# CLP/CAPCO Commitment to Air Quality Improvement

# CLP/CAPCO's Continued Effort in Emissions Reductions

- CLP/CAPCO has significantly reduced emissions since 1990's
- The 2010 emissions targets are very challenging as we had already achieved substantial emissions reductions before the 1997 base year
- CLP/CAPCO is making best endeavor to respond to the challenging targets
- We will continue to give our strong support to cross-border collaboration to tackle the regional air quality issue

# CLP/CAPCO - Pioneering Environmental Improvements

*World standard Electrostatic Precipitators fitted since inception of CPPS*

- Removing >99% of the particulates

*Low NOx Burners fitted to power plant by 1994*

- Technology now being adopted by others in the region

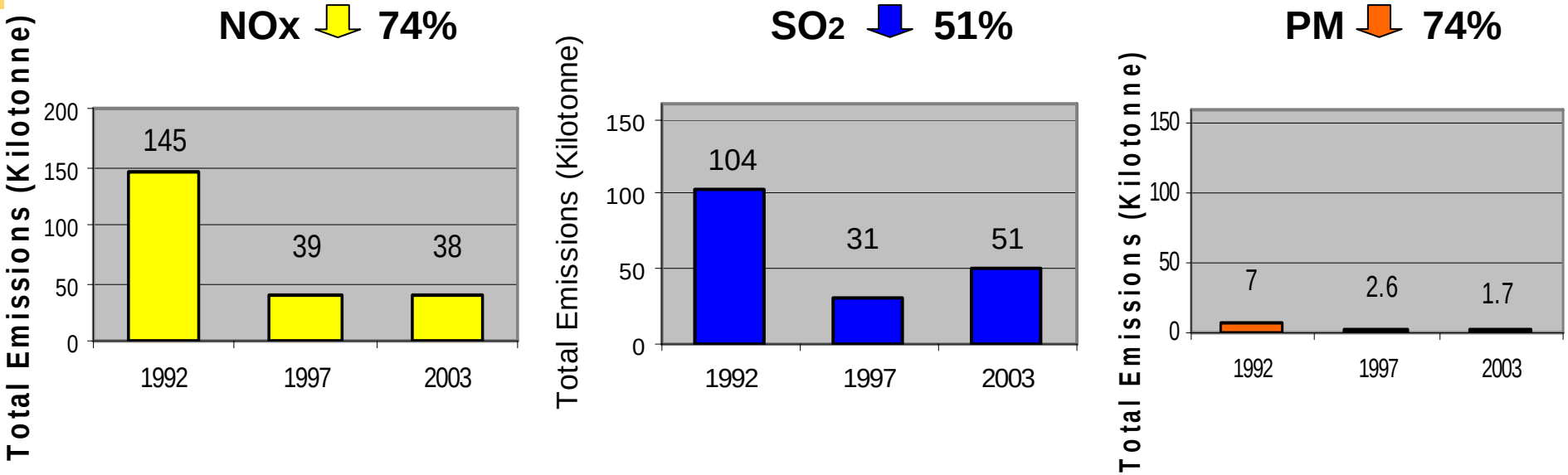
*Introduced Nuclear Power in 1994*

- Diversified fuel mix to reduce emissions

*Introduced clean natural gas to Hong Kong in 1996*

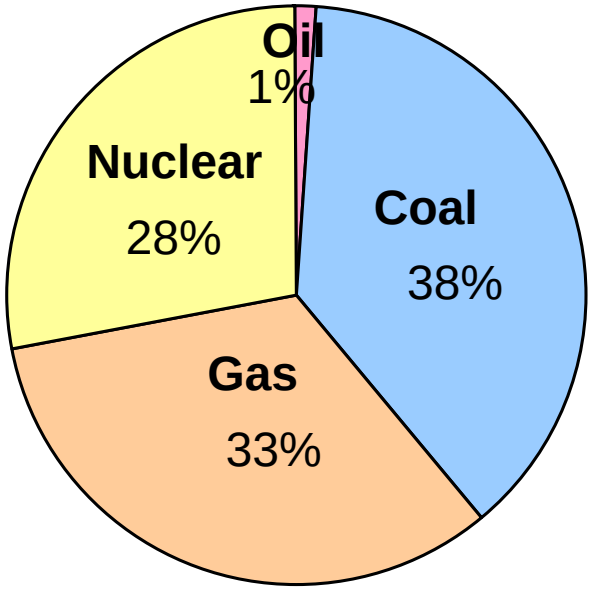
- Clean fuel now being adopted by others in the region

