

TECHICIAL PROPOSAL



HOBART

Reference:

Kaohsiung Airport Catering Services (KACS)

Kaohsiung airport (KHH)

Dish Washing System

1x HOBART Flight Type Dishwasher

AC2024-KHH-703

Revision G

March 18, 2026

INTRODUCTION

The HOBART GmbH has been given the opportunity to develop design ideas for a productive, reliable, economic and efficient washing concept for the Inflight Catering Facility at Kaohsiung airport (KHH).

We would like to consider this document as a recommendation for the new ware washing installation in accordance with the requirements and data provided.

Should you have any questions or comments, please do not hesitate to contact us any time.

March 18, 2026

Date

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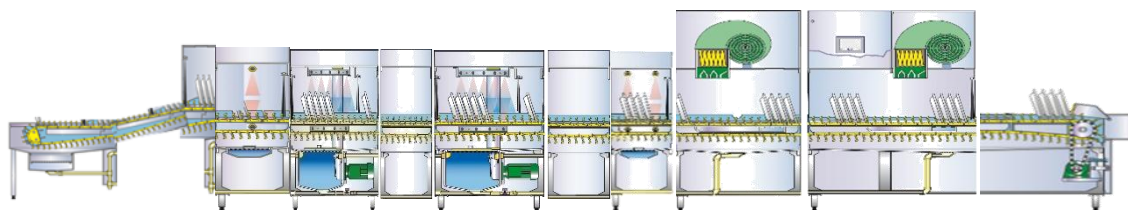
DESIGN SPECIFICATION

Pos 20B HOBART Flight Type Washer

AIRLINE CATERING 1-TRACK CUTLERY CROCKERY WASHER

航食專用刀叉/餐具清洗機 (1-TRACK 單傳動馬達), 平板式刀叉履帶

Machine Type: FLOW Line Aero 9/5 10b-M-SN-AN-R-DSK-DS8, C38



Schematic representation only

TECHNICAL SPECIFICATION

| | | | DIMENSIONS |
|--------------|---------------------|-----------|------------------|
| 10b | Lower Entry Section | 低入口段 | 3.500 mm |
| M | Pre Wash Section | 預洗段 | 650 mm |
| SN | Pre Wash Section | 強力預洗段+過度段 | 1.400 mm |
| AN | Main Wash Section | 主洗段+過度段 | 1.400 mm |
| R | Rinse Section | 高溫噴淋段 | 650 mm |
| DSK | Drying Section | 烘乾段 1 | 900 mm |
| DS | Drying Section | 烘乾段 2 | 1.400 mm |
| 8 | Exit Section | 出口段 | 2.000 mm |
| TOTAL | | 總長 | 11.900 mm |

整機外部尺寸: L11900 x W1438 x H2320mm

KEY DATA 技術參數

| | | | |
|-------------------------------|-----------------------------------|-------------|-------------|
| Total length | 總長度..... | 11.900 | mm |
| Usable conveyor width | 入口履帶寬度..... | 965 | mm |
| Usable chamber height | 入口高度..... | 560 | mm |
| Operational speed (speed 2)** | 履帶速度(可調整)..... 建議操作速度(二速)..... | 1,5 | m/min* |
| Fresh Water consumption, cold | 耗水量 (公升/ 小時)..... | 220 | l/h |
| DEMI Water consumption, cold | 純水耗水量 (公升/ 小時)... | 200 | l/h |
| Thereof regeneration water | 循環水量..... | 80 | l/h |
| Conveyor | 履帶型式..... | 刀叉/餐具 | Conveyor |
| Heating Medium | 能源..... | Steam | 蒸汽式 |
| Voltage | 電壓..... | 380/60/3/PE | |
| Connection Value*** | 總功率..... | 12 (tbd) | kW |
| Power Consumption**** | | 95 (tbd) | kg/h |
| Usable cutlery belt | 刀叉履帶寬度..... | 250 | mm |
| Capacity cutlery per hour | 刀叉清洗量體..... | 3.528 | Cutlery pcs |



