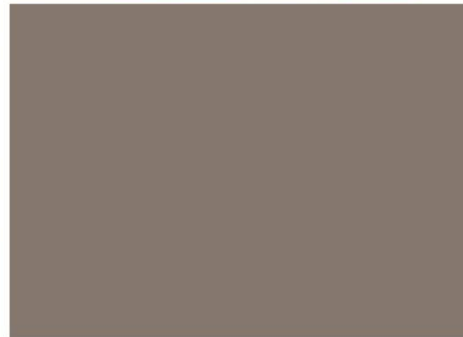


GRAND HYATT TAIPEI



君悅飯店節能分享

2014 五月28號

台北君悅飯店

■飯店主要區域說明

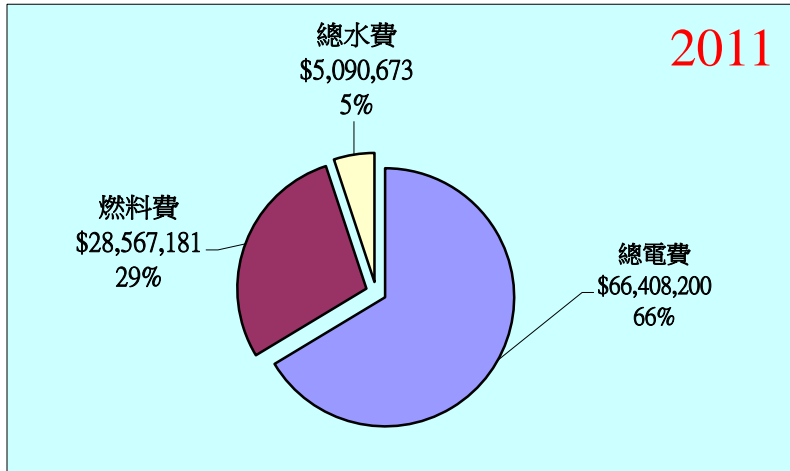
- 建築主體: RC結構
- 高度 九十二米
- 面積: 118,900 平方公尺

- 地下3層, 地上26層,
- 客房區: 856間客房
- 公共區: 宴會廳*8間, 健身中心...等,
及後場行政/辦公/ 機房

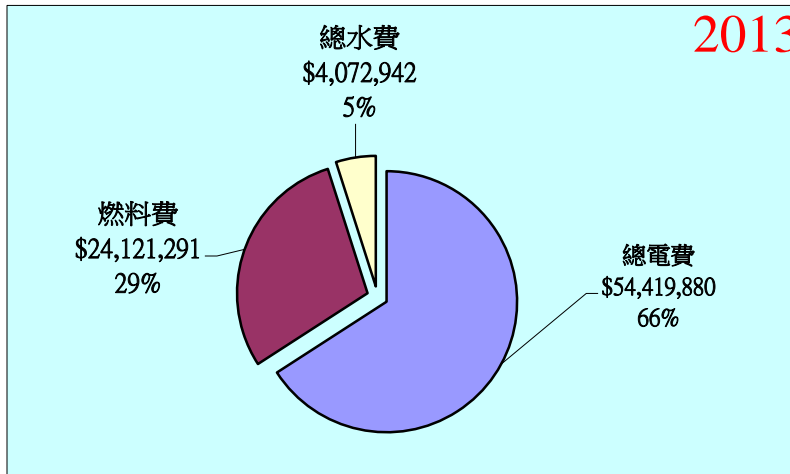


飯店總能源費用

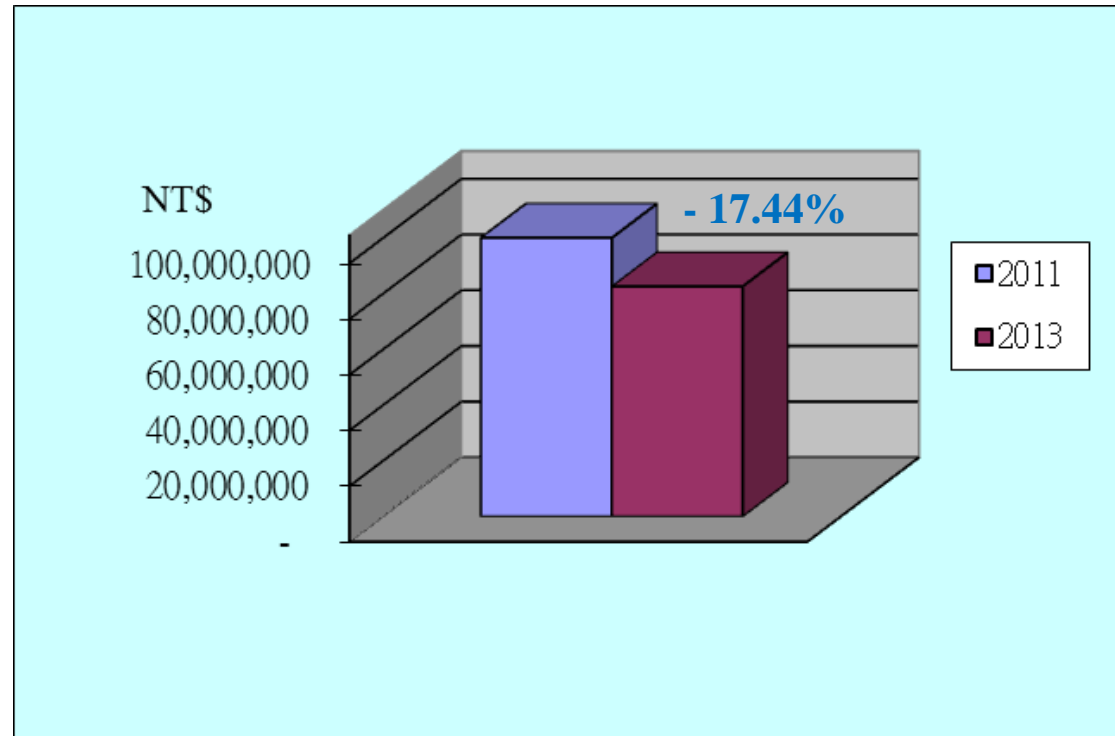
2011
總能源費用
NT\$100,066,054



2013
總能源費用
NT\$82,614,112



飯店總能源費用



2011能源費 \$100,066,054

2013能源費 \$82,614,112

2011/2013總能源消耗量比較共節省約1745萬費用




如何達成以上節能



(一) 重新設計空調系統，使用高效率主機

(二) 冬季使用外氣製造冰水



(三) 使用熱泵同時製造熱水與冰水

(四) 全面使用LED燈泡在各房與各餐廳

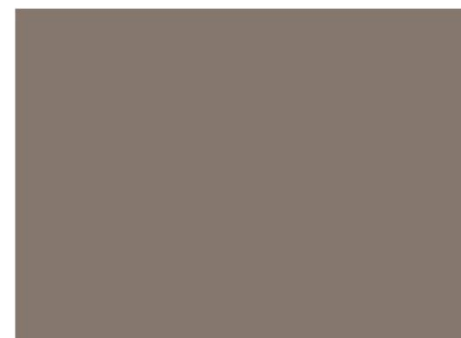


(五) 使用電腦軟體管理各項設備保養

(六) 能源分析與管理

節約能源措施

空調
熱泵
鍋爐
照明





走過從前

■空調系統:

