



## 全自動 PET 吹瓶機 PET Automatic Stretch Blow Molding Machine

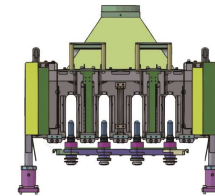
最節能環保吹瓶線 The world's most energy efficient bottle production line



## 機台優勢 OUTSTANDING

擁有多項先進功能的全自動PET吹瓶機EM系列，處處展現獨樹一幟的非凡性能！

Integrating with many advanced functions in one, KEENPRO EM Series fully automatic PET stretch-blow molding machine exhibits extraordinary performance throughout.

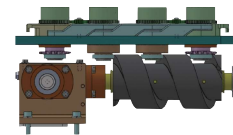


### 加熱系統優勢

1. 單支燈管雙邊集中方式加熱
2. 各道瓶胚加熱溫度可控制在3°C內
3. 加熱功率低

### Heating System Outstanding

1. Single-lamp bilateral centralized heating
2. Temperature of all channels inside heating box controlled within 3°C
3. Low energy heating



### 公轉系統優勢

1. 採用「螺桿驅動」，實現快速連續運動及無級調速。
2. 穩定公轉系統採U字型軌道，滑塊只需要1/3的推動力，阻力較小
3. 玻璃纖維尼龍複材射出滑塊，受力可達945 kgf。

### Transfer System Outstanding

1. Using "screw drive" for fast continuous movement and variable speed
2. The unique U-shaped track design with stable transfer system, the carrier blocks only need 1/3 of sliding driving force, thus less resistance
3. Composite of glass fiber and Nylon carrier block with loading force up to 945 kgf



EM Series +

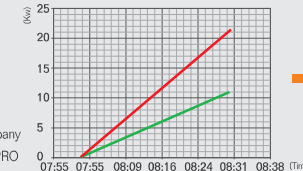
### 關鍵技術 Key Technology

使用E+H氣體流量計檢測

1. 並聯閥與封口缸關鍵性技術
2. 吹瓶耗氣量與同業比較節省15%以上
3. E+H實測與同業比較更節省45%以上

→ (Measured by ENDRESS+HAUSER flow meter)

1. Distance between valves module and neck sealing is short
2. Air wastage reduction above 15% over other similar category
3. Recycle rate as high as 45%, compare with other competitor



耗電量分析 Power consumption analysis

1. 每千支空瓶吹瓶機耗電2.0kwh
2. 每年節省耗電量13萬kwh
3. 比同業節省耗電47%

1. Every 1,000pcs bottle energy waste 2.0kWh
2. Reduce 130,000kg Carbon emission per year
3. Energy saving as high as 47%, compared with other competitors

|  |                   |
|--|-------------------|
| 回收效率 Air Recycle Rate  | 45%               |
| 每千支空瓶吹瓶機耗電 Blow Power for 1,000 Bottles                                  | 2.0 kWh           |
| 每千支空瓶空壓機耗電 Air Compressor Power for 1,000 Bottles                        | 6.0 kWh           |
| 每千支PET空瓶節省耗電 Power Saving for 1,000 Bottles                              | 2.5 kWh           |
| 每年節省耗電(以5.3千萬支瓶子) Yearly Savings (Based on 53 Million Bottle Production) | 130,000 kWh       |
| 每年減少13萬kg碳排放量 Yearly Reduction for Carbon Emission is 130,000kg.         | Appr. 11,500 tree |

