CIS 全自動冰塊清潔系統
Clean Ice System

- ✓ 1000磅以下製冰機適用
- ✓ 365天保持冰塊衛生
- ✓ 不限品牌或型號皆可安裝
- ✓ 不會改變冰的味道

主機 - 電解式臭氧水模組

信號盒
(選配)

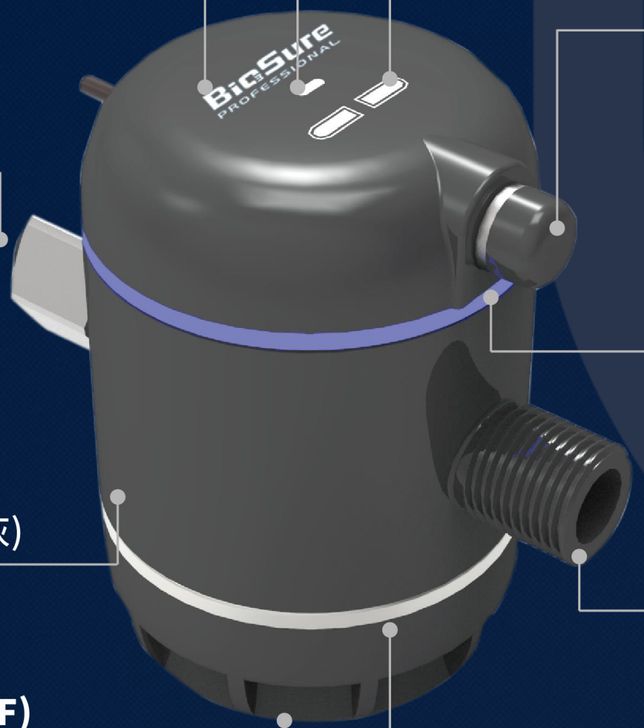
外觀

頂燈
藍、白雙色

LOGO絲印
Pantone 8400C (亮粉銀)

按鍵
左 / 右鍵

信號線接埠
4芯 (也燒錄程序)



進口
G1/2” Female Nut (活動螺帽)

進口濾網&密封圈 (配件)

氣氛燈
藍、紅雙色

主體外部烤漆(PC)
亮面, Pantone 45C (深鐵灰)

出口
G1/2” Male Thread

發生器模塊外部烤漆 (PVDF)
亮面, Pantone 45C (深鐵灰)