1. 冰水開/關機程序複雜
2. 系統切換及使用複雜
3. 冷卻水水位不平衡
4. R-11 冷煤需更新
5. 設備/管路故障越來越頻繁

■熱水系統


1. 鍋爐排氣環保法規標準提高
2. 附屬管路複雜
3. 燃燒效率不易控制





分項節約能源措施及成效資料表

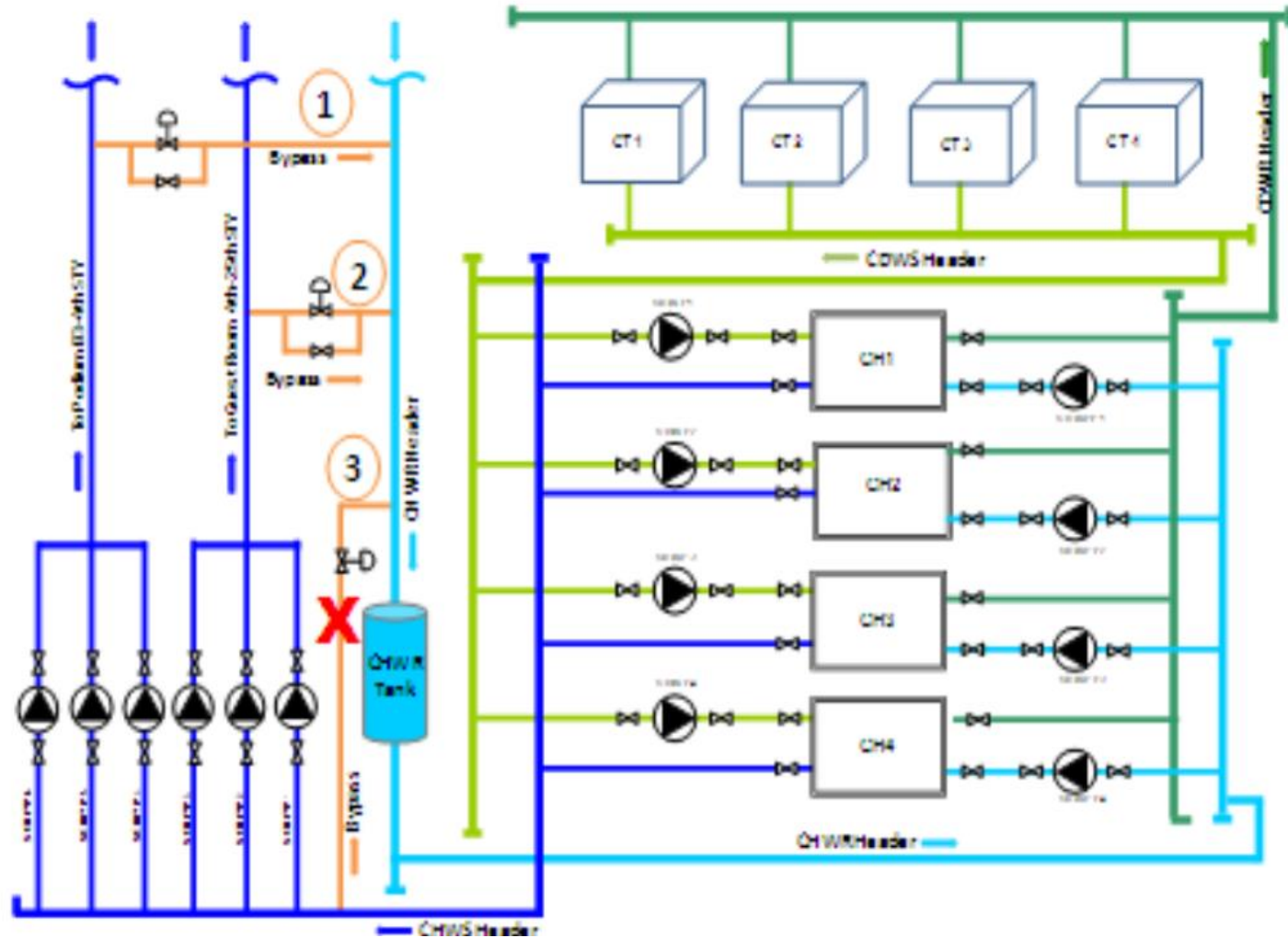
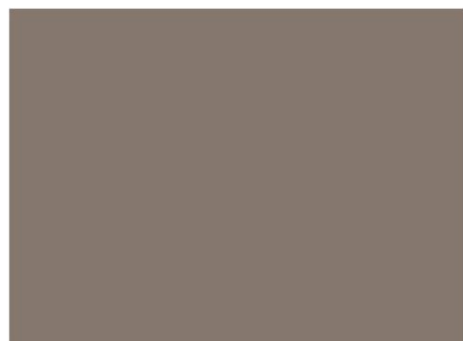
報名單位名稱	台北君悅飯店
分項節能措施	空調系統
節能措施	改善系統效率 由0.957Kw/RT降至0.68Kw/RT
設計理念或改善流程	<ol style="list-style-type: none"> 1. 由變頻主機取代空調定速離心機 2. 由區域出水設定壓差,提供足夠的壓力,不另設區域泵 3. 冷卻水以變頻泵供應,風扇依濕球溼度自動調整設定溫度,調整冷卻水溫度. 4 冬季使用Free cooling
節能成效	$7,969,200-5,989,200=1,980,000\text{kWh}$ (100-101 臺電CAM電錶) $1980000\text{kWh} * 2.73 = 540\text{萬元}$ 抑低CO2之排放量 $1980000\text{kWh} * 0.536 = 1061$ 「公噸」



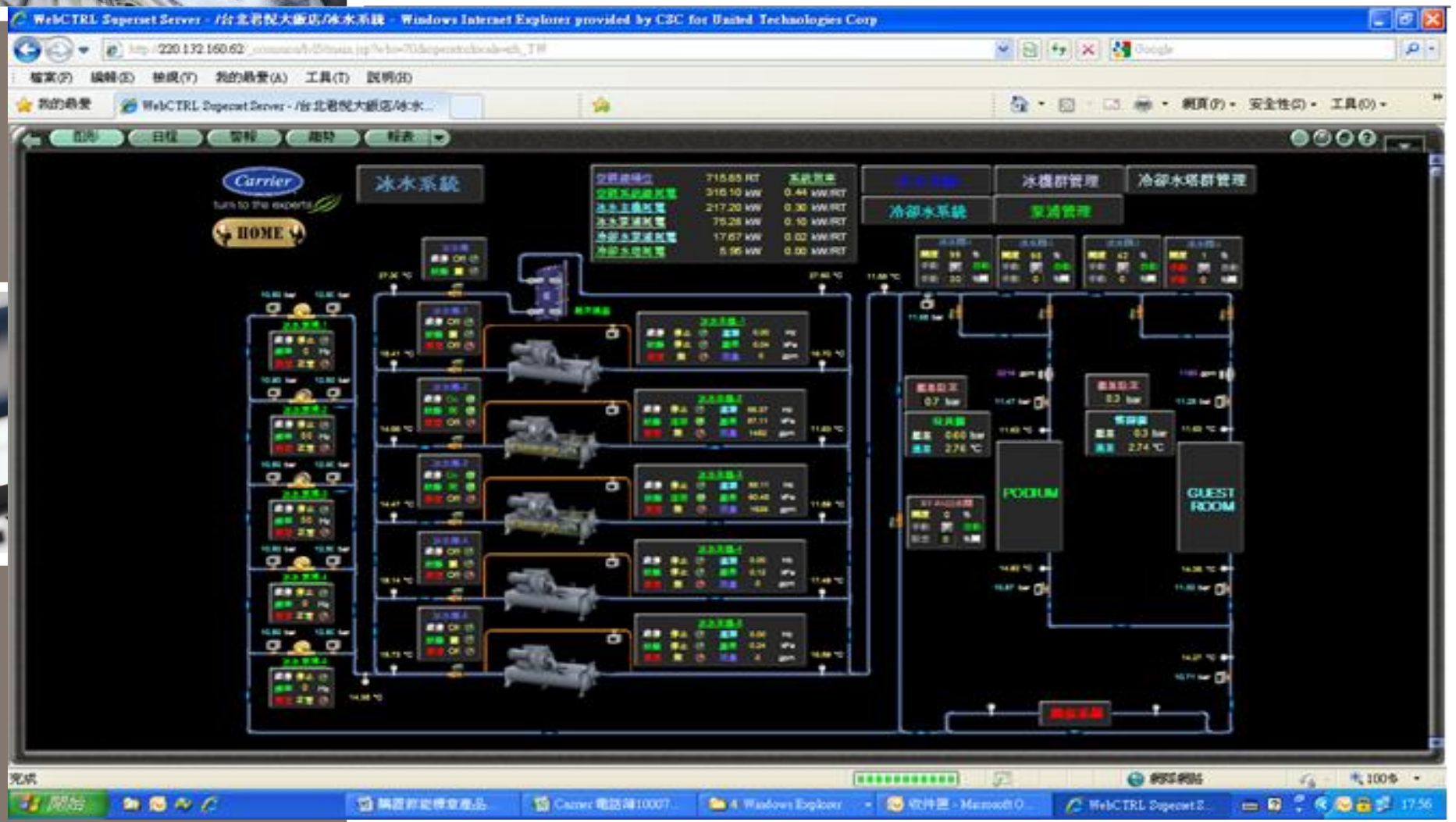


既設空調系統流程圖

Existing Chiller Plant system flow diagram



汰換後冰水主機 New Chiller – Post retrofit



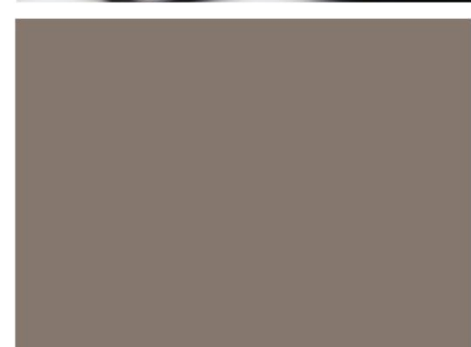


新舊空調系統比較



備名稱	原系統效率(kW/RT)	汰換後系統效率(kW/RT)
Chillers	0.581	0.30
PCHWP	0.041	0.10
SCHWP	0.122	X
CDWP	0.165	0.02
CT	0.048	0.01
Total System	0.957	0.44