瓶胚規格: Φ2925, 12.5 gram

## 機台規格表 EM SERIES SPECIFICATION

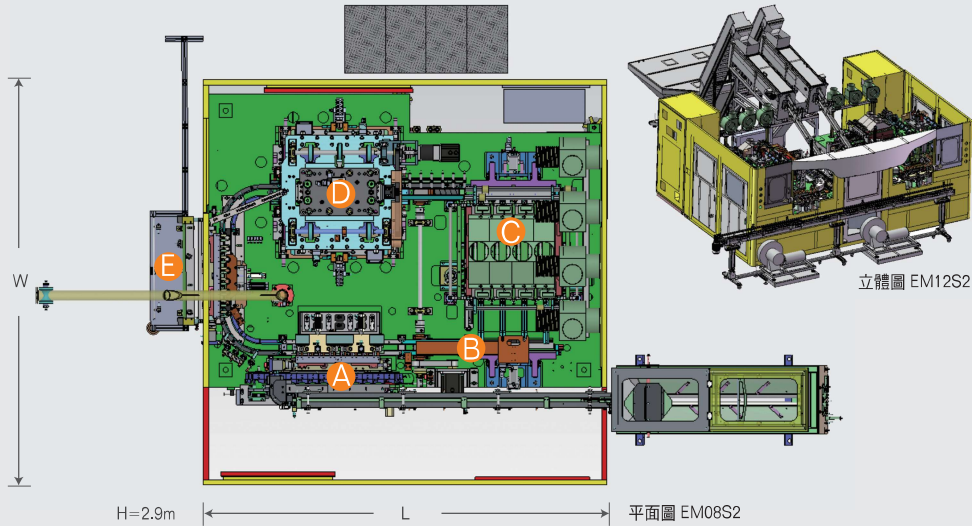
| EM SERIES |                        | Unit    | STANDARD   |             |             |             |             |             |             |             | HIGH-SPEED  |             |             |
|-----------|------------------------|---------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           |                        |         | EM06S2   | EM08S2      | EM04S2-88   | EM08S2-88   | EM04M       | EM06M1      | EM08M3      | EM08TR      | EM12S2      | EM16S2      | EM16S2-88   |
| 瓶子最大容量    | Max. volume            | Ltr.    | 0.75   |             | 1           |             | 2           |             | 1.5         | 0.75        | 0.75        |             | 1           |
| 模穴數       | No. of cavities        | cavity  | 6  | 8           | 4           | 8           | 4           | 6           | 8           | 8           | 12          | 16          | 16          |
| 胚頭數       | No. of preform holders | pcs     | 168  | 224 (196)   | 128         | 224 (196)   | 120 (144)   | 168         | 224         | 224         | 336         | 448         | 448         |
| 加熱間距      | Heating pitch          | mm      | 54   | 54          | 54          | 54          | 54          | 54          | 54          | 54          | 54          | 54          | 54          |
| 瓶子間距      | Cavity pitch           | mm      | 80   | 80          | 88          | 88          | 128         | 128         | 116         | 80          | 80          | 80          | 88          |
| 牙口外徑尺寸    | Preform neck           | mm      | 18-38  | 18-38       | 18-38       | 18-38       | 18-38       | 18-38       | 18-38       | 18-38       | 18-38       | 18-38       | 18-38       |
| 最大瓶胚高度    | Max. preform height    | mm      | 100  | 100         | 100         | 100         | 160         | 160         | 120         | 140         | 100         | 100         | 100         |
| 最大瓶身直徑    | Max. bottle diameter   | mm      | 70   | 70          | 80          | 80          | 115         | 115         | 105         | 70          | 70          | 70          | 80          |
| 最大瓶身高度    | Max. bottle height     | mm      | 240  | 240         | 262         | 262         | 320         | 320         | 310         | 240         | 240         | 240         | 262         |
| 加熱箱數      | Heating oven           | units   | 1X3  | 1X4 (2X2)   | 1X2         | 1X4 (2X2)   | 1X2 (2X2)   | 1X3         | 1X4         | 1X4         | 2X3         | 2X4         | 2X4         |
| 燈管量       | No. of infrared lamps  | pcs     | 26   | 32          | 16          | 32          | 24 (52)     | 39          | 40          | 38          | 48          | 64          | 64          |
| 加熱最大功率    | Max. heating power     | kw      | 50   | 62          | 32          | 62          | 44 (82)     | 74          | 78          | 72          | 94          | 124         | 124         |
| 配置功率      | Max. installed power   | kw      | 62   | 74          | 44          | 74          | 56 (94)     | 86          | 90          | 82          | 118         | 148         | 148         |
| 機台電壓      | Power supply           | voltage | 380V / 220V  | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V | 380V / 220V |
| 主機尺寸      | Machine dimension      | M       | 3.0X2.6X2.9  | 3.9X3.3X2.9 | 4.3X4.1X2.9 | 5.4X5.1X2.9 | 3.4X3.2X2.9 | 4.3X3.2X2.9 | 5.2X2.8X2.6 | 3.9X3.3X2.9 | 5.9X5.6X3.8 | 6.1X5.8X3.8 | 6.1X5.8X3.8 |
| 機台重量      | Machine weight         | kg      | 7000   | 7500        | 5500        | 7500        | 7000        | 9000        | 10500       | 7500        | 15000       | 18000       | 18000       |
| 理論產能      | Theoretical output     | B.P.H.  | 9000   | 12000       | 6000        | 11000       | 5300        | 7800        | 9600        | 12000       | 18000       | 21000       | 21000       |
| 實際產能      | Actual output          | B.P.H.  | 依客戶提供的瓶型規格、瓶胚設計和品質而定。 Based on the bottle shape, preform design and quality. |             |             |             |             |             |             |             |             |             |             |