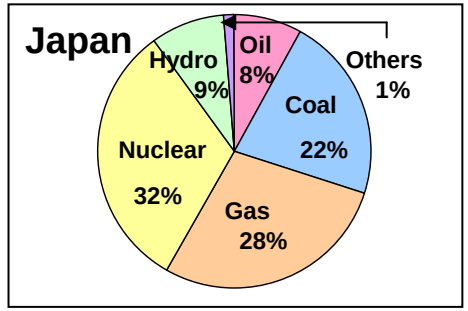
# CLP/CAPCO Achieved Significant Emissions Reduction prior to 1997

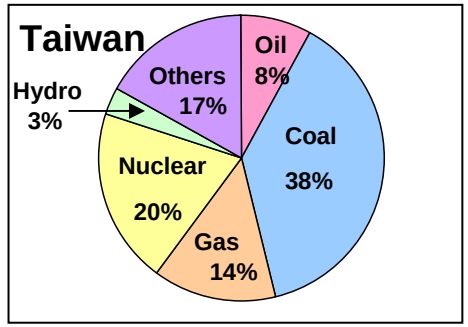


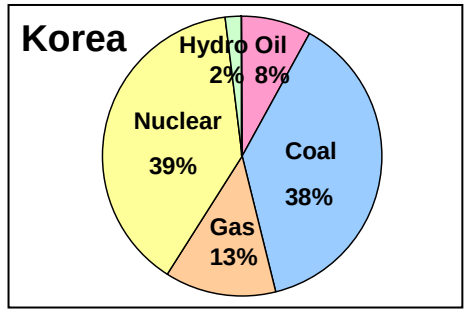

- **Significant reduction of emissions were achieved prior to 1997 base year**
- **Total electricity demand increased by 50% from 1992 to 2003**

# Fuel Diversity is a Critical Strategy for Economies depending on Imported Fuels




- CLP is the pioneer in the region in diversifying to cleaner natural gas and nuclear for electricity generation
- Japan, Taiwan and Korea also import significant quantities of coal for electricity generation

# Contributing further to Regional Air Quality Improvement

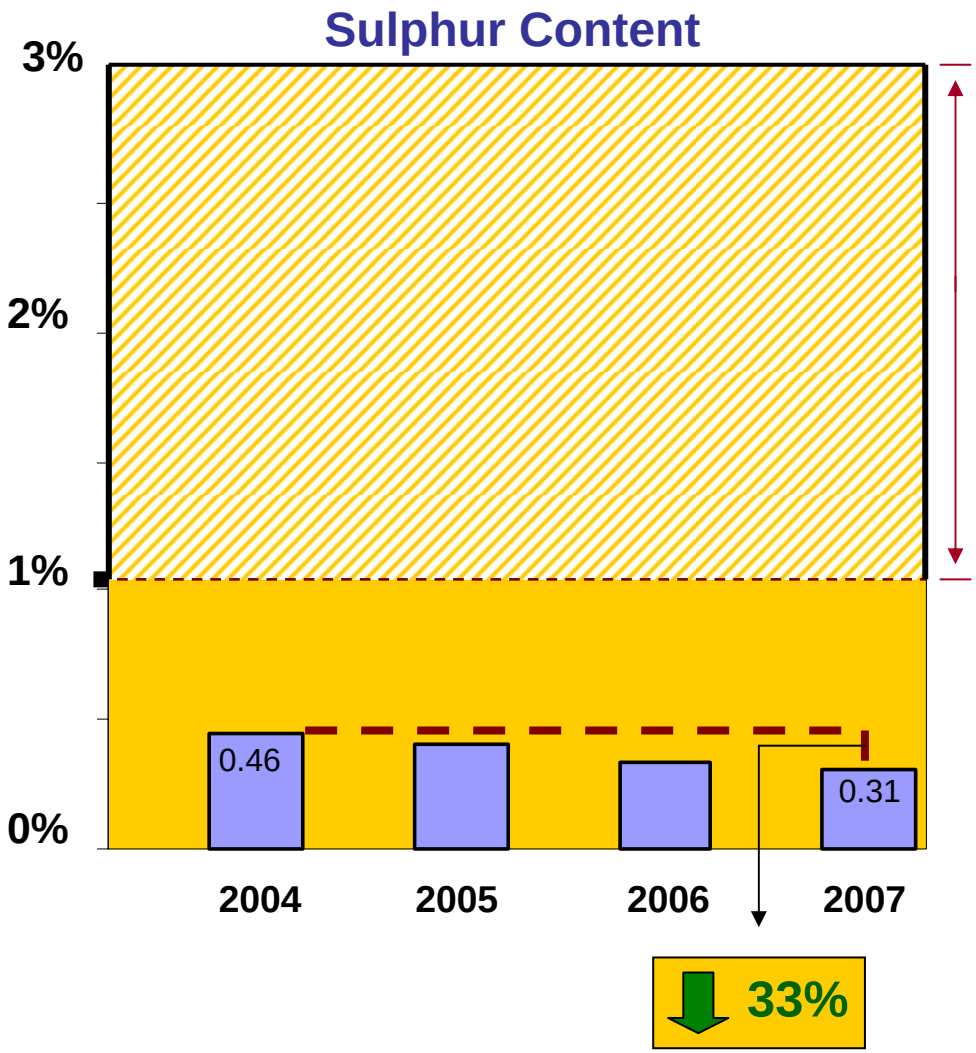
- CLP/CAPCO supports collaboration between Hong Kong and Guangdong governments to improve regional air quality
- Emissions targets for 2010 (20% to 55% reductions) are very challenging for CLP/CAPCO as we had already reduced emissions substantially before the 1997 base year
- We are working very hard to try to meet the government's targets:

  - Using ultra-low sulphur coal

  - Emissions reduction facilities for coal fired power plants

  - Bringing one of the cleanest fuels, Liquefied Natural Gas (LNG), to Hong Kong

# Using Ultra Low Sulphur Coal




International Standard (1% to 3%)

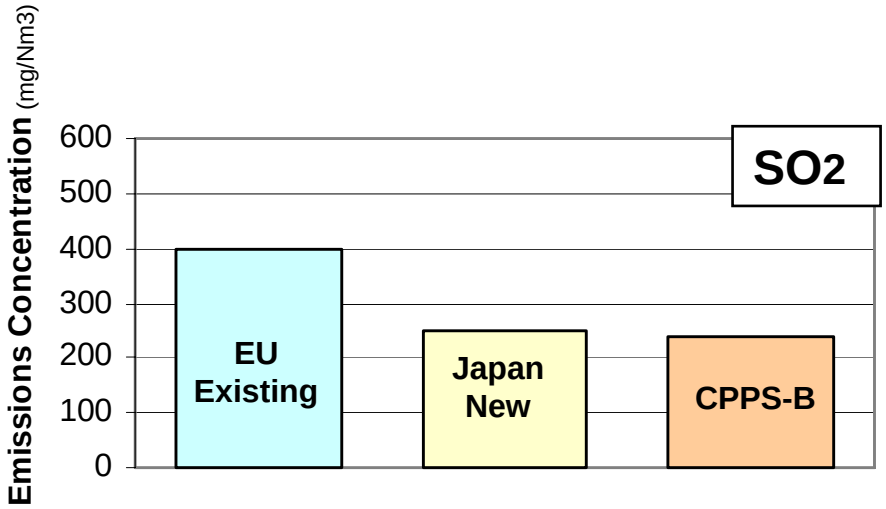
Hong Kong Standard (1%)

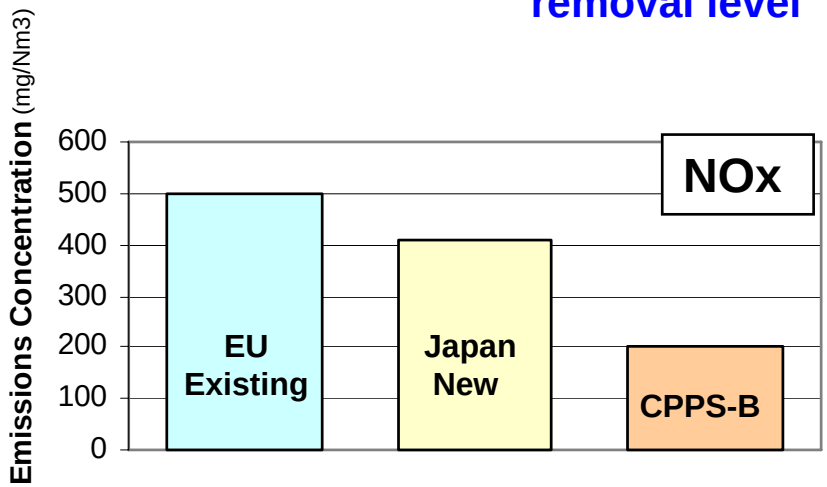
- By 2007, ultra low sulphur coal will form 1/3 of CPPS' coal portfolio, leading to a reduction of $SO_2$ emissions by 33%, compared to 2004

