIENCY

BUILDING ENERGY MANAGEMENT SYSTEMS (BEMS)

Coex developed BEMS in-house in 2002 to monitor its facility management operations. BEMS is integral to Coex's sustainability efforts, as it works with the EarthCheck Program to record and analyse the following five areas:

- Gas usage
- Electricity usage
- Water usage
- Waste production
- Recycling levels

These numbers are then used to calculate Coex's daily carbon emissions.

BEMS can also run complex simulations of energy-saving or waste-reducing measures. This allows facility managers to internally benchmark future eco-friendly efforts, while EarthCheck allows them to competitively benchmark against other venues.

BEMS also helps Coex maintain indoor environmental levels. For example, the system calculates the minimum number of air conditioning units that need to be used each day based on forecasted outdoor temperatures.

BEMS also helps Coex manage energy grid usage during peak hours, such as during extreme weather or large events. This helps to minimize the effect of the complex's energy usage on the environment as well as curtail expenses.

BEMS carries out extensive mathematical analyses of Coex's energy usage. All information is compared over time, and analyses between energy and waste levels on a per-day, per-month, and per-year basis are constantly carried out. In this way, BEMS allows Coex to determine whether energy is being used efficiently within the complex. It also helps Coex come up with better ways to manage and reduce all types of carbon emissions.

LED REPLACEMENT

After conducting extensive testing in its underground parking facilities, Coex replaced older metal halide, incandescent and fluorescent lights throughout much of the Center with new light emitting diode (LED) models.

LED brands from 20 companies were tested for an entire year to find the most energy-efficient model, which was then installed throughout Exhibition Hall A during the first exhibition hall renovation project.

Lighting replaced includes:

- Exhibition Halls A, B and C: 1,030 bulbs replaced
- Exhibition Halls A, B and C Service Passages and Loading Dock: 224 bulbs replaced
- Parking sign lights: 711 bulbs replaced
- Air traffic lights & Exhibition rooftop: 90 bulbs replaced
- Coex Mall & Atrium and Administration Building: 6,268 bulbs replaced

ALTERNATIVE ENERGY TESTING

Due to its monitoring technologies, Coex is the site of many alternative energy experiments. These alternative energy methods all come in small, home-sized units that could potentially be commercialised for consumer use.

Coex carefully measures the energy outputs of each appliance, not only for its own benefit, but also to distribute the information to parties that can help advance Korea's green energy industry.

PHOTOVOLTAIC GENERATORS

In May 2009, 10 solar generator modules were installed on the roof of the convention center as a trial. The power capacity of each generator is 2kWh – about the energy used by a one-family household.

SOLAR-POWERED STREETLAMPS

Seven solar-powered streetlamps have been installed in Coex's eastern plaza. These lamps charge during the day and light up roads and sidewalks during the night.

SOLAR TREE

A solar-powered LED streetlamp is more efficient than existing one, with same process to light up.

Each of the trees has four leaves and one LED lamp. Three Solar Trees have been planted near the Piano Fountain Square.

WIND TURBINE

A wind turbine has been installed in Coex's eastern plaza, using the high winds around that area to generate power. It has a capacity of 1.2kwh.

WATER CONSERVATION

Gray water (waste water) with low levels of toxicity is recycled through Coex's gray water treatment facilities. The recycled water is used in the toilets and

urinals in the convention center complex and the ASEM Tower office building. This vastly reduces water consumption and wastewater generation.

The output of the gray water treatment system is 160,000 cubic meters per year, which **reduces yearly carbon emissions by 94 tonnes.**

Water saving initiatives included installing low/dual flush toilets, low flow tap fittings and low flow shower fittings throughout the Center.

Garden sprinklers using recycled water are operated after dark in order to reduce evaporation, using recycled gray water, and low maintenance, hardy plant species are used in landscaping.

Coex updated its Water Recycling System in 2004. This recycling system is used in ASEM Tower, Coex Mall, Hall B, and in convention center restrooms.

ENVIRONMENT

Flooring in Exhibition Hall C was replaced during the 2008 renovation period. Polished concrete flooring was installed in place of wasteful carpet flooring, which has to be replaced constantly due to wear and tear from exhibitions.

Hall A in 2009 and Hall B in 2010 underwent the same renovation. Replacing the carpet flooring in the exhibition halls has reduced CO2 emissions by 4,083 tonnes each year.

In the underground parking lots, flooring was renovated with eco-friendly epoxy, which is manufactured from natural ingredients and leaves no contaminants behind after it is applied.

COMMUNITY FACILITIES

URBAN GREEN SPACES

Three "green spaces" have been created so far around the Coex premises: the ASEM garden (2,050 sqm), Piano Fountain park (4,510 sqm), and Exhibition Hall roof garden (988 sqm).

Green spaces are proven to reduce the urban "heat island" effect, where heavily developed areas have a higher temperature than their surroundings. Reduction of the heat island effect by Coex's green spaces has reduced carbon emissions by 6 tonnes per year.

PEDAL POWER

A 101sqm bicycle check area was installed at the Trade Center's south gate. A check area was created to ensure bikes would be safe.