※產品規格若有變更，恕不另行通知。 Products are subject to change without notice.

## 選配表 OPTIONAL

|     |                        |        |     |                          |         |     |                         |        |
|-----|------------------------|--------|-----|--------------------------|---------|-----|-------------------------|--------|
| TPC | Top chain conveyor     | 頂板式輸送帶 | RDM | Remote diagnostic module | 遠端診斷模組  | BRD | Broken bottle detection | 破瓶檢測功能 |
| SWI | Swing-arm conveyor     | 搖臂式輸送機 | AMS | APP management service   | APP管理系統 | PTD | Preform temp. detection | 瓶胚溫度檢測 |
| ARS | HP air-recovery system | 氣體回收系統 | BRB | Burst bottle rejection   | 破瓶排瓶裝置  | SSS | Servo stretching system | 伺服拉伸系統 |
| ACS | HP air-cooling system  | 瓶子吹冷系統 | BRF | Full bottle rejection    | 滿瓶排瓶裝置  | WHM | Watt-hour meter         | 電力量測系統 |

## 機台結構 MACHINE STRUCTURE



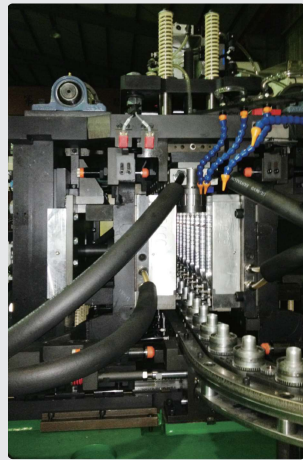
A 入胚系統 Preform Infeed System



C 加熱系統 Heating System



E 出瓶系統 Bottle Discharge System



D 成型系統 Molding System

### A 入胚系統 Preform Infeed System

- 輸送帶將瓶胚從料桶至整列機，再將瓶胚自動排列成序後單道送胚。
- 採用伺服馬達驅動分胚載塊作動及定位。
- 入胚夾爪將瓶胚取至公轉滑塊上。
- The conveyor delivers preforms from hopper to unscrambler, then preforms are automatically arranged in order, ready for feeding.
- Movement and locating of preform dividing block is driven by servo motor.
- Preform in-feed gripper picks preforms and place them on the transfer system.

### B 公轉系統 Transfer System

- 採用伺服控制的螺桿驅動，動作快速穩定及衛生環保。
- 有別於傳統噪音較大的直線機公轉採用鏈條傳動或氣缸驅動，我們的噪音較小。
- Screw movement is controlled by servo motor, provides fast and smooth motion, thus it is environmental-friendly.
- As distinguished from the conventional loud and noisy linear transfer system, which normally uses chain or air cylinder, ours is quieter.

### C 加熱系統 Heating System

- 瓶胚以併排橫列之矩陣模式送入加熱單元。
- 單邊燈管雙邊加熱與反射聚熱模式，確保瓶胚受熱均勻。
- 模組化設計，提昇紅外線燈管及冷卻水道維修保養便利性。
- 瓶胚出加熱箱後，配置溫度感應開關，顯示瓶胚溫度，利於加熱功率調整。
- The preforms are fed into the heating system in a parallel horizontal matrix mode.
- Double side single accommodation heating zone and reflect heat concentration concept make preform more evenly heat.
- Module design enhance maintenance of IR lamp and cooling ramp.
- Preforms leaving heating system, by going through the thermocouple device, which detects the temperature of the preforms and adjusts the heating power efficiently.