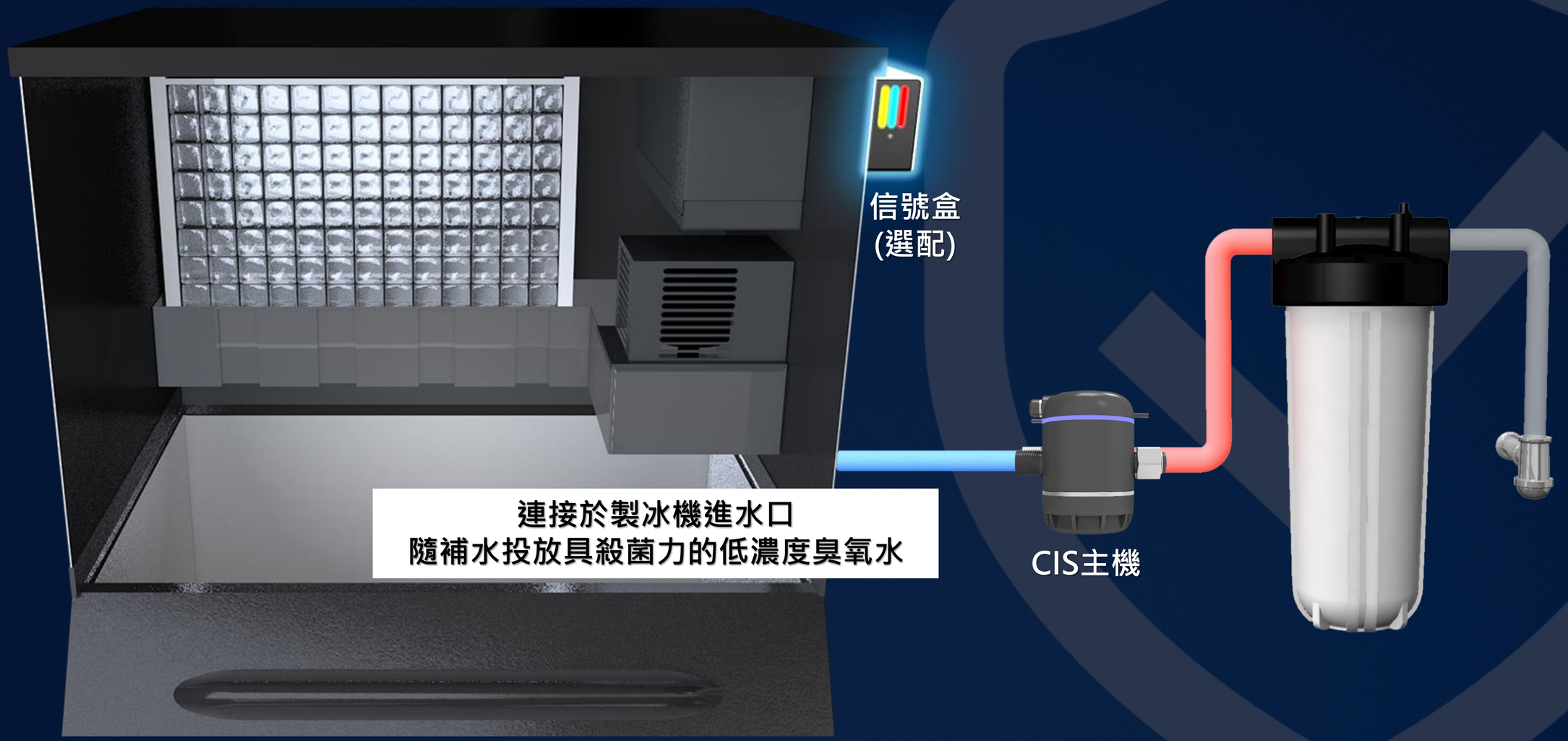
裝飾環
白銀

規格表

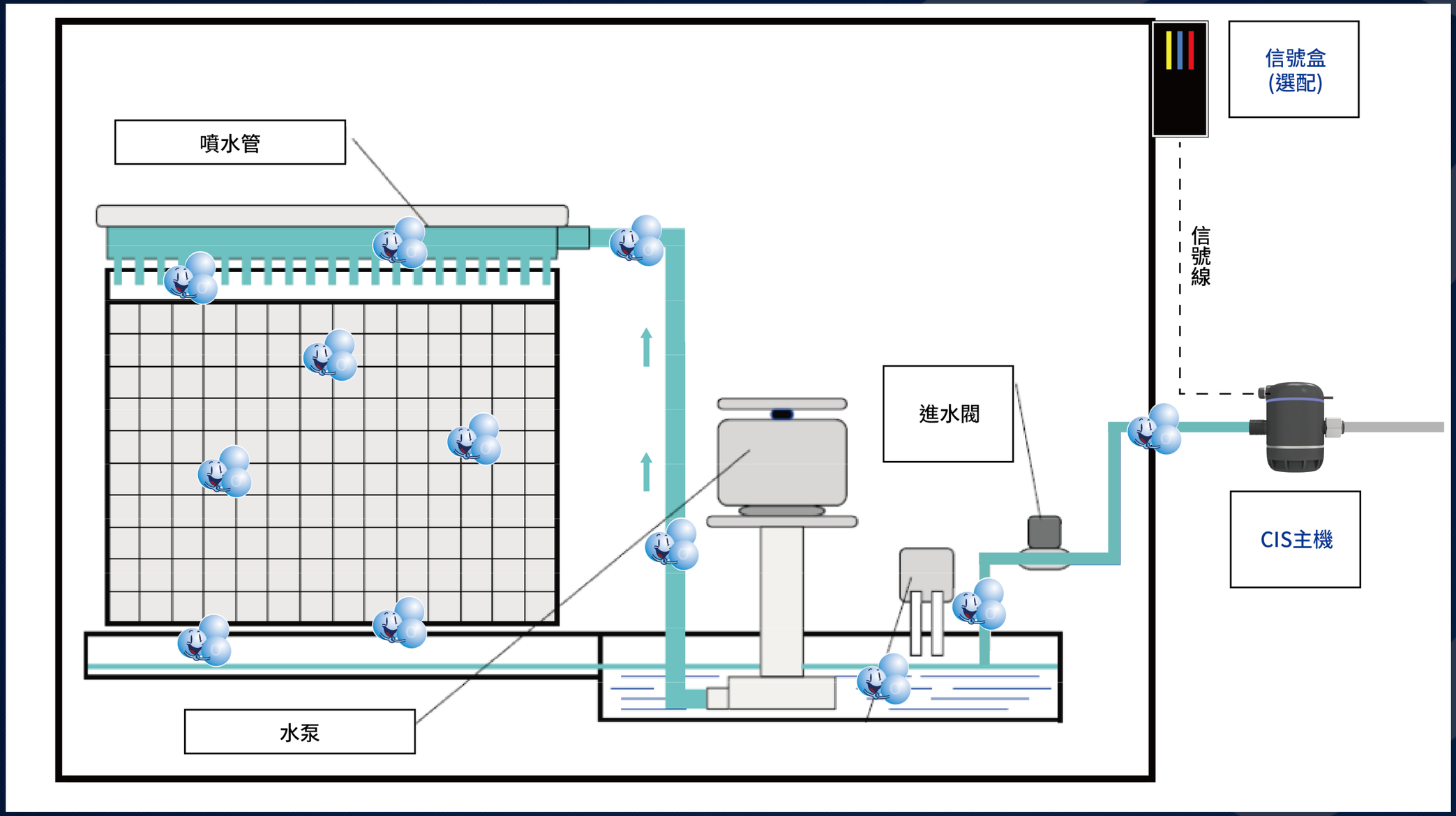
型號	EOS7175-P
水中溶解臭氧濃度	0.025 ppm (循環水中濃度，冰塊沒有臭氧)
防水防塵等級	IP56*
耐受水壓	7 bar, 100 psi
內部容積	≥ 80ml
臭氧發生量	≥10 mg/hr
工作水質	TDS 60 - 300；硬度 < 250 ppm as CaCO3 (碳酸鈣硬度)
電源	適配器：AC100-240V, 50/60Hz；主機：DC12V/1A
發生器壽命	500工作小時