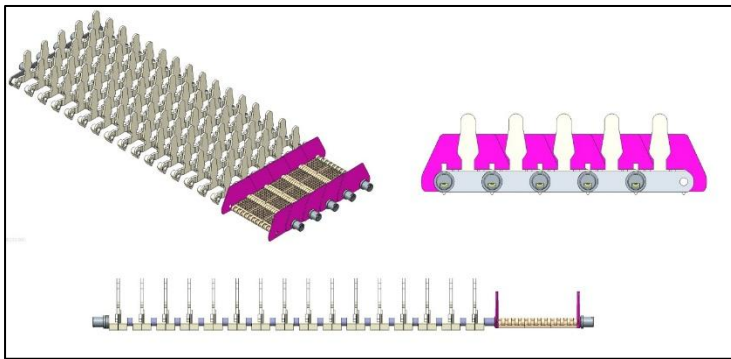
* According to DIN 10510 with 2 minutes contact time 根據 DIN2 分鐘接觸時間
 ** Recommended speed, the machine is equipped with two additional speeds depending on characteristics of washware as well as wash and drying results 建议速度, 机器具备三速调整根据餐具种类, 清洗力及烘干效果
 *** For connection with 380/60/3/PE 連接電壓
 **** Average consumption during typical operation 正常操作下平均消耗

Conveyor Design – Cutlery 刀叉 /Crockery 餐具 (flat cutlery line 平板式刀叉履帶)

Type: MW2/CT

The machine and its conveyor belt are designed specifically for the heavy-duty application of the Airline Catering environment. Compared to a standard machine the machine execution is adapted to the specific requirements of the Airline Catering business in terms of extended and long-term operation times. 本機及其輸送帶為航空餐飲（Airline Catering）的高強度應用環境所專門設計。相較於標準機型，本設備在結構與配置上針對航空餐飲業長時間、連續運轉的特殊需求進行了強化與優化。

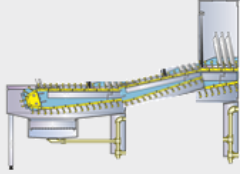
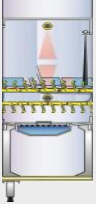
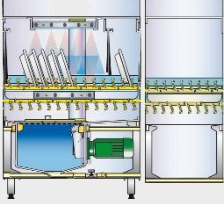
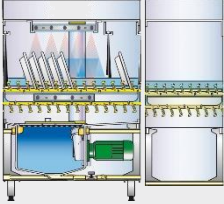
Following described belt design ensures highest reliability while offering perfect results specifically for the cutlery wash application. 下述之輸送帶設計可確保最高等級的運行可靠性，並能在餐具（特別是刀叉餐具）清洗應用中提供卓越的清洗效果。

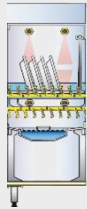
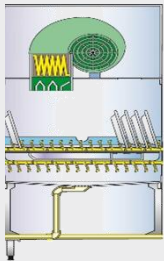
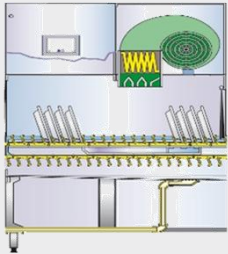
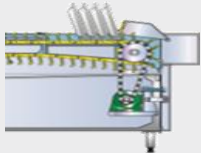


Benefits 優勢

- ✓ Special designed track to wash Cutlery in flat position on dedicated track
- ✓ 專為刀叉餐具設計的平放式清洗軌道，確保最佳清洗效果與穩定性。
- ✓ Highest durability due to special reinforced conveyor for heavy duty application
適用重負荷操作的特殊增強履帶具有最高的耐用性
- ✓ Hygienic and heavy duty design 清潔容易且適用重負荷操作