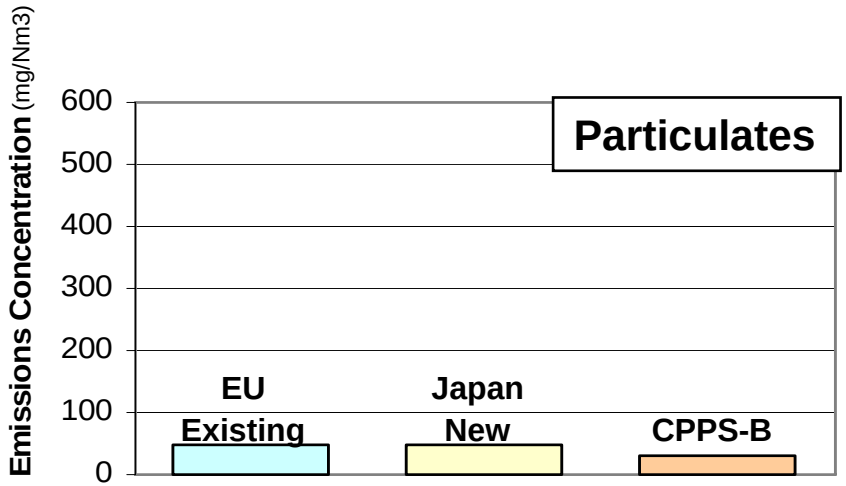
# Retrofitting Coal Fired Units to World Standards

**With the emissions reduction facilities in place:**

**$SO_2$ ↓ 90%** **NOx ↓ 80%** **Particulates ↓ Further reduced from current 99+% removal level**



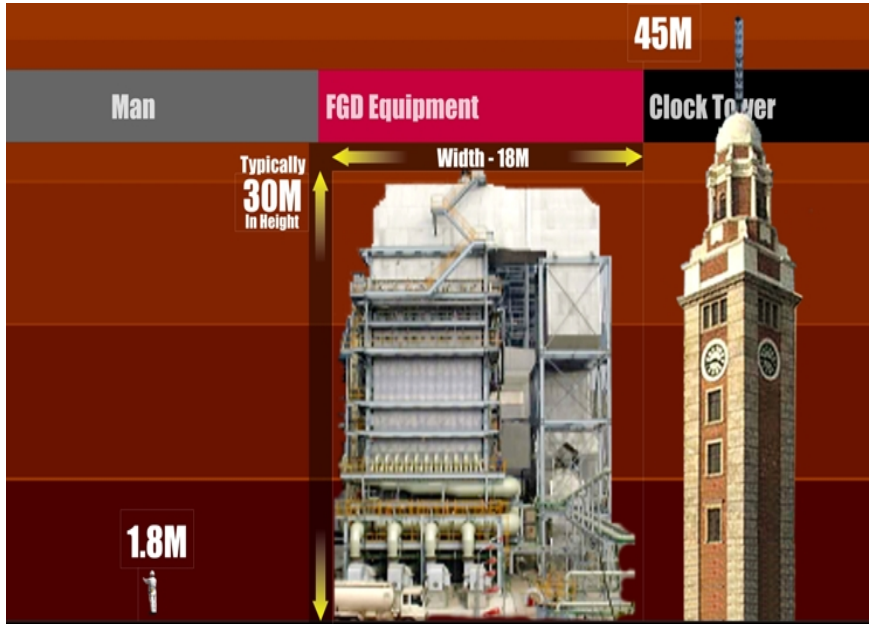

- **$SO_2$, NOx and Particulates will achieve better than EU and Japan standards**