取樣日期: 原系統為2010年10月7~10日
新系統為2012年10月19日



Free Cooling



Carrier
turn to the experts

HOME

- 冷水控制
- 冷却水系統
- 冰機群管理
- 泵浦管理
- 冷却水塔群管理

熱交換器

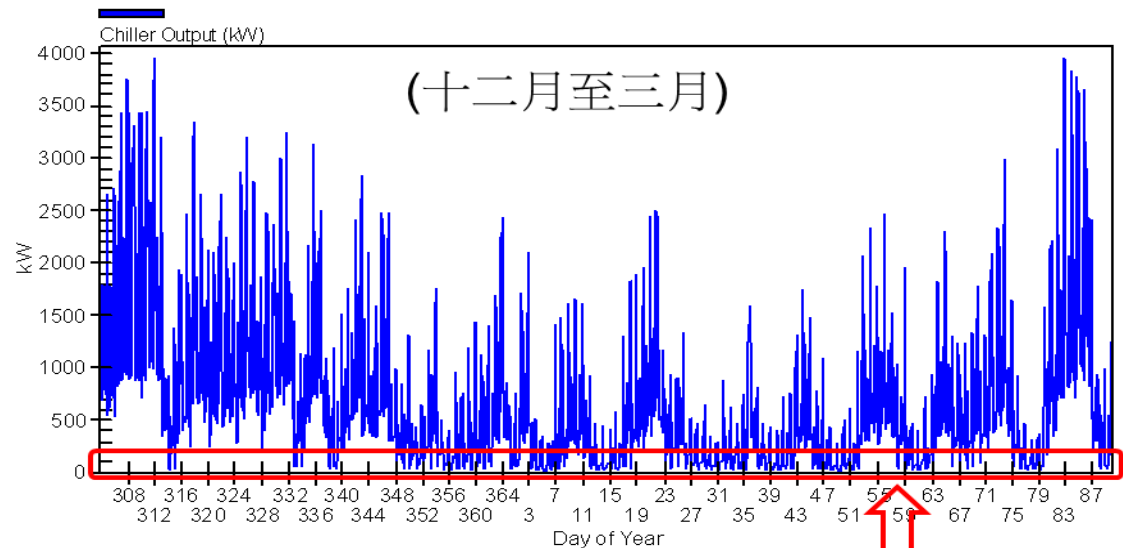
14.80 °C
18.80 °C
12.20 °C

Free Cooling Optimization Control Enable
Building Load Calculative Method

Heat Exchanger Nominal Capacity	0 RT	Outside Air Temperature	15.60 °C
Differential Tune	0 RT	Outside Air RH%	63 %
Free Cooling Setpoint DT Low Limit	0 °C	Free Cooling Status	⊖
Free Cooling Setpoint DT High Limit	0 °C	1# Chiller Status	⊖
CHST Set-point Range Low Limit	0 °C	2# Chiller Status	⊖
CHST Set-point Range High Limit	0 °C	3# Chiller Status	⊖
1#Chiller Nominal Cooling Capacity	550 RT	4# Chiller Status	⊖
1#Chiller Nominal Cooling Capacity	550 RT	5# Chiller Status	⊖
Free Cooling Setpoint DT Low Limit	500 RT	1# Chiller Load Percent	0.0 %
Free Cooling Setpoint DT High Limit	500 RT	2# Chiller Load Percent	0.0 %
CHST Set-point Range Low Limit	550 RT	3# Chiller Load Percent	0.0 %
CHST Set-point Range High Limit	550 RT	4# Chiller Load Percent	0.0 %
		5# Chiller Load Percent	0.0 %
		Chilled Water Supply Temperature	0.00 °C
		Chilled Water Return Temperature	0.00 °C
		Chilled Water Flow Rate	0.00 gpm
		Chilled Water Supply Temp. Setpoint	0.00 °C
		Chiller Status	⊖
		Outside Air Wetbulb Temp	11.70 °C

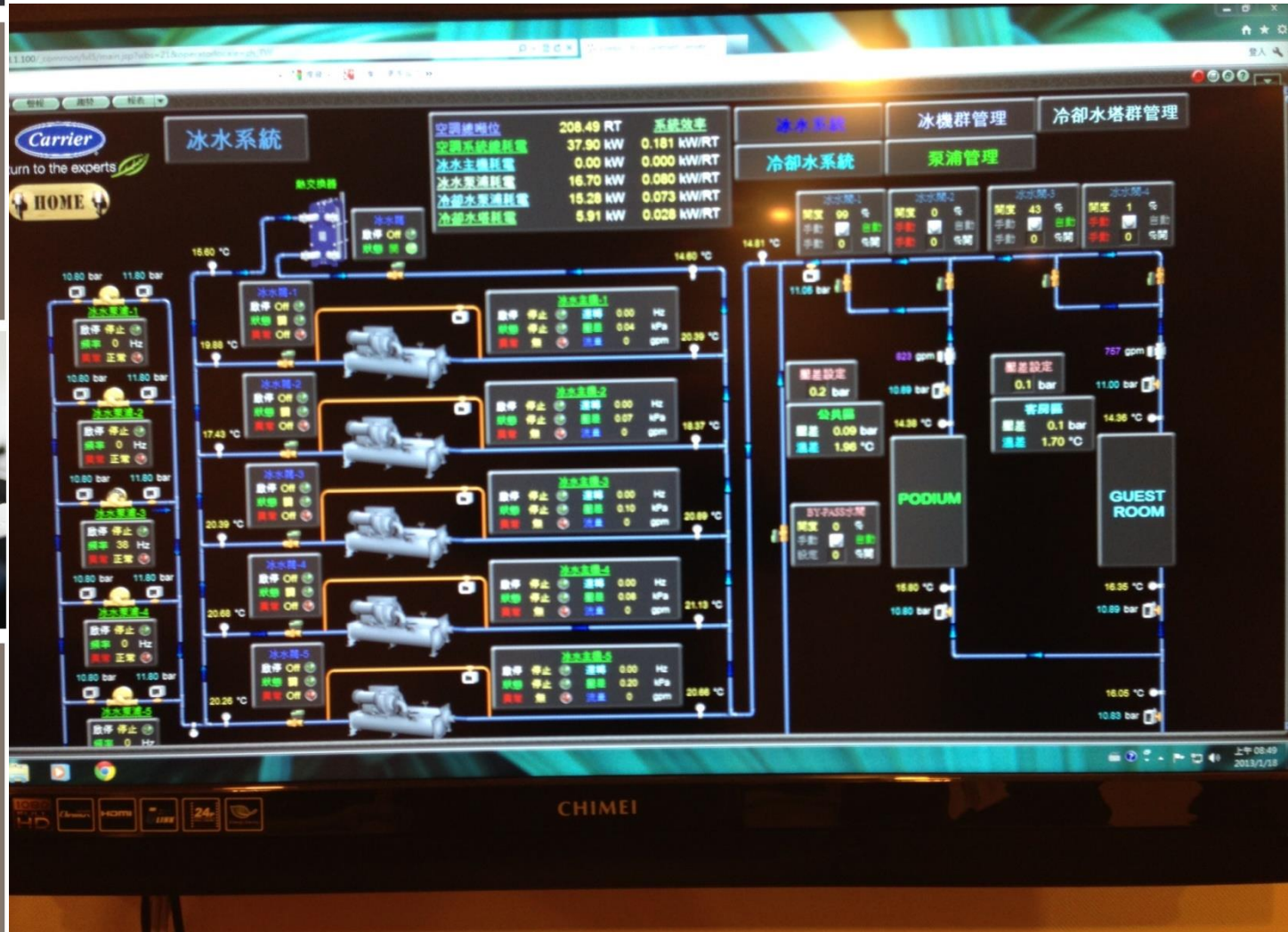
自然冷卻系統

Free cooling system



Very low load period at night time

自然冷卻系統 Free cooling system






分項節約能源措施及成效資料表

自然冷卻系統



Free cooling 每冷凍噸耗電為0.18KW/R,


省電: $(0.95-0.18)=0.77\text{KW/RT}$,



(1) $8\text{hr} \times 120\text{RT} \times 0.77 \times 113\text{天} = 83529\text{KW/hr}$

(2) $24\text{hr} \times 208\text{RT} \times 0.77 \times 7\text{天} = 26906\text{KW/hr}$,

(1)+(2)共省= 110435KW/hr $110435 \times 2.73 = 30.1$ 萬元



抑低CO₂之排放量 $110435\text{kw} \times 0.536 = 59.1$ 「公噸」



鍋爐/熱泵主機房

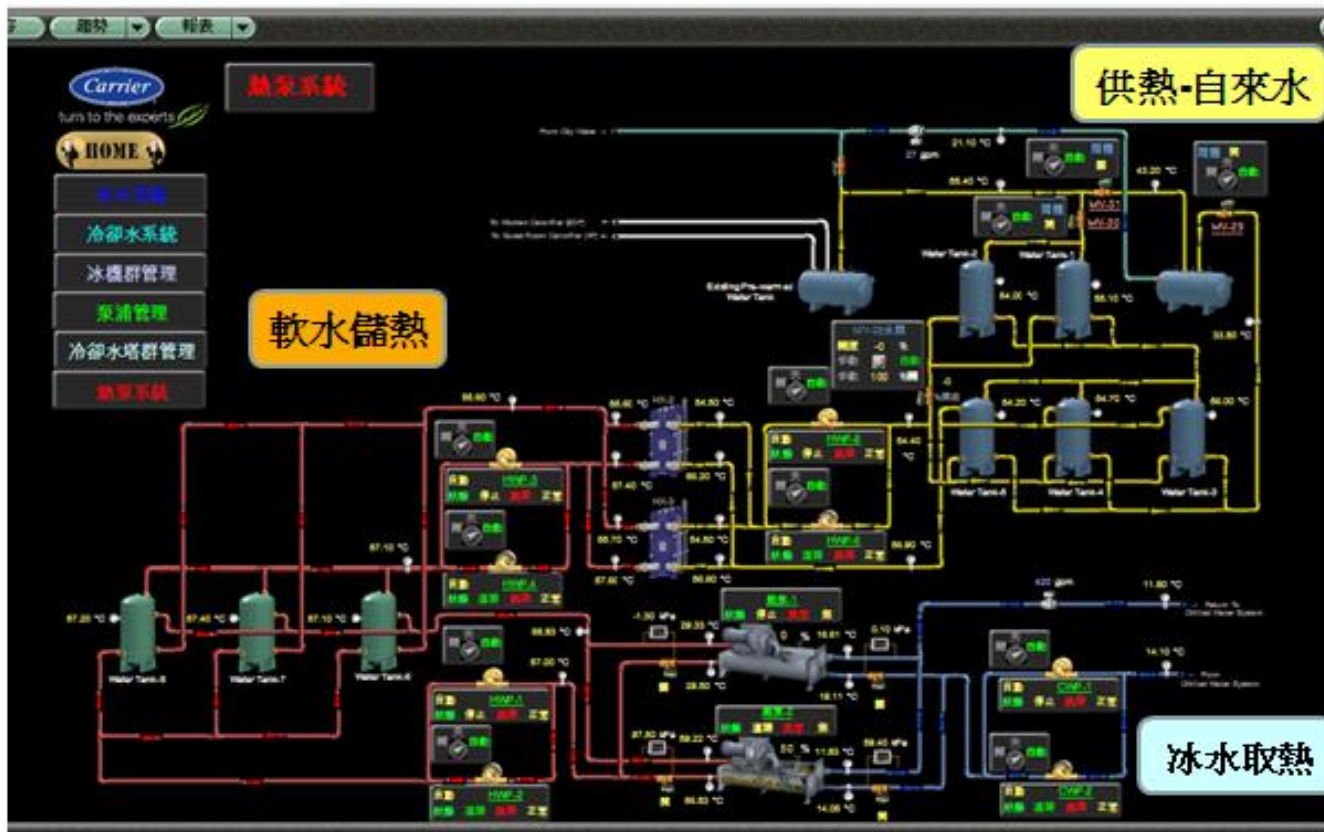


Past

Nowadays




鍋爐/熱泵主機房






分項節約能源措施及成效資料表


能源回收利用



1. 原熱水鍋爐系統，以熱泵熱水系統取代，部份負載效率約為1.75kW/RT，其耗能為329.3kW，年度運轉時數為4,382小時。



2. 年度耗能為： $329.3\text{kW} \times 4,382\text{hr} = 1,442,834\text{kWh/年}$
燃料油：19,455元/kl
 $19,455\text{元/kl} \times 338\text{kl/年} \times 44\% = 289\text{萬元}$