商品尺寸	W119 x D73 x H108 (mm)
淨重	100 g

* 防塵係數5: 不可能完全阻止灰塵侵入，但灰塵的侵入量不能對裝置的正常工作或安全造成不良影響。
防水係數6: 從每個方向對準箱體強力噴射的水都不應造成損害。

配置示意



內部示意



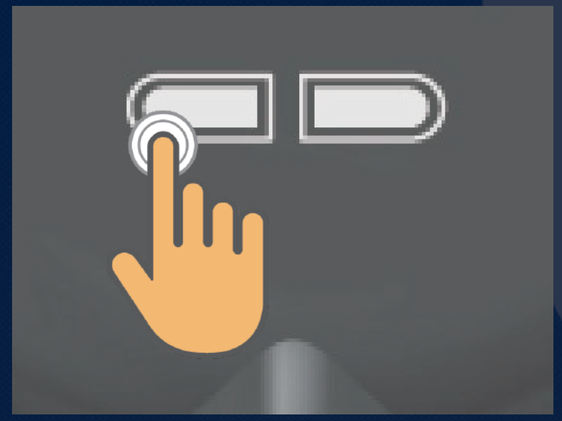
模式切換

流量開關模式

定時模式

模式切換：
左鍵長按3秒

白燈慢閃



藍燈慢閃

附加功能 – 強力模式

- ✓ 特殊需求時使用，如衛生局抽檢前。
- ✓ 兩種啟動辦法都可以轉換為強力模式。
- ✓ 循環水中臭氧濃度約可提升兩倍。
- ✓ 強力模式非設計於長期使用，因此壽命預估不做定義。