DETAILED SPECIFICATION 詳細規格

| ENTRY SECTION 低入口段 | | | |
|------------------------------|---|----------------------------------|-----------|
| 10B |  | Loading height 入口段高度 高度 | 740 mm |
| | | Module length 長度 | 3.500 mm |
| | | Open loading length 有效裝載工作段長度 | 2.300 mm |
| PRE-WASH SECTION 預洗段 | | | |
| M |  | Wash tank capacity 水箱容量 | 20,5 Ltrs |
| | | Wash pump size 清洗泵 | 0,27 kW |
| | | Module length 長度 | 650 mm |
| PRE-WASH SECTION 強力預洗段 + 過度段 | | | |
| SN |  | Wash tank capacity 水箱容量 | 151 Ltrs |
| | | Wash pump size 清洗泵 | 2,2 kW |
| | | Module length 長度 | 1.400 mm |
| WASH SECTION 主洗段 + 過度段 | | | |
| AN |  | Wash tank capacity 水箱容量 | 151 Ltrs |
| | | Wash pump size 清洗泵 | 2,2 kW |
| | | Module length 長度 | 1.400 mm |

| DUAL RINSE SECTION 高溫雙道噴淋段 | | | |
|----------------------------|---|------------------------------------|----------------|
| R |  | Wash tank capacity 水箱容量 | 23 Ltrs |
| | | Rinse pump sizes 噴淋泵 | 0,46 + 0,42 kW |
| | | Module length 長度 | 650 mm |
| DRYING SECTION 烘乾段 1 | | | |
| DSK |  | Fan capacity 風機 | 1,1 kW |
| | | Module length 長度 | 900 mm |
| DRYING SECTION 烘乾段 2 | | | |
| DS |  | Fan capacity 風機 | 1,1 kW |
| | | Module length 長度 | 1.400 mm |
| EXIT SECTION 出口段 | | | |
| 8 |  | Loading height 出口段高度 | 920 mm |
| | | Module length 長度 | 2.000 mm |
| | | Open unloading length 有效卸載工作段長度 | 1.600 mm |

HEAT RECOVERY SYSTEM 熱回收系統

| | | | |
|------------|--|--|------------------------|
| C38 | | Cooling surface (Copper) 熱交換面積(銅) | 38 m ² |
| | | Exhaust air capacity 排氣量 | 270 m ³ /hr |
| | | Output temperature exhaust air 排氣溫度 | 29°C |
| | | Air humidity 濕度 | 90-98 rel. in % |
| | | Heat recovery 熱回收效能 | Approx. 20 kW |

OPTIONAL FEATURES

Following options described can be selected in addition to the already included standard features:

| | | |
|---|---|--|
| <p>Selected <input checked="" type="checkbox"/></p> | <p>Steam heated 蒸汽加熱</p> <ul style="list-style-type: none"> ✓ Machine is heating with Steam <input checked="" type="checkbox"/> 2,0 – 3,5 bar <input type="checkbox"/> 3,5 – 10 bar (optional at additional price) ✓ Piping according to DIN EN 12953-10 | |
| <p>Selected <input checked="" type="checkbox"/></p> | <p>Usable height 入口高度 560 mm (instead of 440 mm)</p> <ul style="list-style-type: none"> ✓ A usable height of 560 mm instead of 440 mm allows the operator to load the machine with wash ware such as oven racks or standard units in order to wash these items in upright position 有效清洗高度提升至 560 mm (標準機型為 440 mm)，可支援烤箱架及標準品等清洗物以直立式裝載與清洗。 | |