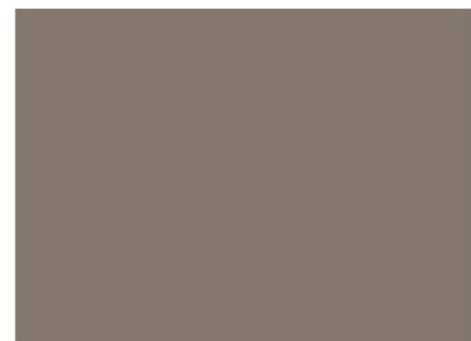


抑低CO₂之排放量

$1,442,834\text{kWh} \times 0.536/1,000 = 773.4\text{公噸/年}$

節約能源措施

使用省水C/T,減少水濺之耗水



電力系統

22.8KV 雙迴路供電



14. 9. 2006

14. 9. 2006



分項節約能源措施及成效資料表

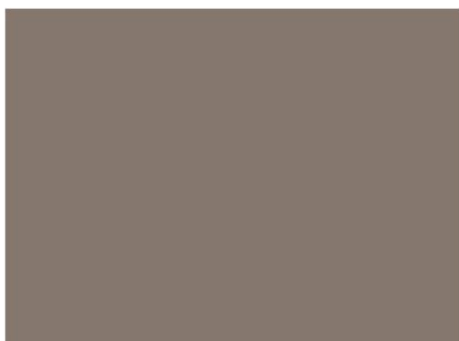
因更換高效變頻主機,並改善空調系統效率,預估可降低契約容量約500KW

	八月	九月	十月	十一月	十二月	
100年基本電費	1028560	1028560	1028560	793822	767740	
101年基本電費	1028560	959989	899990	709808	671772	
差額	0	68571	128570	84014	95968	
節省金額						377,123



節約能源措施

客房 餐廳 公共區域 及後場更換使用高效率
燈具



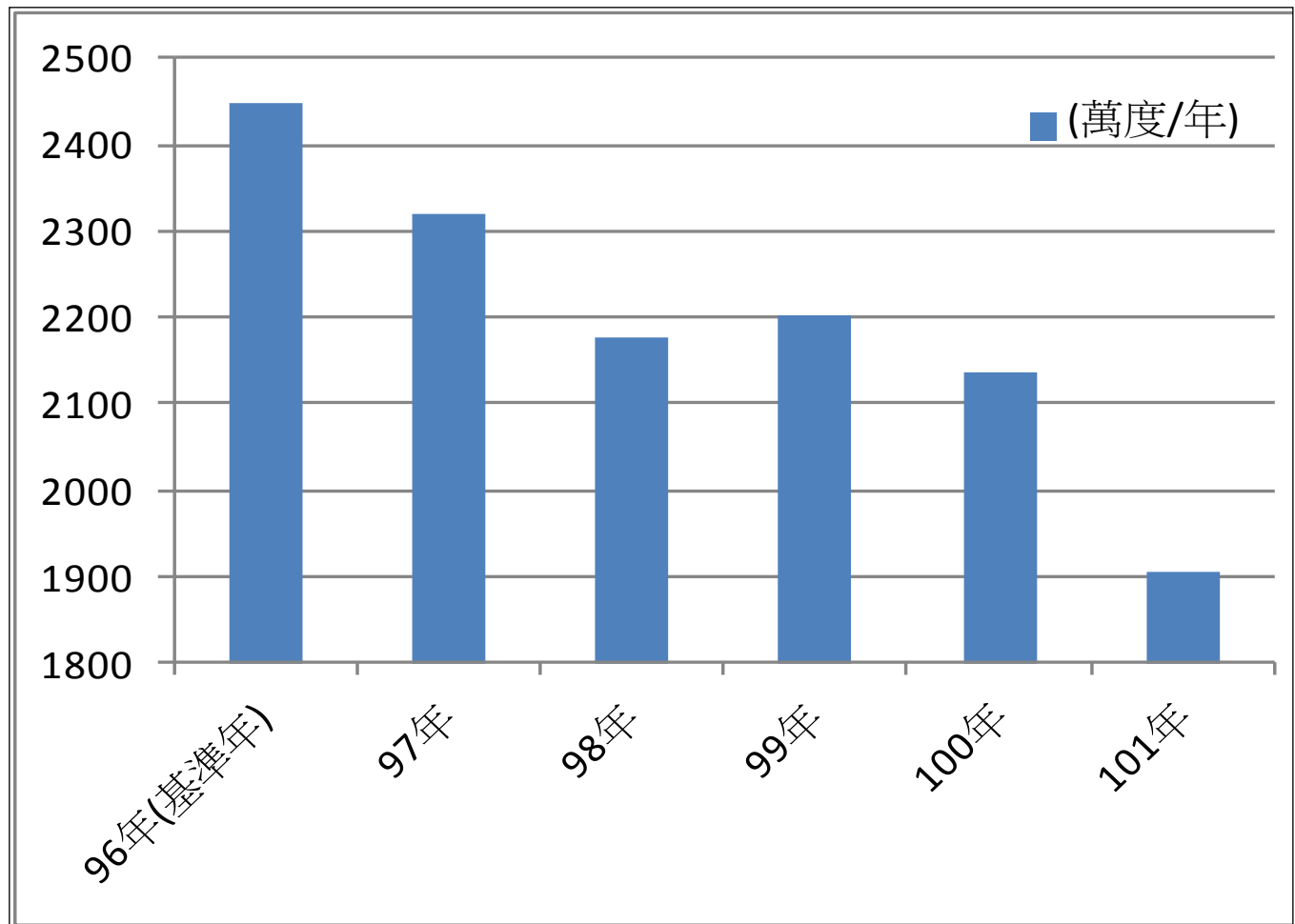
節約能源措施 Boiler



鍋爐以天然瓦斯替代燃料油減少碳排放： 4054公噸/年

	kg-CO2		2012燃料M*3		公噸/年
燃料油 CO2之排放量	3.111		1304		4056.
天然瓦斯CO2之排放量	1.88	1/1000	1304		2.45
減少之 CO2之排放量					4054

96~101年間用電量變化圖





定期檢查節約能源設備

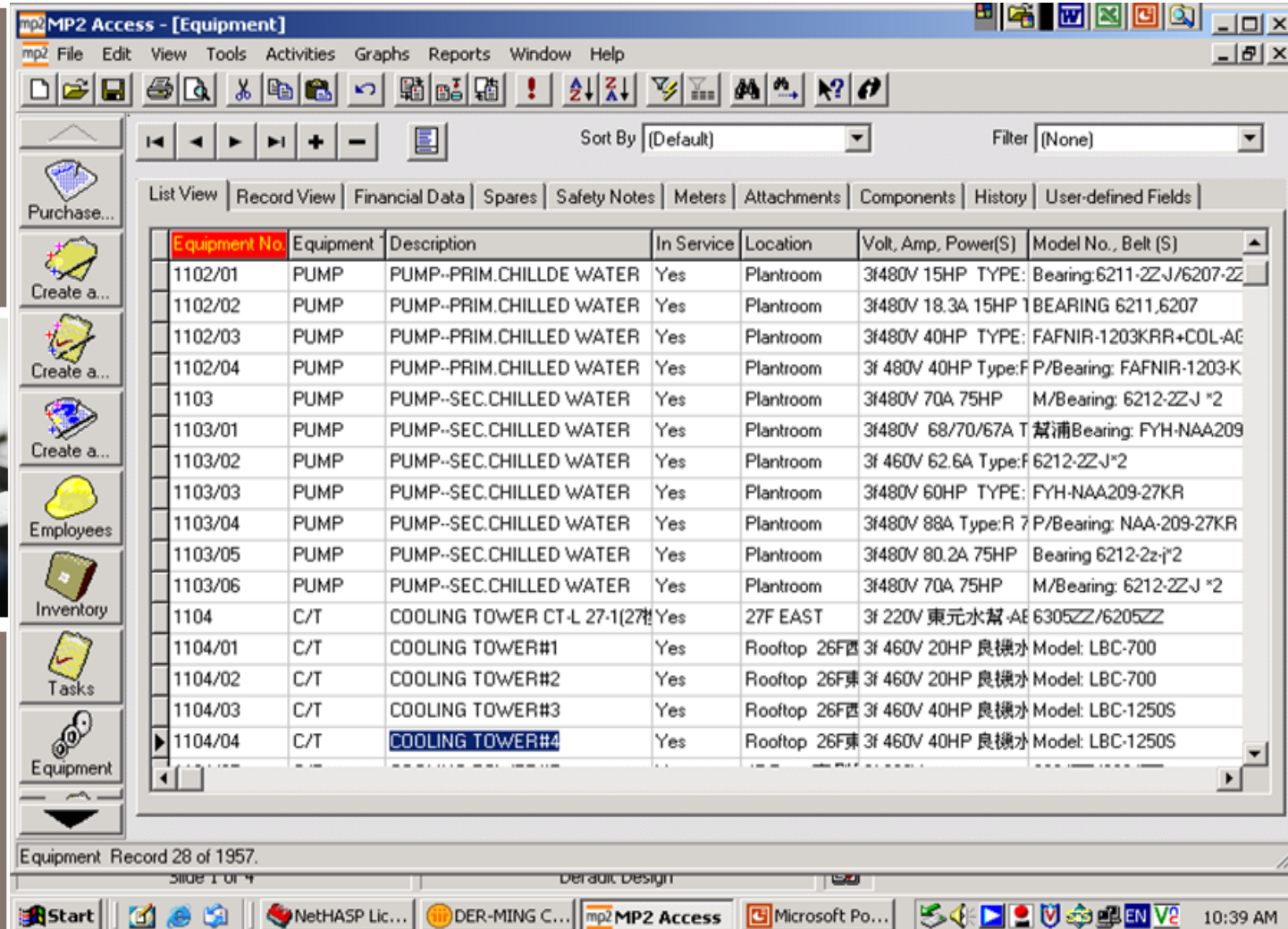
- [MP2](#) 保養軟體



The screenshot displays the MP2 Access software interface. The window title is "mp2 MP2 Access". The menu bar includes "File", "Edit", "View", "Tools", "Activities", "Graphs", "Reports", "Window", and "Help". The toolbar contains various icons for file operations and editing. The main area features a "Quick Access" panel with the "mp2 access 2000" logo and a grid of buttons for "Purchase Or...", "Create a Wo...", "Create a Task", "Create a Re...", "Employees", "Inventory", "Tasks", "Equipment", "Work Orders", "Work Order ...", "Requisitions", and "Statistical...". The status bar at the bottom shows "Slide 1 of 1", "Default Design", and the taskbar with the Start button, active applications, and system tray.