附加功能 – 強力模式

檔位切換：
右鍵長按3秒

流量開關模式

白燈
慢閃 → 長亮

定時模式

藍燈
慢閃 → 長亮

減少清潔人力，轉換爲更多生產力

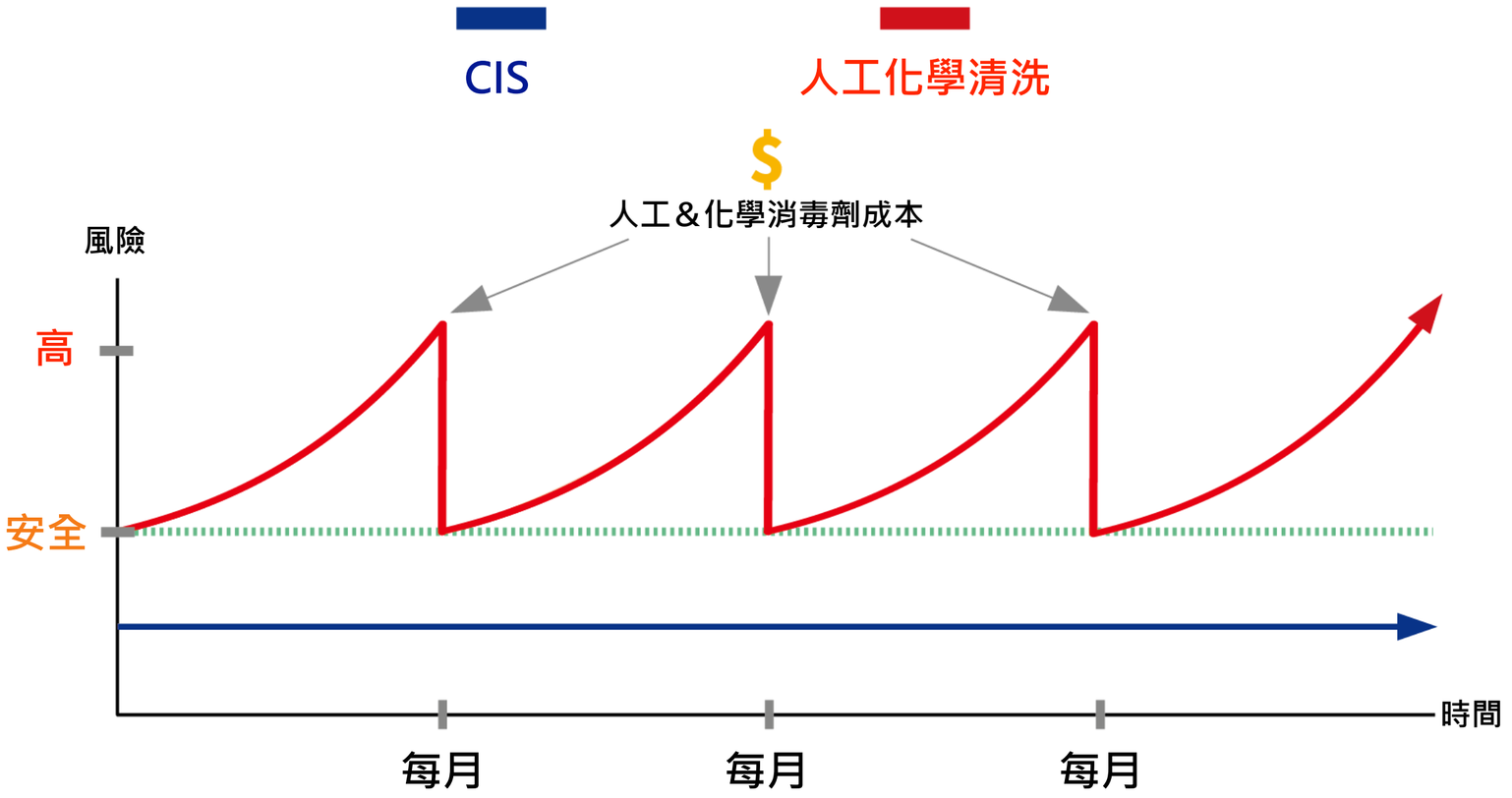
項目	周期	清潔內容	耗費時間	費用	操作
1	每日	儲冰槽清潔	15分鐘	人工	內部員工
2	每周	拆機清洗	30分鐘	人工	內部員工
3	每月	拆機+藥劑清洗	60分鐘	人工 + 藥劑 (新臺幣1,000-1,500)	內部員工
4	每季	藥劑清洗： 水塔+管綫+設備 (含制冰機)	60-120分鐘	新臺幣4,500	外包廠商