Capco


Emissions Control Project
2005 - 2011
Capco
ExxonMobil

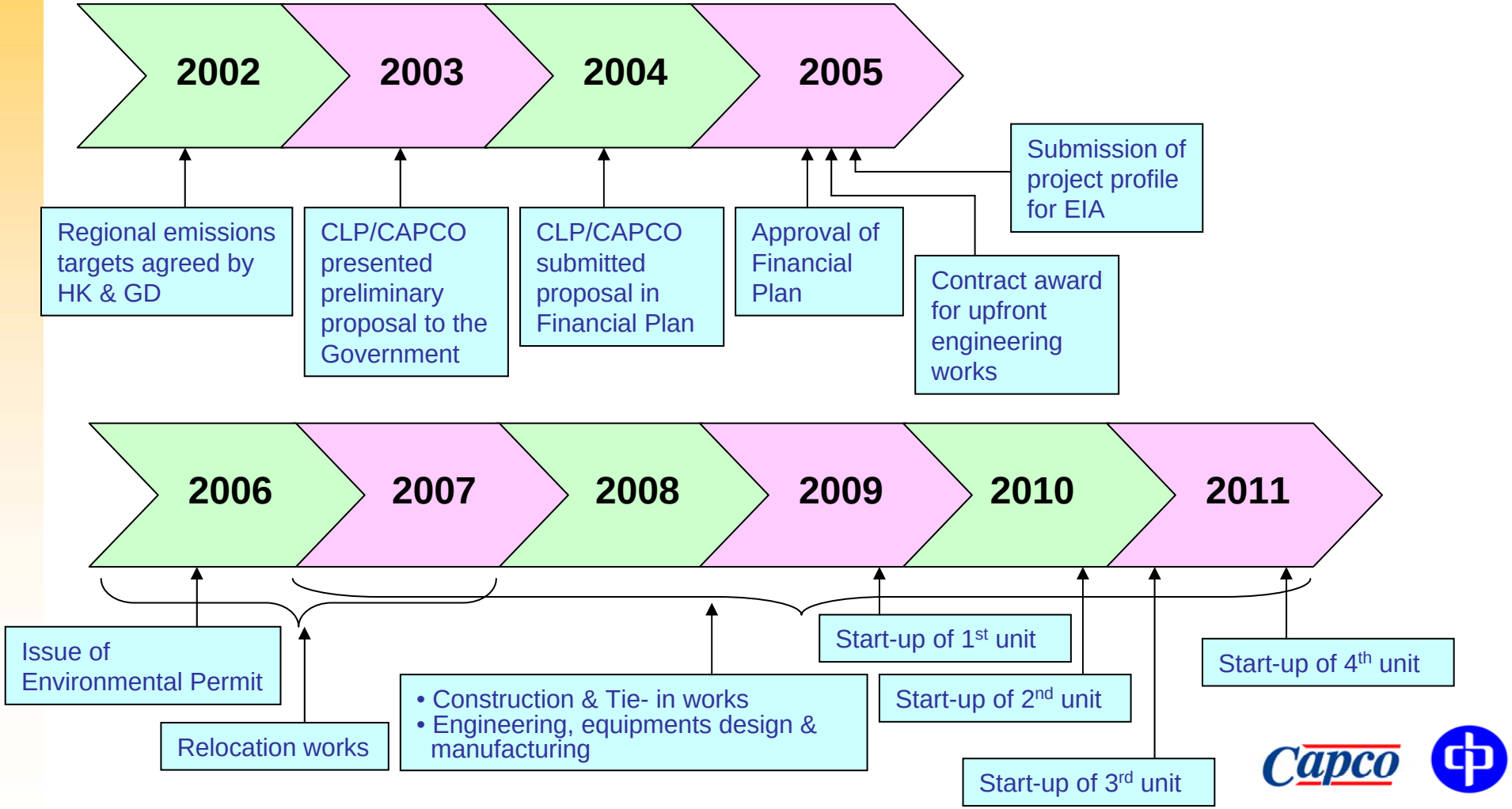
# Emissions Reductions Begin in 2009

- Complex engineering work on an existing plant with limited footprint
- Installation work can only be done during winter months, so that reliable supply to our customers can be ensured during the peak months



# Emissions Reduction Begin in 2009

## FGD & SCR - Project Milestones



# Bringing in LNG to Ensure Reliable and Adequate Supply of Natural Gas to Reduce Emissions

Benefits of bringing LNG to Hong Kong

- Environmentally-friendly fuel
- Maintains a diversified fuel mix
- Affordable Cost

➢ **Project Profile for EIA submitted in May 2005**


**By 2011, CLP/CAPCO aims to have a LNG terminal in place to increase the use of natural gas**

# Support to Cross-border Collaboration


## Partnership with Professional & Trade Bodies

- **"One-One-One" programme by Federation of Hong Kong Industries**
- **"Project Clean Air" by Business Coalition on the Environment**
- **HK & PRD Pilot Air Monitoring Project by Civic Exchange**