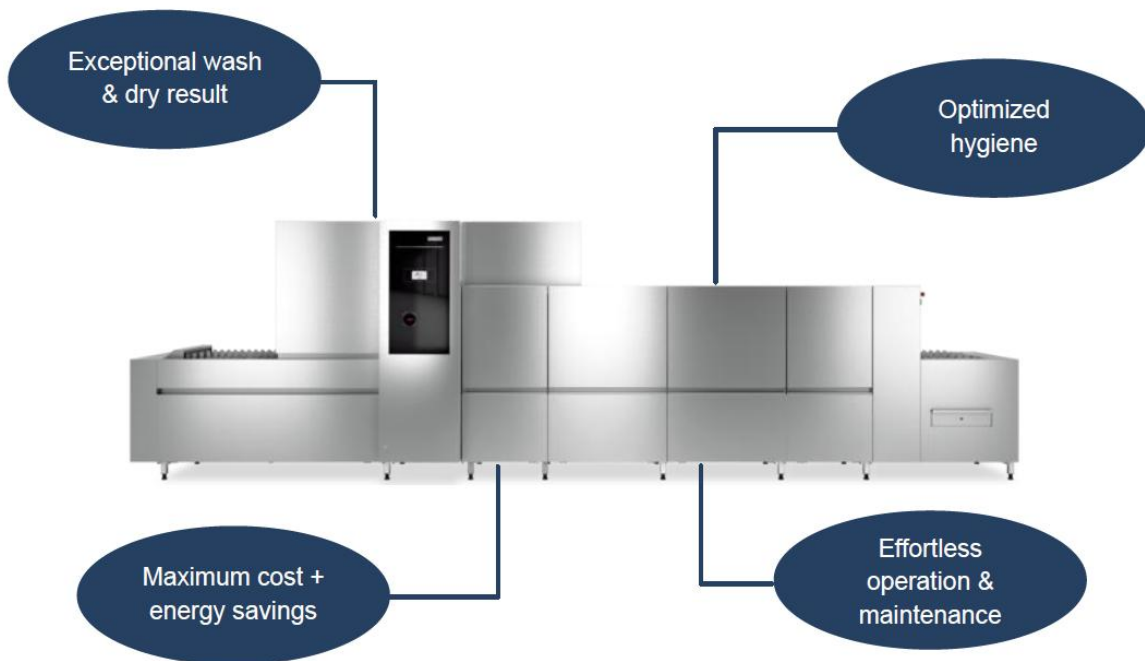
| | | |
|---|---|--|
| <p>Selected</p> <input type="checkbox"/> | <p>Turbo Blower 2x 0,75kW 高壓風刀機</p> <ul style="list-style-type: none"> ✓ Maximizes drying performance of machine for racks, drawers 最大化設備對洗籃與抽屜的烘乾效能 ✓ High pressure blower blows off remaining water on surface and complements the standard DSK dryer perfectly 高壓鼓風機可吹乾表面殘留水分，並完美補充標準 DSK 烘乾系統的效果 ✓ Switchable: Can be turned off during operation of other smaller wash items to ensure these don't flip 可切換開關：在清洗較小件物料時可關閉，避免小件物料翻轉 | |
| <p>Selected</p> <input checked="" type="checkbox"/> | <p>Curtain on exit section 擋水簾位於出口段</p> | |
| <p>Selected</p> <input checked="" type="checkbox"/> | <p>Free-fall Chute at the exit section 出口端自由落料滑槽</p> <ul style="list-style-type: none"> ✓ While running the process with rotatables, like melamine cups, bowls and plates the hinged end switch flap on the machine exit can be opened for direct collecting in boxes 於清洗空廚可重複使用之餐具（如美耐皿杯、碗、盤）時，可將設備出口端之鉸鏈式限位開關擋板開啟，使餐具於出口後可直接落入周轉箱或物流箱內。 ✓ The rotatable chute saves time and generates less manual handling for the operator in the clean end of the machine. 落料滑槽設計可有效縮短餐具清洗後之處理時間，降低潔淨端作業人員之人工搬運次數與勞動強度，提升整體作業效率與人因安全。 | |
| <p>Selected</p> <input checked="" type="checkbox"/> | <p>250mm wide cutlery conveyor belt width 刀叉段履帶寬度 250mm</p> <ul style="list-style-type: none"> ✓ Wider cutlery track to fit on more cutlery pieces 加寬刀叉履帶以容納更多數量刀叉 | |

Included Machine Features: Built on 4 Pillars

This machine is specifically engineered for the unique demands of the Airline Catering Market. Compared to standard dishwashing units, it includes a range of specialized features tailored to meet the industry's highest standards for hygiene, efficiency, and reliability. 本機專為航空餐飲（Airline Catering）市場的特殊需求所設計。相較於標準洗碗設備，本機整合多項專屬功能，全面符合航空餐飲產業對於衛生、安全、效率與可靠性的最高標準。

At the heart of the machine's design are four foundational pillars that define its outstanding performance and user experience:

本機設計的核心基礎在於四大關鍵支柱，這些核心理念共同奠定了其卓越的性能表現與優異的使用者體驗：



In the following pages, each pillar is detailed with its key features and supporting evidence to demonstrate the machine's performance and benefits. 在後續頁面中，將針對每一項核心支柱進行詳細說明，並透過其關鍵功能與佐證資料，具體呈現本機的性能表現與所帶來的實際效益。