減少或替代項目2 – 3的工作程序

全自動制冰機殺菌機隨時保持安全衛生

Reference: 台灣麥當勞

製冰機風險控制



CIS v.s. 人工清洗

CIS 提供連續且自動的綫上消毒，消除了傳統方法中由于操作間隔而導致的潛在風險。

- × 總是存在頻繁周期性風險！
- × 存在定期費用
- × 人工化學清洗時製冰機無法工作
- × 存在藥劑殘留風險

- ✓ 持續保持低風險
- ✓ 沒有額外的費用，原料只需要水
- ✓ 全自動運作，不需要人力操作
- ✓ 無化學殘留

內部測試報告

EOS7176抑菌效果持續追蹤測試

日期 2020/07/14 - 2020/7/31

材料 Scotsman 製冰機 (型號: AF 103)、EOS7176、定時開關、Micrology Lab Easygel kit、採樣器材、DPD 比色法濃度檢測套組

安 裝位置

採樣點 2 (出冰口)

測試器材

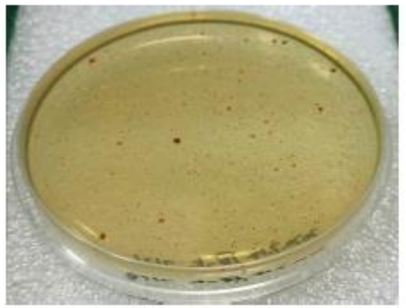
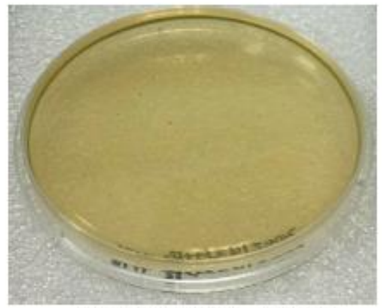
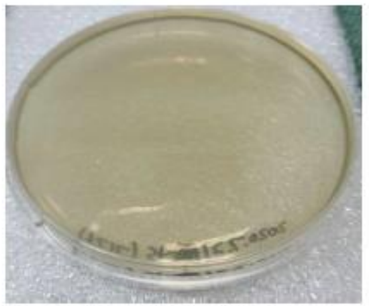
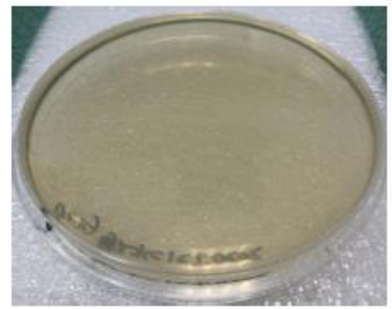
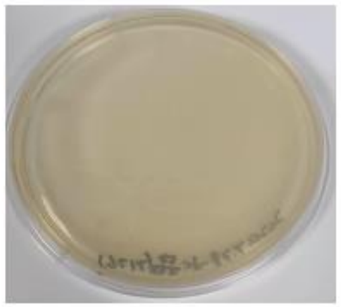
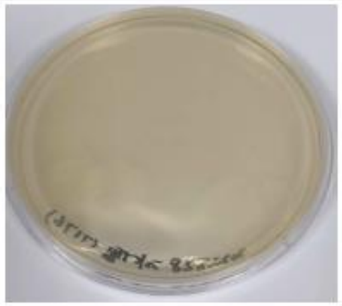
方法

1. 使用DPD 比色法濃度檢測套組測試水箱內臭氧濃度, 並採樣兩處進行細菌培養48小時: 水箱與出冰口, 各取 5 ml 樣品, 與 Easygel 混合後進行培養.

