

PROJECT CLEAN AIR

Certification Scheme for Clean Air Charter

Final Report

For

Hong Kong Aircraft Engineering Company Limited (HAECO)



Prepared by



February 2009

1. INTRODUCTION

Hong Kong Aircraft Engineering Company Limited (HAECO) has provided comprehensive aeronautical engineering and maintenance services to airlines and operators since 1950. The operation of HAECO comprises heavy maintenance at hangars which holds six wide-bodied aircraft fully docked with an additional two nose-in. The company also performs line maintenance for about 70 airlines at the passenger and cargo terminals in Hong Kong International Airport as well as component overhaul at Tseung Kwan O. HAECO provides 'inventory technical management' services for rotatable spares of various airlines. The Company is building a third heavy maintenance hanger with opening planned for mid 2009.

With approximate 4,500 headcounts, HAECO Hong Kong operation in passenger terminal building is 24 hours a day and 365 days a year and it has expanded its operation into other Asian cities over the past years. Swire holds major interests in HAECO and provides management support.

This report outlines the findings of the Business Environment Council (BEC) from a walk through audit and interview with Mr. Matthew Tang, Environmental Protection & Industrial Safety Manager and Mr. Henry Lam, Environment, Health & Safety Officer.

From the pre-audit questionnaire completed by HAECO, it was determined that HAECO fits into Group C category of the certification scheme, showing that the organization has comprehensive management systems and means in place to identify and verify the implementation of energy efficiency / emission reduction programmes that are in compliance with the Clean Air Charter.

The site visit was conducted at the HAECO plant in Hong Kong International Airport and led by Ms Dorothy Lam and Ms Brenda Fung on 19th November 2008. The purpose of this audit was to verify HAECO's commitments to the Clean Air Charter.

2. OBSERVATIONS AND COMPLIANCE

Based on the site meeting, HAECO's programmes and practices on reducing air emission were reviewed. In general, a systematic approach on addressing the Clean Air Charter's commitments has been implemented as follows:

- HAECO follows Green Office Guidelines and Sustainable Development policy established by the Swire group. Sustainable Development committee was formed to establish strategies on carbon emission intensity per year and to prepare 3-year carbon financial budget.
- Environmental Protection and Industrial Safety (EP & IS) Department and Facilities Development Department are responsible for monitoring and recording energy consumptions and measuring air emission. Both departments are also accountable to formulate the energy saving plans.
- Every new recruited staff will be briefed about the Clean Air Charter and its importance during the induction training. This topic is also included in the refresher courses conducted for existing staff periodically.
- Emission of airborne chemical substances generated from painting activity has been investigated and the measurement result indicated that the exposure of organic vapours and particulate matters satisfied the Occupational Exposure Limited (OEL). And the removal efficiency of air scrubber has also been tested to ensure the scrubbing effectiveness.
- Suggestion award scheme have been implemented to give incentive for sound suggestion of energy saving measure.
- EP & IS Department and Facilities Development Department are responsible for monitoring and recording energy consumptions and measuring air emission by measurement and energy bills.

Regarding the six commitments of the Clean Air Charter, the table below summarizes the achievements of HAECO:

Commitment	Action done
1) Operate to a recognized world class standard, or the standards established by the Hong Kong / Guangdong governments on emissions of air pollutants, even if it is not a requirement to do so here. (Relevant to industrial operations, power plants and business with direct emissions)	<ul style="list-style-type: none"> ◆ Air emission sources have been identified and recorded in the environmental management plan. HAECO's operation follows local legislation and EP & IS Department is responsible for relevant legislation update. ◆ HAECO was awarded Indoor Air Quality certificate with Good Class in 2007.
2) Use continuous emissions monitors (CEMs) at significant	◆ HAECO's major emission sources are from vehicle exhaust and chemical processes such as aircrafts

Commitment	Action done																
sources, e.g. large and medium plants. (Relevant to large / medium industrial operations and power plants)	<p>and its components painting.</p> <ul style="list-style-type: none"> ◆ The major air pollutants generated including paint mist, VOC, SO_x, NO_x and particulates from diesel and combustion of fuel. ◆ As HAECO is not considered as an industrial operation which possesses stationary emitting facilities that are regulated by Air Pollution Control Ordinance, therefore continuous emissions monitors are not applicable to the scope of HAECO operation with regards to the Charter commitments.. 																
3) Publish information on energy and fuel use, as well as total emissions of air pollutants annually and timely, if emissions are significant.	<ul style="list-style-type: none"> ◆ HAECO's works on reducing its environmental impacts are published in its annual Environmental, Health and Safety report. ◆ Besides EHS report, HAECO also publicizes its energy and fuel consumption figures in Carbon Disclosure Project 2007 questionnaire. Comparison of <u>emission intensity</u> between 2006 and 2007 is summarized as below <table border="1" data-bbox="738 1061 1425 1538"> <thead> <tr> <th></th> <th>2006</th> <th>2007</th> <th>Improvements</th> </tr> </thead> <tbody> <tr> <td>Base Maintenance (Kg / manhour)</td> <td>11.22</td> <td>8.33</td> <td>25.75%</td> </tr> <tr> <td>Line Maintenance (Kg / movement)</td> <td>12.47</td> <td>12.37</td> <td>0.80%</td> </tr> <tr> <td>Total kg / HK\$1000 turnover</td> <td>11.56</td> <td>9.14</td> <td>20.93%</td> </tr> </tbody> </table>		2006	2007	Improvements	Base Maintenance (Kg / manhour)	11.22	8.33	25.75%	Line Maintenance (Kg / movement)	12.47	12.37	0.80%	Total kg / HK\$1000 turnover	11.56	9.14	20.93%
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4) Undertake to adopt energy-efficient measures in their operations.	<ul style="list-style-type: none"> ◆ A heat pump was installed in the canteen to supply hot water for washing and cleaning activities. Approximate annual electricity saving of 117 x 10³ kWh is estimated. 																