Equipment List: 建立設備清單, 以規劃保養單內容



The screenshot displays the 'MP2 Access - [Equipment]' software window. The interface includes a menu bar (File, Edit, View, Tools, Activities, Graphs, Reports, Window, Help), a toolbar with various icons, and a navigation pane on the left with options like 'Purchase...', 'Create a...', 'Employees', 'Inventory', 'Tasks', and 'Equipment'. The main area shows a table with columns: Equipment No., Equipment, Description, In Service, Location, Volt, Amp, Power(S), and Model No., Belt (S). The table lists various pumps and cooling towers. The status bar at the bottom indicates 'Equipment Record 28 of 1957' and the system tray shows the time as 10:39 AM.

Equipment No.	Equipment	Description	In Service	Location	Volt, Amp, Power(S)	Model No., Belt (S)
1102/01	PUMP	PUMP-PRIM.CHILLDE WATER	Yes	Plantroom	3f480V 15HP TYPE:	Bearing:6211-2Z-J/6207-2Z
1102/02	PUMP	PUMP-PRIM.CHILLED WATER	Yes	Plantroom	3f480V 18.3A 15HP	BEARING 6211,6207
1102/03	PUMP	PUMP-PRIM.CHILLED WATER	Yes	Plantroom	3f480V 40HP TYPE:	FAFNIR-1203KRR+COL-AC
1102/04	PUMP	PUMP-PRIM.CHILLED WATER	Yes	Plantroom	3f 480V 40HP Type:F	P/Bearing: FAFNIR-1203-K
1103	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f480V 70A 75HP	M/Bearing: 6212-2Z-J *2
1103/01	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f480V 68/70/67A T	幫浦 Bearing: FYH-NAA209
1103/02	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f 460V 62.6A Type:F	6212-2Z-J*2
1103/03	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f480V 60HP TYPE:	FYH-NAA209-27KR
1103/04	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f480V 88A Type:R 7	P/Bearing: NAA-209-27KR
1103/05	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f480V 80.2A 75HP	Bearing 6212-2z-j*2
1103/06	PUMP	PUMP-SEC.CHILLED WATER	Yes	Plantroom	3f480V 70A 75HP	M/Bearing: 6212-2Z-J *2
1104	C/T	COOLING TOWER CT-L 27-1(27)	Yes	27F EAST	3f 220V 東元水幫	AE 6305ZZ/6205ZZ
1104/01	C/T	COOLING TOWER#1	Yes	Rooftop 26F西	3f 460V 20HP 良機水	Model: LBC-700
1104/02	C/T	COOLING TOWER#2	Yes	Rooftop 26F東	3f 460V 20HP 良機水	Model: LBC-700
1104/03	C/T	COOLING TOWER#3	Yes	Rooftop 26F西	3f 460V 40HP 良機水	Model: LBC-1250S
1104/04	C/T	COOLING TOWER#4	Yes	Rooftop 26F東	3f 460V 40HP 良機水	Model: LBC-1250S

Equipment Record:設備基礎資料

The screenshot displays the 'MP2 Access - [Equipment]' window. The interface includes a menu bar (File, Edit, View, Tools, Activities, Graphs, Reports, Window, Help), a toolbar with various icons, and a navigation pane on the left with buttons for 'Purchase...', 'Create a...', 'Employees', 'Inventory', 'Tasks', and 'Equipment'. The main area shows the 'Record View' for an equipment record. The 'Equipment No.' is 1106/15, and the name is 'AIR HANDLING UNIT L1-1 Grand Residence'. Other fields include 'Equipment Type' (AHU), 'Voltage, Amp, Power' (3f460V15.7A), 'Model No., Belt' (C-99), 'Manufacturer' (UC211-2F-A/6), 'Vendor ID', 'Spare-parts Code', 'Priority', 'Person Responsible', 'Operating Status', 'Purchase Date', 'Startup Date', and 'Warranty Expiration Date'. A 'Locations' section contains 'Location' (4F(7.8.E.F東北角AHG-...), 'Volt, Amp, Power(S)' (3f480V, 10.7A, 10.7a, 1), 'Model No., Belt (S)' (SPA 1632), and 'Bearing, Freon (S)'. At the bottom, there are checkboxes for 'In Service' (checked) and 'Notify when creating work orders'. The status bar at the bottom indicates 'Equipment Record 63 of 1957' and 'Slide 3 of 4'.

MP2 Access - [Equipment]

mp2 File Edit View Tools Activities Graphs Reports Window Help

Sort By [Default] Filter [None]

List View Record View Financial Data Spares Safety Notes Meters Attachments Components History User-defined Fields

Equipment No. 1106/15 AIR HANDLING UNIT L1-1 Grand Residence

Equipment Type AHU

Voltage, Amp, Power 3f460V15.7A

Model No., Belt C-99

Manufacturer UC211-2F-A/6

Vendor ID

Spare-parts Code

Priority

Person Responsible

Operating Status

In Service

Notify when creating work orders

Locations

Location 4F(7.8.E.F東北角AHG-...

Volt, Amp, Power(S) 3f480V, 10.7A, 10.7a, 1

Model No., Belt (S) SPA 1632

Bearing, Freon (S)

Purchase Date

Startup Date

Warranty Expiration Date

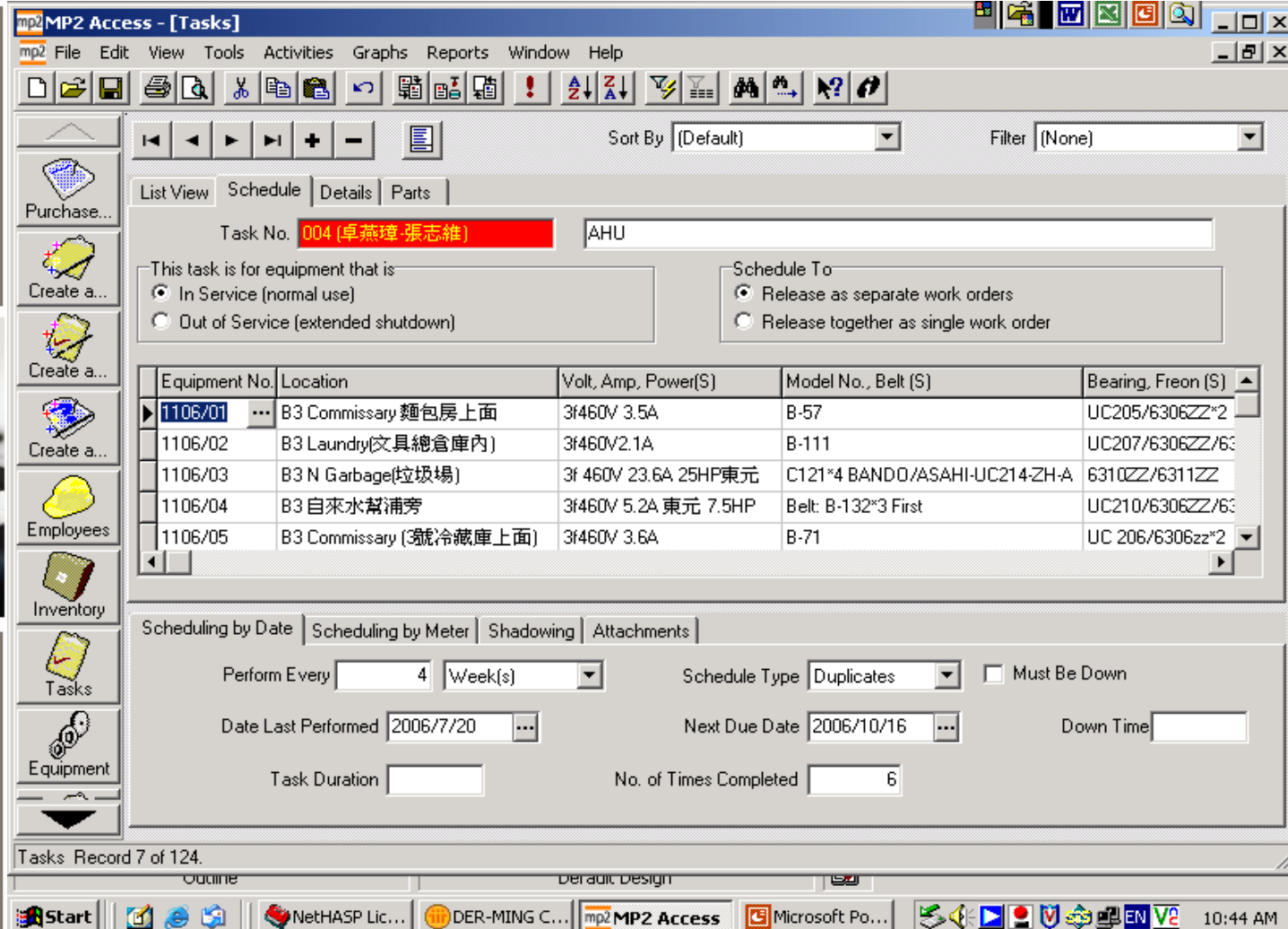
Equipment Record 63 of 1957

Slide 3 of 4

Default Design

Start NetHASP Lic... DER-MING C... mp2 MP2 Access Microsoft Po... 10:41 AM

Task Schedule:排定保養單日程



The screenshot displays the 'MP2 Access - [Tasks]' window. The interface includes a menu bar (File, Edit, View, Tools, Activities, Graphs, Reports, Window, Help), a toolbar, and a sidebar with icons for Purchase, Create a..., Employees, Inventory, Tasks, and Equipment. The main area shows a task for 'AHU' with the following details:

Task No. **004 (卓燕璋-張志維)** AHU

This task is for equipment that is:

- In Service (normal use)
- Out of Service (extended shutdown)

Schedule To:

- Release as separate work orders
- Release together as single work order

Equipment No.	Location	Volt, Amp, Power(S)	Model No., Belt (S)	Bearing, Freon (S)
1106/01	B3 Commissary 麵包房上面	3f460V 3.5A	B-57	UC205/6306ZZ*2
1106/02	B3 Laundry(文具總倉庫內)	3f460V2.1A	B-111	UC207/6306ZZ/63
1106/03	B3 N Garbage(垃圾場)	3f 460V 23.6A 25HP東元	C121*4 BANDO/ASAHI-UC214-ZH-A	6310ZZ/6311ZZ
1106/04	B3 自來水幫浦旁	3f460V 5.2A 東元 7.5HP	Belt: B-132*3 First	UC210/6306ZZ/63
1106/05	B3 Commissary (瀧號冷藏庫上面)	3f460V 3.6A	B-71	UC 206/6306zz*2

Scheduling by Date | Scheduling by Meter | Shadowing | Attachments

Perform Every Week(s) Schedule Type Must Be Down

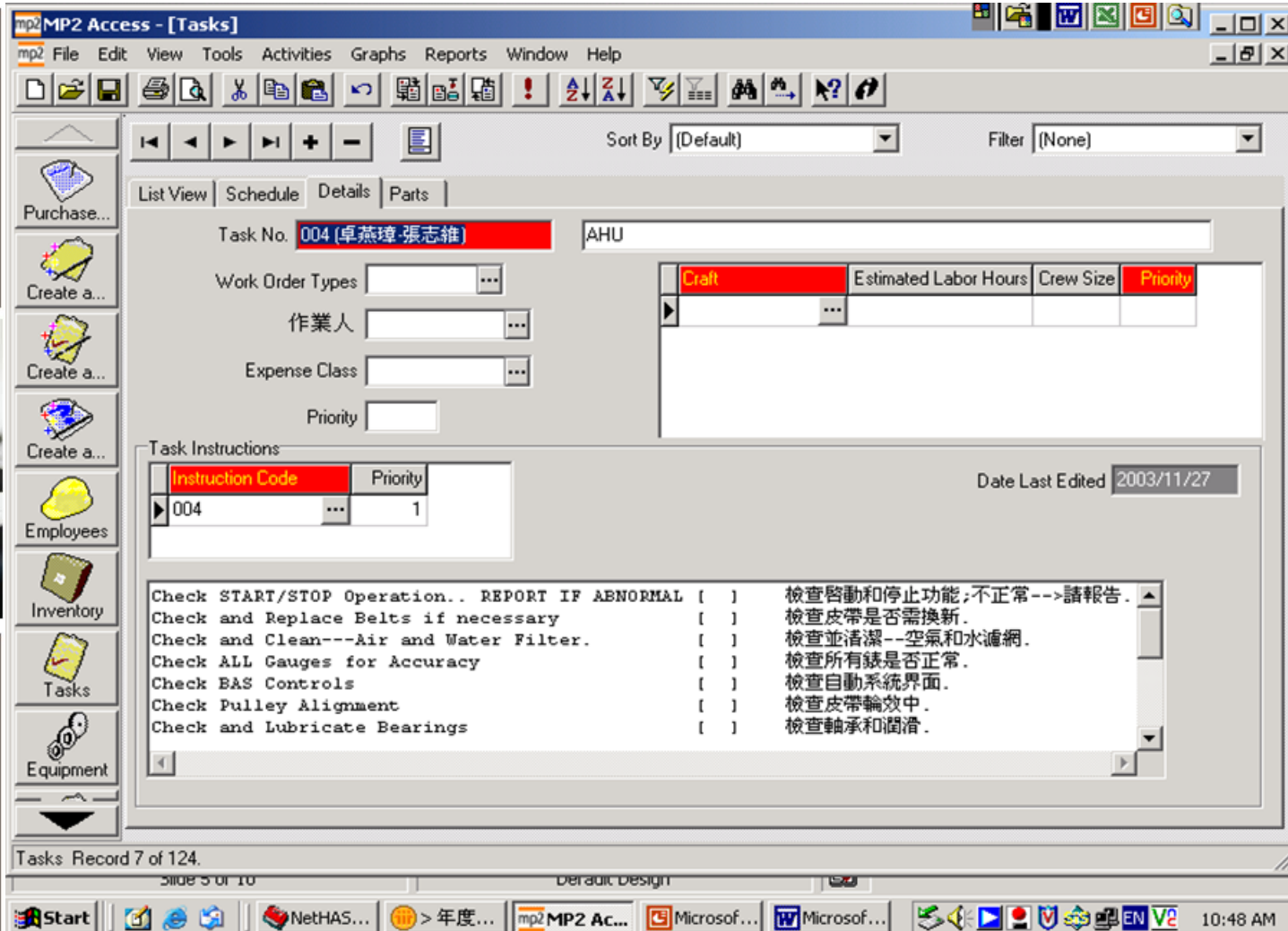
Date Last Performed Next Due Date Down Time

Task Duration No. of Times Completed

Tasks Record 7 of 124.

Taskbar: Start | NetHASP Lic... | DER-MING C... | mp2 MP2 Access | Microsoft Po... | 10:44 AM

Task Details: 保養單內容



The screenshot displays the 'MP2 Access - [Tasks]' application window. The interface includes a menu bar (File, Edit, View, Tools, Activities, Graphs, Reports, Window, Help) and a toolbar with various icons. The main area is divided into several sections:

- Navigation:** Back, Forward, and Home buttons, along with 'Sort By (Default)' and 'Filter (None)' dropdowns.
- Task Information:** Task No. 004 (卓燕璋-張志維), Work Order Types, 作業人 (Operator), Expense Class, and Priority.
- Table:** A table with columns: Craft, Estimated Labor Hours, Crew Size, and Priority.
- Task Instructions:** A table with columns: Instruction Code and Priority. One instruction is visible: 004 with Priority 1.
- Task List:** A list of tasks with checkboxes and descriptions in both English and Chinese.

Task Instructions Table:

Instruction Code	Priority
004	1

Task List:

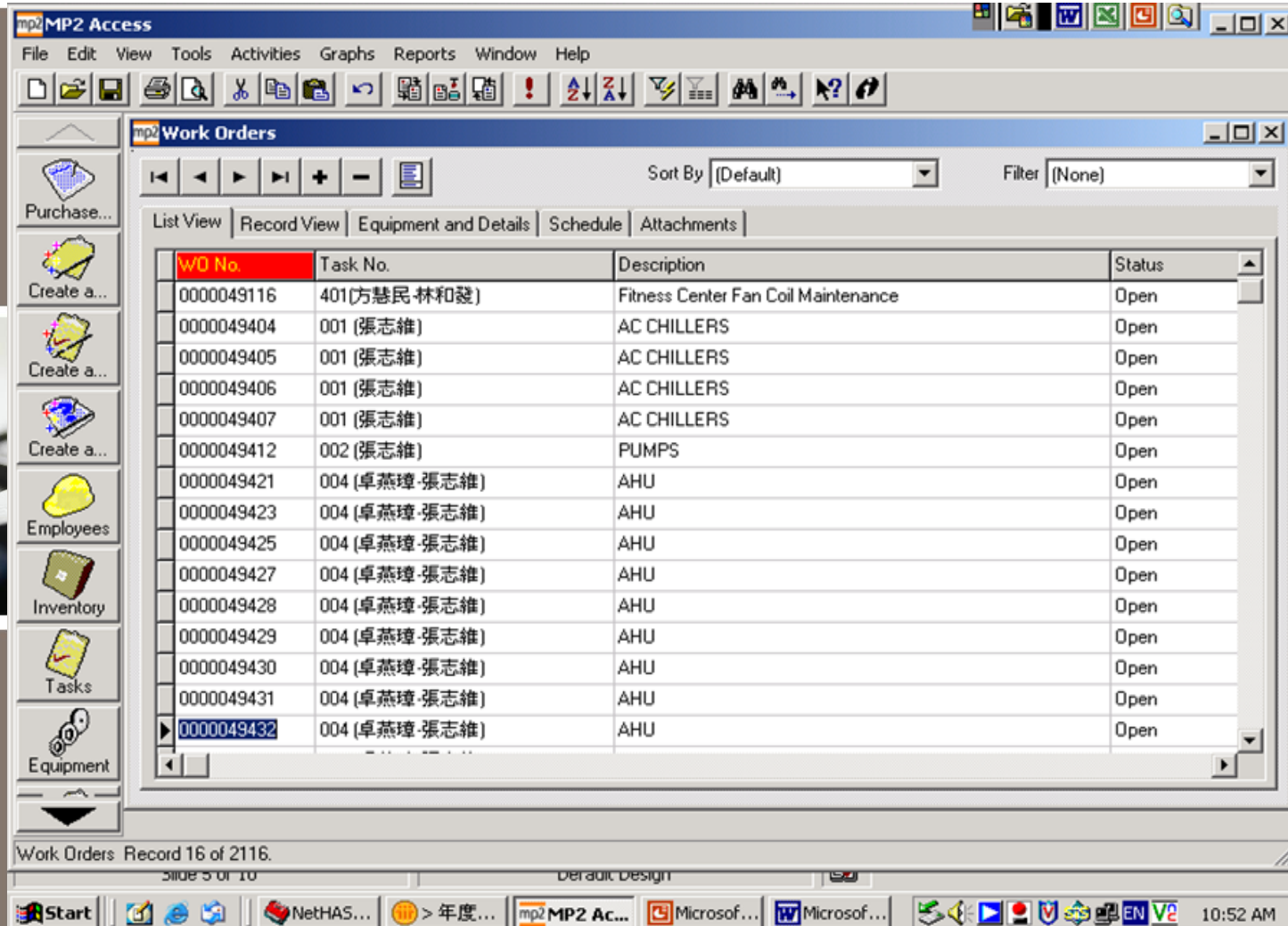
Instruction Code	Description
[]	Check START/STOP Operation.. REPORT IF ABNORMAL
[]	Check and Replace Belts if necessary
[]	Check and Clean---Air and Water Filter.
[]	Check ALL Gauges for Accuracy
[]	Check BAS Controls
[]	Check Pulley Alignment
[]	Check and Lubricate Bearings