2. 將 EOS7176安裝於入水口，定時開關設定為每 20 分鐘的前 2 分鐘生成臭氧, 24小時循環.

3. 每運轉 7 天後重複步驟 1

結果

	水箱濃度 (ppm)	細菌培養 48小時後 (水箱水)	細菌培養 48小時後 (冰塊水)
第 1天 (7/14) 裝機前採樣	0	 培養出細菌	 培養出少許細菌
第 7天 (7/21) 裝機後採樣	≧0.025	 未培養出細菌	 未培養出細菌
第 14 天 (7/28) 裝機後採樣	0-0.025	 未培養出細菌	 未培養出細菌
	* 說明: 本次測試觀察到滿冰後水箱水不再流動, 水箱內臭氧水濃度降至極低幾乎無法測出. 恢復製冰 (鏟冰後)約10分鐘才恢復至 0.025ppm.		

未使用

50 CFU/mL

測試結果：

測試項目	測試方法	測試結果	定量/偵測極限(註3)	單位
總生菌數	AOAC 990.12 Aerobic Plate Count in Foods.	5.0X10 [1]	10	CFU/mL

備註：1. 測試報告僅就委託者之委託事項提供測試結果，不對產品合法性做判斷。
2. 本報告不得分離或擷錄使用。
3. 若該測試項目屬於定量分析則以「定量極限」表示；若該測試項目屬於定性分析則以「偵測極限」表示。
4. 低於定量極限/偵測極限之測定值以 "未檢出"或" 陰性 " 表示。

- END -

Chengchia Tsai, Manager
Signed for and on behalf of
SGS Taiwan Ltd.

聯絡人:任志正 博士

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | 3F, 125, Wu Kung Road, New Taipei Industrial Park, Wu Ku District, New Taipei City, 24886, Taiwan / 24886新北市五股區新北產業園區五工路125號3樓
t (886-2) 2299-3939 f (886-2) 2299-1687 www.sgs.tw
Member of SGS Group

化學消毒後

40 CFU/mL

測試結果：

測試項目	測試方法	測試結果	定量/偵測極限(註3)	單位
總生菌數	AOAC 990.12 Aerobic Plate Count in Foods.	4.0X10 [1]	10	CFU/mL

備註：1. 測試報告僅就委託者之委託事項提供測試結果，不對產品合法性做判斷。
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4. 低於定量極限/偵測極限之測定值以 "未檢出"或" 陰性 " 表示。

- END -

Chengchia Tsai, Manager
Signed for and on behalf of
SGS Taiwan Ltd.

20%

聯絡人:任志正 博士

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | 3F, 125, Wu Kung Road, New Taipei Industrial Park, Wu Ku District, New Taipei City, 24886, Taiwan / 24886新北市五股區新北產業園區五工路125號3樓
t (886-2) 2299-3939 f (886-2) 2299-1687 www.sgs.tw
Member of SGS Group

使用IDS 1週

10 CFU/mL

測試結果：

測試項目	測試方法	測試結果	定量/偵測極限(註3)	單位
總生菌數	AOAC 990.12 Aerobic Plate Count in Foods.	1.0X10 [1]	10	CFU/mL

備註：1. 測試報告僅就委託者之委託事項提供測試結果，不對產品合法性做判斷。
2. 本報告不得分離或擷錄使用。
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4. 低於定量極限/偵測極限之測定值以 "未檢出"或" 陰性 " 表示。

- END -

Chengchia Tsai, Manager
Signed for and on behalf of
SGS Taiwan Ltd.