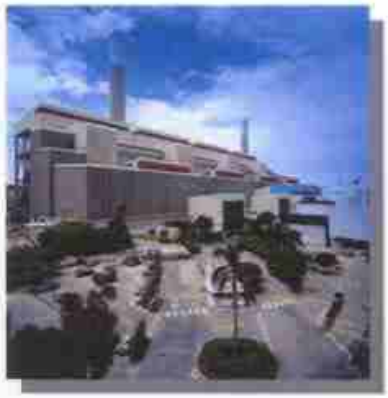
## Experience Sharing

- **"Symposium on Cross-border Environmental Management – Partnership for Environmental Sustainability", 10 November 2004**
- **Visit to power plants by Guangdong Environmental Protection Bureau, 20 July 2005**
- **The 4th Pearl River Delta Conference on Energy and Environment, 23 – 24 September 2005**

# Summary

- CLP/CAPCO is committed to playing its part and reducing its emissions as far as can be practically achieved
- CLP/CAPCO is adopting the best available technologies for environmental improvement
- Continuing dialogue with the Government on practical means to reduce emissions further
- Collective efforts from all sectors and across the region are required to make a meaningful improvement to air quality

# CLP Emissions Control Project



As a continuous effort to further improve the emissions performance of its coal-fired power generation, CLP is in the process of retrofitting 4 generation units in Castle Peak Power Station with new emissions control facilities, ie. Flue Gas Desulphurisation (FGD) and Selective Catalytic Reduction (SCR). With this new emissions control equipment in place, the emissions of $SO_2$ and NOx will be reduced by about 90% and 80% respectively, while particulates with more than 99% already being captured will be further reduced.

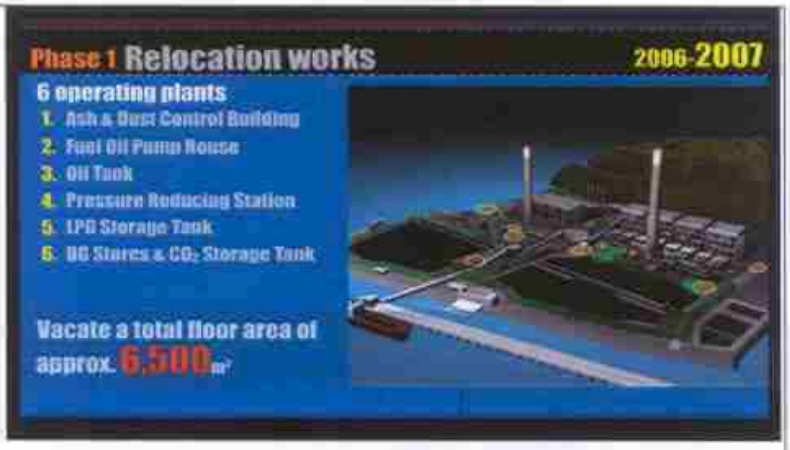
Scale of a FGD Equipment

A typical FGD equipment is about 30 meters in height and 18 meters in width, which equals to two-thirds of the Tsimshatsui Clock Tower.

A Major Undertaking

The Emissions Control Project involves extensive relocation and construction work in the Castle Peak "B" Power Station, which is currently contributing to about one-third of CLP's electricity supply. To implement this large-scale project in the power station without interrupting its operation and supply of electricity is a great challenge. Additional challenges include limited footprint, complex interfacing between existing facilities and new equipment.

The whole project comprises two phases. The first phase focuses on plant relocation which aims at vacating a total floor area of approximately 6,500m$^2$. The second phase is the installation of new emissions control facilities.




**Phase I (2006 – 2007)**

— a total of six existing facilities will be relocated. These include:

- Dismantle the Ash & Dust Control Building and relocate its operations to three different locations
- Move the existing Fuel Oil Pump House to a new location at Castle Peak "A" Power Station
- Demolish the existing oil tank
- Move the Pressure Reducing Station to 60 meters east to the original location
- Move the LPG Storage Tank to a new location
- Move the Dangerous Goods Stores and $CO_2$ Storage Tank to four different locations

**Phase II (2007 – 2011)**

— four major emissions control facilities will be installed in phases between 2009 and 2011, which include the SCR, FGD, extension of berth as well as building of material handling facilities. In order to ensure reliable electricity supply during the entire project period, installation work of new facilities could only be carried out during winter season when demand for electricity is relatively lower.

CLP started to engage the government with a preliminary proposal in 2003 and submitted the plan along with the Financial Plan (2005-2008) in 2004. We are pleased that the project has obtained government approval and are committed to proceed at a fastest possible and practicable way.