Task List (Chinese):

Instruction Code	Description
[]	檢查啟動和停止功能;不正常-->請報告.
[]	檢查皮帶是否需換新.
[]	檢查並清潔--空氣和水濾網.
[]	檢查所有錶是否正常.
[]	檢查自動系統界面.
[]	檢查皮帶輪效中.
[]	檢查軸承和潤滑.

Tasks Record 7 of 124. Date Last Edited 2003/11/27

Work Order List: 預防保養清單



The screenshot displays the MP2 Access software interface. The main window is titled "mp2 Work Orders" and shows a list of work orders in a table format. The table has four columns: "WO No.", "Task No.", "Description", and "Status". The status of all listed work orders is "Open".

WO No.	Task No.	Description	Status
0000049116	401(方慧民·林和發)	Fitness Center Fan Coil Maintenance	Open
0000049404	001 (張志維)	AC CHILLERS	Open
0000049405	001 (張志維)	AC CHILLERS	Open
0000049406	001 (張志維)	AC CHILLERS	Open
0000049407	001 (張志維)	AC CHILLERS	Open
0000049412	002 (張志維)	PUMPS	Open
0000049421	004 (卓燕璋·張志維)	AHU	Open
0000049423	004 (卓燕璋·張志維)	AHU	Open
0000049425	004 (卓燕璋·張志維)	AHU	Open
0000049427	004 (卓燕璋·張志維)	AHU	Open
0000049428	004 (卓燕璋·張志維)	AHU	Open
0000049429	004 (卓燕璋·張志維)	AHU	Open
0000049430	004 (卓燕璋·張志維)	AHU	Open
0000049431	004 (卓燕璋·張志維)	AHU	Open
0000049432	004 (卓燕璋·張志維)	AHU	Open

The interface includes a menu bar (File, Edit, View, Tools, Activities, Graphs, Reports, Window, Help), a toolbar with various icons, and a sidebar with navigation options like "Purchase...", "Create a...", "Employees", "Inventory", "Tasks", and "Equipment". The status bar at the bottom indicates "Work Orders Record 16 of 2116" and "Slide 5 of 10".

Work Order History Part I: 保養單歷史資料I

mp2 MP2 Access

File Edit View Tools Activities Graphs Reports Window Help

mp2 Work Order History

Sort By (Default) Filter (None)

List View Record View Equipment and Details Schedule Attachments

WD No.	Task No.	Close Date	Description	Request Date	Request Time	監督人員	作業人員	Scheduled Start Da
0000043203	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043204	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043205	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043206	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043207	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043208	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043209	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043210	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043211	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043212	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043213	005 (卓燕璋·張)	2005/7/13	AIR FANS	2005/6/13	12:23:51 下午	5卓燕璋	5卓雁璋	2005/6/13
0000043214	006 (張志維)	2005/7/13	BOILERS	2005/6/13	12:23:51 下午	5卓燕璋	湯照明	2005/6/13
0000043215	006 (張志維)	2005/7/13	BOILERS	2005/6/13	12:23:51 下午	3嚴陽祥	5卓燕璋	2005/6/13
0000043216	006 (張志維)	2005/7/13	BOILERS	2005/6/13	12:23:51 下午	3嚴陽祥	5卓燕璋	2005/6/13
0000043217	009(張志維)	2005/7/13	DOMESTIC	2005/6/13	12:23:51 下午	5卓燕璋	湯照明	2005/6/13

Work Order History Record 44314 of 53742.

Start NetHAS... MIKO F... mp2 MP2 Ac... Microsoft... Microsoft... 11:10 AM

Work Order History Part II: 保養單歷史資料 II

mp2 MP2 Access

File Edit View Tools Activities Graphs Reports Window Help

mp2 Work Order History

Sort By [Default] Filter [None]

List View Record View Equipment and Details Schedule Attachments

作業人員	Scheduled S	Scheduled Start	Scheduled Finish Date	完工日期	完工時間	備註欄 (Pls. type h
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/8	2005/7/2	10:46:44 上午	15.00
▶ 5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/2	10:46:51 上午	15.00 更換風車軸承
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/2	10:47:14 上午	15.00
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/2	10:47:20 上午	15.00 更換皮帶*2
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/9	10:47:37 上午	20.00
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/2	10:47:43 上午	15.00
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/2	10:47:48 上午	15.00
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/22	2005/7/2	10:47:54 上午	15.00
5卓雁璋	2005/6/13	12:00:00 上午	2005/7/8	2005/7/7	10:48:01 上午	19.00 更換皮帶*2
5卓雁璋	2005/6/13	12:00:00 上午	2005/6/24	2005/7/2	10:48:16 上午	15.00
5卓雁璋	2005/6/13	12:00:00 上午	2005/6/13	2005/7/7	10:48:29 上午	19.00 暫停使用
湯照明	2005/6/13	12:00:00 上午	2005/6/24	2005/7/15	10:48:42 上午	25.00
5卓燕璋	2005/6/13	12:00:00 上午	2005/10/14	2005/6/26	10:49:17 上午	10.00
5卓燕璋	2005/6/13	12:00:00 上午	2005/10/14	2005/6/26	10:49:41 上午	10.00
湯照明	2005/6/13	12:00:00 上午	2005/7/1	2005/7/15	10:52:23 上午	25.00

Work Order History Record 44314 of 53742.

Slide 8 of 10 Default Design

Start NetHAS... DER-MI... mp2 MP2 Ac... Microsoft... 11:16 AM

Planned Preventive Maintenance: 列印設備預防保養單

KEF1110 - 廚房抽風機

Task No. KEF1110 Tenant Assigned By 作業人員 Scheduled Start Date 12/02/2014 Scheduled Finish Date 12/02/2014 Perform by Warranty No Priority 3.00 Expense Class Project ID	Request Date 06/02/2014 Request Time 17:47:12 Originator Telephone No. Extension WO Type 102.02 24 完工日期 15/06/14 完工時間 Project Task
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------

Craft	Estimated Crew Size	Estimated Labor Hours
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Equipment No.	Equipment Description	Location	Sub-location 1	Sub-location 2	Sub-location 3
1110/09	KITCHEN EXHAUST FAN B3-4	B3 Laundry	.	.	.

Part No.	Equipment No.	Description	Qty Required	Date Used	Qty Used

List extra parts and comments here

Employee Code	Equipment No.	Work Date	First Name	Last Name	Regular Hours	Overtime Hours

Safety Note

Equipment No. 1110/09
 460V 4.3A Bearing: FYH-P21.0*2 GOOD YEAR AX-46 TORQUE-FLEX

Task Instructions

月
 季
 半年
 年
 检查启动和停止功能;不正常->请报告。
 检查皮带量;是否需要换新。
 检查并记录电流。

r: 27 s: 34 t: 36A

季
 半年
 年
 检查轴承和润滑。
 检查皮带校正
 每年 6, 12月份以高阻计量线圈,和绝缘等等...

Andy

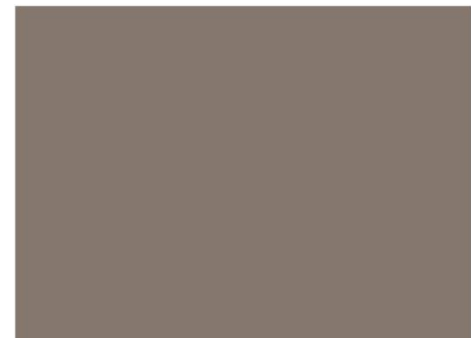
保養單歸檔在控制室



30. 3. 2009




能源管理

每月節約能源會議





定期紀錄各種能源耗用量

- 
- * 每日主要能源消耗記錄(監測)
 - * 每月各部門能源使用記錄(量測)
 - * 每月各部門能源使用統計(分析)
 - * 外氣溫度與用電比較(每日稽核)
- 
- 

定期紀錄各種能源耗用量:以監測,量測, 分析,稽核掌控能源之使用

(一)每日主要能源消耗記錄(監測)