SGS TAIWAN LTD SGS TAIWAN

80%

聯絡人:任志正 博士

使用IDS 2週

Not detected

測試結果：

測試項目	測試方法	測試結果	定量/偵測極限(註3)	單位
總生菌數	AOAC 990.12 Aerobic Plate Count in Foods.	陰性	10	CFU/mL

備註：1. 測試報告僅就委託者之委託事項提供測試結果，不對產品合法性做判斷。
2. 本報告不得分離或擷錄使用。
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4. 低於定量極限/偵測極限之測定值以 "未檢出"或" 陰性 " 表示。

- END -

Chengchia Tsai, Manager
Signed for and on behalf of
SGS Taiwan Ltd.

SGS TAIWAN LTD SGS TAIWAN

99%

聯絡人:任志正 博士

食品工業研究所 – 殺菌測試報告

製冰水殺菌

99.999%

製冰機內表面殺菌

99.999%

Conclusion：
Instant antimicrobial effects can be found once the IDS is attached to the ice making machine. Throughout the operation of IDS for 1 month in total, the antimicrobial efficacies of both the interior water supply and the surface of the ice machine are maintained at more than 99.999%.

Attachment

Report No.：107SA04464
Applicant：Biotek Environmental Science Ltd. (BES Group)
Name of Article：Evaluation of Antimicrobial Efficacy of Ice Making Machine with IDS (Ice Disinfection System) / BioSure Professional IDS (Model: EOS7170 Series)
Test Method：1.AOAC 990.12 Aerobic Plate Count in Foods
2.AOAC Offical Method 991.14 Coliform and Escherichia coli Count in Foods

Evaluation of Antimicrobial Efficacy
of Ice Making Machine with IDS (Ice Disinfection System)

Test procedure：

1. Set up ice making machine that has been running properly for 4 months with IDS attached to supply dissolved ozone for sanitation within the ice machine. Make sure the ice making machine and IDS unit both operate normally.
2. Prepare 75 mL bacterial suspension of *Escherichia coli* BCRC 10675 at a concentration of 5.5×10^7 CFU/mL. Dispense the bacterial suspension into the tank of the ice making machine with a volume of 7500 mL water. The final bacterial concentration is approximately 5.5×10^5 CFU/mL. Take sample immediately from the tank and perform plate count to confirm the bacterial load of the tank water.
3. Perform tests for total aerobic count and *Escherichia coli* on the samples collected from the swab of the designated sampling site S1 (surface of water distributors), S2 (surface of the water tank at 1cm below the maximum water level) and the sample S3 (tank water) and S4 (ice produced from the machine) for day 1, 7, 14, 21 and 28.
4. Use ozone gas detector to monitor the concentration of ozone in the off-gas in real-time.

Results：

As shown in Table 1, the ice making machine (Figure 1) was inoculated with bacterial suspension of *Escherichia coli* BCRC 10675 at a concentration of 5.5×10^5 CFU/mL. After the IDS had been operated for 1, 7, 14, 21 and 28 days, samples were taken from the swab of the designated sampling site S1 (Figure 2), S2 (Figure 3), the tank water (Figure 4) and the ice produced from the machine (Figure 5) and tested for total aerobic count and *Escherichia coli*. Test results showed non-detectable for both total aerobic count and *Escherichia coli*. The antimicrobial efficacy was calculated as more than 99.999 %.

Conclusion：
Instant antimicrobial effects can be found once the IDS is attached to the ice making machine. Throughout the operation of IDS for 1 month in total, the antimicrobial efficacies of both the interior water supply and the surface of the ice machine are maintained at more than 99.999%.

Table 1. Results of antimicrobial efficacy test for ice making machine with IDS after inoculation of *Escherichia coli* at a concentration of 5.5×10^5 CFU/mL.