FEATURES INCLUDED 功能介紹

Optimized hygiene 最佳化衛生

THERMOLABEL 溫度標示測試通過

Our machines are engineered to consistently achieve a utensil surface temperature of 71°C, ensuring hygienic results in line with HACCP standards. 本機設計可穩定使餐具表面溫度達到 71°C，確保清洗後餐具符合 HACCP 衛生標準，達到卓越衛生效果。

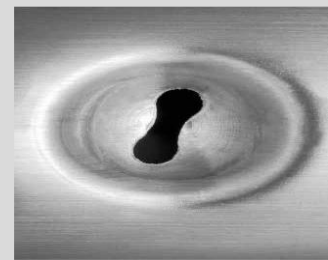
- ✓ Thermolabel test provides reliable, irreversible temperature verification, offering peace of mind and clear documentation of hygiene compliance. Thermolabel 測試提供可靠且不可逆的溫度驗證，讓操作人員安心，並能清楚記錄衛生合規性。
- ✓ Delivers proof of sanitization performance, supporting quality assurance and meeting regulatory requirements for food-safe operations. 可證明清洗消毒效能，支援品質保證，同時符合食品安全操作的法規要求。



Innovative Nozzle Design 創新噴嘴設計

Precision-engineered spray nozzles developed by HOBART deliver a broader and more targeted spray pattern, optimizing wash coverage and intensity. HOBART 精密研發的噴嘴可提供更廣泛且精準的噴射範圍，優化洗滌覆蓋面與強度。

- ✓ Enhanced spray angles ensure a powerful, deep-cleaning wash action, reducing reject rates and improving hygiene results. 改良的噴射角度確保強力且深入的清洗效果，降低報廢率並提升衛生清潔成果。
- ✓ Greater precision in jet distribution leads to more efficient cleaning of complex and heavily soiled items, even in high-throughput environments. 噴射分佈精準度更高，即使在高產能環境下，也能有效清洗複雜或重汙染的物料。



Exceptional wash & dry results 卓越清洗與烘乾效果

PERMANENT-CLEAN Automatic Soil Removal*自動殘渣清除系統*

The PERMANENT-CLEAN module actively removes food residues and debris during operation using an intelligent sensor-controlled system. This ensures consistently high wash water quality throughout the cleaning cycle, even under heavy load.

PERMANENT-CLEAN 模組透過智慧感應控制系統，在運作過程中主動清除食物殘渣與污物，即使在高負荷運作下，也能持續維持洗滌水的高品質，確保清洗效果穩定優異。

Your benefits:

- ✓ Individual soil removal as needed prevents cross-contamination between zones 根據實際需求進行個別殘渣清除，防止各區域間交叉污染
- ✓ Maintains consistently high wash water quality for superior wash results 持續保持高品質洗滌水，提供卓越清洗效果
- ✓ Reduces water, energy, and detergent consumption 減少加水及補充洗滌劑的頻率
- ✓ Minimizes refilling frequency 降低水、能源及洗滌劑消耗
- ✓ Simplifies end-of-shift cleaning with easy and hygienic soil disposal 簡化班末清潔作業，殘渣清理方便且衛生



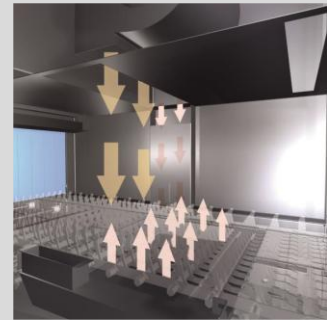
*Not available for 1290 mm wide machine

All-Around Drying System 全方位烘乾系統

The All-Around Drying System delivers 360° airflow for consistently dry wash ware, including challenging hollow items. Warm air is guided from above and the sides via GUIDEAIR nozzles, while air blades in the drying drawer target the underside for complete coverage. 全方位烘乾系統提供 **360° 氣流循環**，確保各類洗滌物料徹底乾燥，即使是空心或不易乾燥的物品亦能達到理想效果。溫風透過 **GUIDEAIR 噴嘴** 從上方及側面導入，同時烘乾抽屜的氣刀吹拂底部，實現全方位覆蓋。