A	B	ER	ES	ET	EU	EV	EW	EX	EY
	YEAR:2013								
	DATE:	Mar. 14	Mar. 15	Mar. 16	Mar. 17	Mar. 18	Mar. 19	Mar. 20	Mar. 21
25	Consumption	354	352	354	338	320	-194551	0	0
	Gas: Shanghai Court	415591	415729	415845	415962	416048	416142		
26	Consumption	138	116	117	86	94	-416142	0	0
	Gas: Pearl Liang	441867	441980	442085	442218	442303	442382		
27	Consumption	113	105	133	85	79	-442382	0	0
	GAS:You & Me	394181	394291	394363	394467	394585	394669		
28	Consumption	110	72	104	118	84	-394669	0	0
	Gas: Irodori & Residence	110228	110316	110396	110486	110527	110601		
29	Consumption	88	80	90	41	74	-110601	0	0
	Gas: Bel Air	14573	14612	14648	14686	14686	14724		
30	Consumption	39	36	38	0	38	-14724	0	0
	GAS:Grand Residence	735	736	736	743	743	743		
31	Consumption	1	0	7	0	0	-743	0	0
	Total Gas Consumption	953	839	947	733	744	-1752707	0	0
	Total C/T Consumption	27	33	35	47	59	-108232	0	0
	Electricity Total Consumption	43200	42800	46000	42800	45600	-18758400	0	0
	Total Feedwater Consumption	51804	48396	49606	45829	43698	-22000608	0	0
	Gas/Water Ratio								
	Total Water	759	845	756	798	790	-737549	0	0
	Total Electricity	43200	42800	46000	42800	45600	-18758400	0	0
	MDT Water	56514	57359	58115	58913	59703	-677846	-677846	-677846
	MTD Electricity	3103200	3146000	3192000	3234800	3280400	-15478000	-15478000	-15478000
	Boiler Gas (include 14.31%)	4217	3308	3705	3434	3178	-1684779	0	0
	MTD Boiler Gas	50359	53667	57372	60806	63984	-1620795	-1620795	-1620795

(二) 每月各部門能源使用記錄(量測)

Meter	Type	2013	2013	2013	2013	2013	2014	2014
		Sep	Oct	Nov	Dec	Jan-Dec	Jan	Feb
15	Laundry	23800	23400	23400	25800	276800	26400	24600
16	Laundry	5720	5840	6120	7040	70240	7200	6440
17	B1 B2 Parking	25680	25500	24480	24600	302160	24720	21600
18	B1 B2 Parking	35760	33840	30660	27240	390600	27000	22920
19	Employee Kitchen	8280	8760	7800	8640	97920	9240	7800
20	Commissary	14140	13720	13580	14140	165900	14280	10500
21	Cheers - Rest	15060	16380	15780	17100	181740	17400	15540
22	Plaza Cafe - Rest	23460	23940	22800	24300	270240	24660	22380
23	Plaza Kitchen	11800	12400	11800	12000	146400	11600	10500
24	Inroom Dining Kitchen	16920	21720	20040	18360	220080	19920	19080
25	Bel Air - Rest	7900	8300	8000	9000	97200	8900	8600
26	Shanghai Kitchen	6800	8160	7760	8000	90080	8400	7280
27	Canton - Rest	16200	16200	17600	17500	198200	17600	15300
28	Canton Kitchen	9960	9720	10200	12120	107760	13680	11040

(三) 每月各部門能源使用統計(分析)

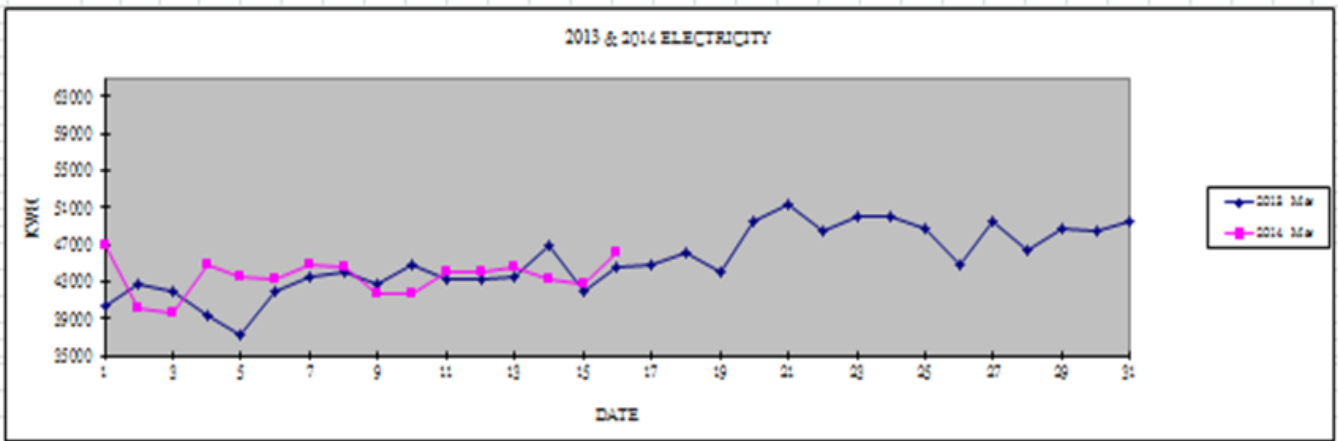
	2013 FEB	2014 FEB	Diff:	Var:
	Ton (噸)	Ton (噸)	Ton (噸)	
Total (總用水)	21,462	21,432	- 30	0%
F&B (餐飲)	9,367	10,590	1,223	13%
Rooms (客房)	3,281	3,314	33	1%
Laundry (洗衣房)	1,756	2,344	588	33%
A/C (冷卻水塔)	1,049	695	- 354	-34%
FC(健身房游泳池)	1,869	1,290	- 579	-31%
Others (其他)	4,140	3,199	- 941	-23%

	2013 FEB	2014 FEB	Diff:	Var:
	Unit (KWh)	Unit (KWh)	Unit (KWh)	
Total (總用電)	1,136,800	1,168,400	31,600	3%
F&B (餐飲)	245,920	262,340	16,420	7%
Rooms (客房)	219,830	193,200	- 26,630	-12%
Aircon (空調)	252,000	268,800	16,800	7%
Others (其他)	419,050	444,060	25,010	6%

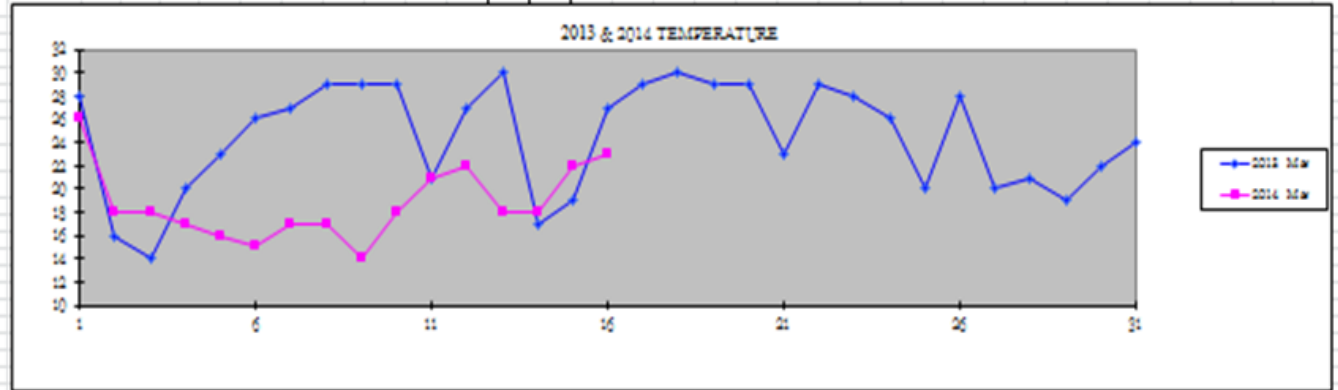
	2013 FEB	2014 FEB	Diff:	Var:
	Pax (客)	Pax (客)	Pax (客)	
Food Cover (用餐人數)	46,837	74,055	27,218	58%
Total No. of Guest (總房客)	11,340	14,255	2,915	26%

(四)外氣溫度與用電比較(每日稽核)

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	31
2013 M..	42400	42800	43000	43000	43200	43700	43800	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200	44200
2014 M..	46800	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000




DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
2013 M..	28	16	14	20	23	26	27	29	29	29	21	27	30	17	19	27	29	30	29	24	23	29	28	26	20	28	20	21	19	22	24	
2014 M..	26	18	18	17	16	15	17	17	14	18	18	21	22	18	18	22	23															






推動整體節約能源教育宣導活動


- 
- 經每月節能會議分享節能新知、能源動態，檢討本飯店節能成效，並於每月各部門會議內提出節能數據，經比較過去紀錄，要求改進節能空間，即時掌握節能且能讓所有員工皆有參與感。
 - 每月主管會議，節能推動績效亦是列為一項重要展示，也是促成所有員工努力的一種動力。
 - 內部電視系統播放省水、省電宣導，讓員工時刻參與節約，即時接受本飯店節能訊息。
 - 飯店能源督導，由工程處安排人員於營業時間、休息時間、夜間清潔時間，巡查本飯店其涵蓋所有區域空間，遇有違規，則拍照後，要求部門主管處理改進。



節約能源提案及改善獎勵機制




為鼓勵員工參與節約能源，凡提出節能提案，且付諸執行者，工程處即給予：1、凱菲屋自助餐券免費二客。2、提報人力支援處每月員工之星黃金級授予，並於每日晨會提報事蹟鼓勵；另外本飯店設有部門獎，部門團體對飯店有增加收益、業務貢獻、節約能源、團體表現，優異者由總經理頒發獎狀及獎金鼓勵。




另獎勵參與部門主管盡心節約，於每月能源會議，則準備簡單茶點慰勞。

員工提案內部請參考：


1. 夜間公共區域4樓以下，減壓供水。
 2. 夜間餐廳廚房不提供熱水，減少熱水使用。
 3. 調整餐廳、會議室空調開關時間，縮短預冷時間。
 4. 提昇空調設定溫度。
 5. 提高水資源回收利用率。
 6. 空調之冷凝水回收再利用。
 7. 燈光設定亮度%調低、減亮、減發亮。
 8. 雨水回收灌溉花圃利用。
- 



未來節能目標




一. 擴大熱泵應用：以熱泵提供泳池加熱器及暖氣系統之熱能，以降低蒸氣鍋爐之瓦斯費用。



二. 外圍大樓外觀夜間照明：以LED低耗能之光源取代傳統燈具(進行中)。

三. 公共區域及餐廳逐步以LED低耗能之光源取代傳統燈具(提報預算審核中)。



四. 使用高效率之空調箱：箱體隔熱係數高熱損小，搭配變頻運作。

END