Item	Ozone off gas level (ppb)	Day (code)	Total aerobic count (CFU/mL)	*E.coli* (CFU/mL)	Antimicrobial efficacy(1) (%)
Tank water (bacterial load after the inoculation of *E.coli*)	-	2018.11.7	-	**5.5×10^5**	-
IDS start-up					
S1：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
S2：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
S3：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
S4：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
Continuous operation of IDS					
S1：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D28}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D28}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D28}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D28}	Non-detectable	Non-detectable	>99.999

Note：(1) Antimicrobial efficacy (%) = (a - b) / a x 100 %

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製冰機工作環境 **無曝氣**

Item	Ozone off gas level (ppb)
Tank water (bacterial load after the inoculation of *E.coli*)	-
IDS start-up	
S1：	0
S2：	0
S3：	0
S4：	0
Continuous operation of IDS	
S1：	0
S2：	0
S3：	0
S4：	0
S1：	0
S2：	0
S3：	0
S4：	0
S1：	0
S2：	0
S3：	0
S4：	0
S1：	0
S2：	0
S3：	0
S4：	0
S1：	0
S2：	0
S3：	0
S4：	0

Table 1. Results of antimicrobial efficacy test for ice making machine with IDS after inoculation of *Escherichia coli* at a concentration of 5.5×10^5 CFU/mL.

Item	Ozone off gas level (ppb)	Day (code)	Total aerobic count (CFU/mL)	*E.coli* (CFU/mL)	Antimicrobial efficacy(1) (%)
Tank water (bacterial load after the inoculation of *E.coli*)	-	2018.11.7	-	**5.5×10^5**	-
IDS start-up					
S1：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
S2：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
S3：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
S4：	0	$T_{D0.5}$	Non-detectable	Non-detectable	>99.999
Continuous operation of IDS					
S1：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D1}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D7}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D14}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D21}	Non-detectable	Non-detectable	>99.999
S1：	0	T_{D28}	Non-detectable	Non-detectable	>99.999
S2：	0	T_{D28}	Non-detectable	Non-detectable	>99.999
S3：	0	T_{D28}	Non-detectable	Non-detectable	>99.999
S4：	0	T_{D28}	Non-detectable	Non-detectable	>99.999

Note：(1) Antimicrobial efficacy (%) = (a - b) / a x 100 %

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V. Conclusion

There is no significant difference (p>0.05) between the ice produced by ice making machine with and without the operation of IDS.

Sensory Evaluation Report

I. Test sample

1. Ice making machine (provided by the applicant)：Scotsman C0630。
2. Ozone disinfection system (provided by the applicant)：BioSure Professional IDS (Model: EOS7170 Series)。

Ice produced by the ice making machine after three ice making cycles was taken for sensory evaluation as sample A. The ice machine was then operated with IDS - turned on. After three ice making cycles with the operation of IDS , ice was taken for sensory evaluation as sample B.

II. Sensory evaluation testing method

Panelists：Food Industry Research and Development Institute (FIRDI) staff. 7 males and 15 females aged 25 ~ 50 years. A total of 22 participants were selected and qualified to be the trained-tasting panelist.

III. Sensory evaluation method

Sensory evaluation was conducted according to the triangle test in BS ISO 4120-200. Sample A and sample B were both coded with a three-digit number. Sample A was coded as 642 or 385 while sample B was coded with 531 or 859. Half of the panel was presented with the order combination AAB and the other half ABB. Three cups were placed in a triangle with one ice cube in each cup (Document 1). Panelists were instructed to identify the odd sample and specify the difference if desired. The questionnaire for the sensory evaluation was shown in Document 2. The significance of difference between samples was established based on the table of minimum numbers of correct judgments for triangle test as shown in Document 3.

IV. Results

Sample A and sample B were tasted by 22 trained panelists. In 22 trials of a triangle test, 6 panelists gave correct judgments. However, 12 correct judgments were required for significance at the 5% probability level. As a result, no significant difference was found between sample A and sample B (p>0.05).

V. Conclusion

There is no significant difference (p>0.05) between the ice produced by ice making machine with and without the operation of IDS.