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	<div data-bbox="748 331 1195 813" data-label="Image"> </div> <ul style="list-style-type: none"> <li data-bbox="692 880 1430 972">◆ Water scrubbers are used in paint grinding workshops to reduce the amount of inhalable particles released to the environment. <div data-bbox="748 990 1220 1386" data-label="Image"> </div> <ul style="list-style-type: none"> <li data-bbox="692 1453 1430 1615">◆ A green roof system has been installed at HAECO's Security Office roof top since Jan 2007, covering an area of about 70m³. It is estimated to achieve a temperature decrease of 3°C and thus reduce electricity consumption for air conditioning.

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	<div data-bbox="746 331 1385 801" data-label="Image"> </div> <ul style="list-style-type: none"> <li data-bbox="694 869 1428 967">◆ LED lighting pilot project was carried out in 2008 to evaluate the deployment of LED lighting across a number of facilities lighting applications. <div data-bbox="746 981 1305 1393" data-label="Image"> </div> <table border="1" data-bbox="746 1509 1422 1872"> <thead> <tr> <th>Luminaries</th> <th>Input Power</th> <th>Qty</th> <th>Annum Operating at 12 hrs/day/year</th> </tr> </thead> <tbody> <tr> <td>Existing SON street light</td> <td>250W</td> <td>7</td> <td>7,665 KW</td> </tr> <tr> <td>Replaced by LED street light</td> <td>150W</td> <td>7</td> <td>4,599 KW</td> </tr> <tr> <td colspan="3">Saving per year</td> <td>3,066 KW</td> </tr> </tbody> </table>	Luminaries	Input Power	Qty	Annum Operating at 12 hrs/day/year	Existing SON street light	250W	7	7,665 KW	Replaced by LED street light	150W	7	4,599 KW	Saving per year			3,066 KW
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	<ul style="list-style-type: none"> ◆ Emission scrubbers are installed on the building roof to pre-treat all air emissions before discharged to the atmosphere. <div data-bbox="772 450 1297 1144" data-label="Image"> </div> ◆ In 2007, adoption of battery carts for travelling between the hangars and different bays has significantly reduced carbon dioxide emission as compared to diesel-powered vehicles. <div data-bbox="751 1402 1382 1753" data-label="Image"> </div> ◆ Town gas consumption has been reduced from 1,509,648 MJ in 2006 to 1,270,032 MJ in 2007 partly due to the partial change of town gas cooking to induction cooking and prohibition of using town gas

Commitment	Action done
	<p>for cooking after 4:00pm.</p>  <ul style="list-style-type: none"> ◆ Electricity consumption has been reduced by 4.6% due to the replacement of the new water cooled chillers installed in 2007.
<p>5) Identify and encourage business-relevant measures to be taken on days when air pollution is high.</p>	<ul style="list-style-type: none"> ◆ HAECO will advise staff to reduce the outdoor activities on high API days as far as possible during the induction and refresher course training. ◆ When air pollution is high, HAECO will consider posting signs in intranet to remind staff to minimize outdoor activities which generate emission and to use less electricity at home and at work as ways to help reducing air pollution.

Commitment	Action done
6) Share air quality expertise in business with others.	<ul style="list-style-type: none"> ◆ In addition to EHS report, HAECO also communicates its environmental efforts and achievement in the company's pamphlet titled "Better living environment". ◆ Periodically, HAECO is open for site visits by EPD, Airport Authority, Swire entities as well as sister companies to share experience on emissions abatement. ◆ Environmental performance questionnaire was provided to supplier so as to allow HAECO communicates its direction on environmental issues among suppliers. ◆ As to demonstrate the efforts made to reduce environmental impacts, HAECO has won numerous awards in the past years, namely <ul style="list-style-type: none"> ➤ Indoor Air Quality Certificate with Good Class in 2007. ➤ 2007 HKAI Environmental Performance Award with Certificate of Merit. ➤ 2006/7 Airport Environmental Best Practice Competition – Air Quality Management, which was organized by Airport Authority. ➤ 2 prizes in 2006 Hong Kong Energy Efficiency Awards competition.

3. CONCLUSION

Hong Kong Aircraft Engineering Company Limited has demonstrated their commitments towards the Clean Air Charter's commitments and is recommended to be certified under the Clean Air Charter.