Your benefits:

- ✓ Perfect drying results for all types of wash ware, including cups, bowls, and glasses 適用於各類洗滌物料，包括杯子、碗盤及玻璃器皿，烘乾效果完美
- ✓ Eliminates the need for manual drying 無需額外手工擦乾，節省勞力與時間
- ✓ Even airflow from top, sides, and bottom ensures maximum efficiency and reliability 上、側、底三方均勻氣流，確保烘乾效率與可靠性達到最高標準

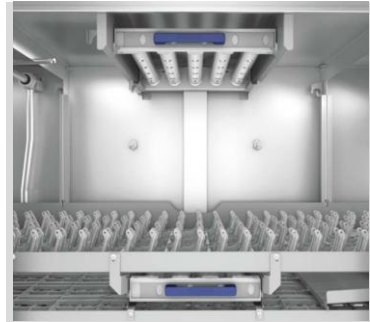


CONTACT-PLUS Wash System 洗滌系統

The CONTACT-PLUS system delivers consistently excellent wash results, even in high-volume operations. Its innovative, specially shaped wash arms ensure thorough coverage, allowing the wash water to remain in contact with the wash ware for optimal cleaning. CONTACT-PLUS 系統可在高產能運作下仍提供穩定卓越的洗滌效果。其創新設計的專用噴臂確保洗滌水均勻覆蓋餐具，使水流能充分接觸洗滌物料，達到最佳清潔效果。

Your benefits:

- ✓ Even and precise distribution of wash water for superior cleaning results 洗滌水分佈均勻且精準，提供卓越清洗效果
- ✓ High-efficiency wash arms reduce reject rates and improve overall wash quality 高效能噴臂降低報廢率並提升整體洗滌品質
- ✓ Tool-free, endcap-free design speeds up cleaning and minimizes downtime 無需工具、無端蓋設計，加快清潔流程並降低停機時間
- ✓ Simplified maintenance with no risk of losing parts 維護簡單，無零件遺失風險



Maximum cost + energy savings 最大成本與能源節省

SENSO-SPACE Compartment Detection 間隔偵測

The SENSOTRONIC system uses smart sensors to optimize water, energy, and detergent usage without compromising hygiene. SENSOTRONIC 系統透過智慧感應器，在不影響衛生標準的前提下，優化水、能源及洗滌劑使用。

Your benefits:

- ✓ Automatically detects empty spaces in the wash load and adjusts fresh water usage 自動偵測洗滌負載中的空置區域，並調整新鮮水使用量
- ✓ Maintains perfect hygiene while reducing resource consumption 在減少資源消耗的同時，仍維持卓越衛生效果
- ✓ Achieves up to 50% savings in fresh water, improving operational efficiency and sustainability 可節省高達 50% 新鮮水用量，提升運作效率並促進永續經營



CLIMATE Energy Saving System 熱能回收系統

This feature reduces energy losses from warm exhaust air by continuously returning it to the system through an efficient heat recovery process. The recovered heat is used to preheat the fresh water before it enters the boiler—resulting in optimized energy use and lower running costs. 此功能可透過高效熱回收流程，將機器排出的熱風持續回收再利用，並用以預熱進入鍋爐的新鮮水，達到能源使用最佳化及降低運行成本的效果。

Your benefits:

- ✓ Minimised energy losses via exhaust air 降低排風熱能損失
- ✓ Efficient use of available heat energy 高效利用可回收熱能
- ✓ Energy savings of up to 20 kW/h 節省能源高達 20 kW/h
- ✓ Reduced operating costs and improved sustainability 降低運行成本並提升永續性



Effortless operation & maintenance 輕鬆操作與維護

Protronic XL Control 控制系統

The Protronic XL Control system offers an intuitive, self-explanatory interface that simplifies machine operation, monitoring, and maintenance. Protronic XL 控制系統提供直覺且自說明式的操作介面，簡化設備操作、監控與維護流程。

Your benefits:



- ✓ Large, color-coded touchscreen ensures quick navigation and easy operation 大型彩色觸控螢幕，操作快速直覺、導航便利
- ✓ Real-time visualization of temperatures and error messages for each machine zone allows fast troubleshooting 實時顯示各區域溫度與錯誤訊息，快速排除故障
- ✓ Automatic maintenance tracking and convenient data storage improve service planning and reduce downtime 自動維護追蹤及便捷資料儲存，提升維護規劃效率並縮短停機時間
- ✓ Message management system and visualized operating manual support efficient operation and compliance 訊息管理系統與可視化操作手冊，支援高效操作並確保合規性

Signal Lights 安全指示燈

Visual signal lights provide immediate status indicators, keeping staff informed at a glance. 指示燈可即時顯示設備運作狀態，讓操作人員一目了然。

Your benefits:

- ✓ Optical signals clearly show when the machine is stopped, requires refilling, or is operating 光學信號清楚顯示設備停止、需要補充水或洗滌劑，或正在運作的狀態
- ✓ Enables staff to respond quickly, maintaining smooth workflow and reducing downtime 幫助操作人員快速反應，維持順暢工作流程並降低停機時間
- ✓ Simplifies monitoring of machine status for efficient operation 簡化設備狀態監控，提升操作效率

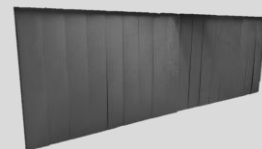


Universal Curtain System 擋水簾統一規格

The universal curtains fit all positions in the machine, making removal, cleaning, and reinstallation quick and easy. 通用的擋水簾可適用於機器內所有位置，拆卸、清潔及重新安裝快速簡便。

Your benefits:

- ✓ One curtain fits all positions, reducing inventory complexity and replacement costs 一片導流簾可適用所有位置，降低庫存與更換成本
- ✓ Easy-to-use hanging mechanism speeds up cleaning and maintenance 操作簡便的掛置機構，加快清潔與維護流程
- ✓ Eliminates the risk of misplacement and simplifies routine tasks 避免擋水簾錯位或遺失，簡化日常作業



Strainer Proof Detection 濾網就位偵測

This feature ensures the machine operates only when strainers are properly in place. 此功能確保設備僅在濾網正確安裝時才可運作。

Your benefits:



- ✓ Detects the presence of strainers before operation 運作前自動偵測濾網是否就位
- ✓ Prevents machine operation without strainers, avoiding damage and downtime 防止未裝濾網操作，避免設備損壞與停機
- ✓ Protects pumps through proper filtration, extending machine lifespan 維護泵浦安全，延長設備使用壽命

Coded Cleaning Assistant 清潔輔助設計

The Coded Cleaning Assistant simplifies maintenance by clearly indicating which parts require cleaning. 清潔輔助設計可簡化維護作業，清楚標示需清潔的部件。

Your benefits:

- ✓ Blue markings identify components that need cleaning at a glance 藍色標記清楚指出需清潔的零件，一目了然
- ✓ Reduces errors and oversight during routine maintenance 減少日常維護過程中的錯誤與疏漏
- ✓ Simplifies cleaning procedures and improves hygiene compliance 簡化清潔程序，提升衛生合規性



REQUIREMENT WATER QUALITY 水質需求

| | KWw cold water soft 冷軟水 | WWw warm water soft 溫軟水 | Optional: VEW demineralized water*純水 |
|--|-----------------------------------|-----------------------------------|--|
| Use/Purpose 用途 / 適用範圍 | Rinse 噴淋 | Filling 補水 | Rinse 噴淋 |
| Connection 管徑 | DN20 | DN32 | DN20 |
| Hardness [° German Hardness] 水硬度 [° 德國硬度] | 0-3 | 0-3 | 0 |
| Conductivity 電導率 [µS/cm] | 80-100 | 150-400 | 10-15 |
| Water Pressure [bar] 水壓 | 2-6 | 2-6 | 2-6 |
| Temperature [°C] 水溫 | 12-18 | min. 60 | 12-18 |

*recommended for glasses, cutlery and silverware

For further details please refer to the technical drawing

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