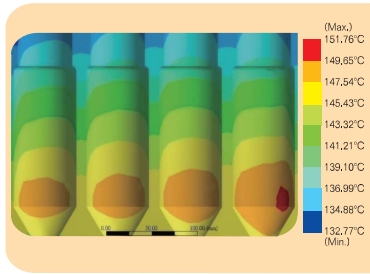
### D 成型系統 Molding System

- 鎖模機構採用伺服馬達配合凸輪驅動。
- 公轉滑塊將加熱後的瓶胚送至模具中吹瓶成型。
- 吹瓶後的高壓氣體回收，到儲氣罐，供增壓機或低壓系統使用。
- The clamping mechanism is driven by a combination of servo motor and cam.
- The transfer system delivers the heated preforms to the mold for blowing bottle process.
- The high-pressure air exhausted after blowing is recovered to air storage tank, which can be reused as air booster in low-pressure situation.

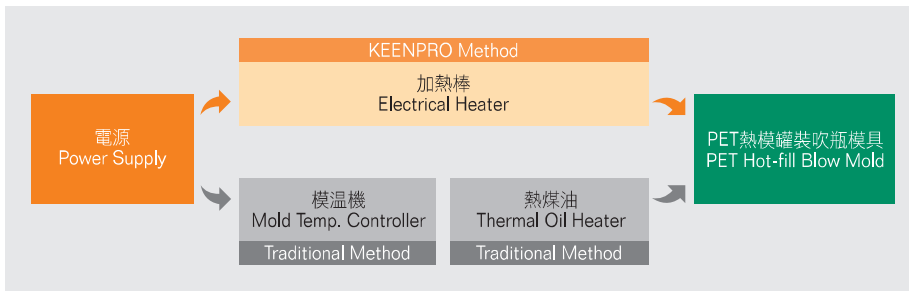
### E 出瓶系統 Bottle Discharge System

- 出瓶處加裝出瓶銜接機構，可與風送道連結，將成行瓶直接輸送至灌裝系統。
- The bottle discharge system can be equipped with air conveyor, which allows bottles to be directly fed to the filling system.

## PET 熱模罐裝吹瓶模具加熱分析 HEATING ANALYSIS PET HOT-FILL BLOW MOLD



| 比較項目<br>Comparison Sheet       | 傳統油溫加熱<br>Thermal Oil Heating | 電熱加熱<br>Electrical Heating |
|--------------------------------|-------------------------------|----------------------------|
| 設備建置成本<br>Equipment Cost       | 較高<br>High                    | 較低<br>Low                  |
| 電力消耗<br>Power Consumption      | 較高<br>High                    | 較低<br>Low                  |
| 加熱管路配置<br>Heating Distribution | 較複雜<br>Complicated            | 較簡單<br>Simple              |
| 環境<br>Environment Impact       | 會產生油霧<br>Oil Mist             | 較潔淨<br>Clean               |



| EM SERIES |                       | Unit    | HOT-FILL  |           |         |         |
|-----------|-----------------------|---------|---|-----------|---------|---------|
|           |                       |         | EM06SH2   | EM08SH2   | EM04MH1 | EM06MH1 |
| 瓶子最大容量    | Max. volume           | Ltr.    | 0.75  |           | 2       |         |
| 模穴數       | No. of cavities       | cavity  | 6   | 8         | 4       | 6       |
| 胚頭數       | No. of preform holder | pcs     | 168   | 224 (196) | 120     | 168     |
| 加熱間距      | Heating pitch         | mm      | 54  | 54        | 54      | 54      |
| 瓶子間距      | Cavity pitch          | mm      | 80  | 80        | 128     | 128     |
| 牙口外徑尺寸    | Preform neck          | mm      | 18-38   | 18-38     | 18-38   | 18-38   |
| 最大瓶胚高度    | Max. preform height   | mm      | 100   | 100       | 160     | 160     |
| 最大瓶身直徑    | Max. bottle diameter  | mm      | 70  | 70        | 115     | 115     |
| 最大瓶身高度    | Max. bottle height    | mm      | 240   | 240       | 320     | 320     |
| 加熱箱數      | Heating oven          | units   | 1X3   | 1X4 (2X2) | 1X2     | 1X3     |
| 燈管量       | No. of infrared lamp  | pcs     | 26  | 32        | 24      | 39      |
| 加熱最大功率    | Max. heating power    | kw      | 50  | 62        | 44      | 74      |
| 配置功率      | Max. installed power  | kw      | 82  | 94        | 76      | 106     |
| 機台電壓      | Power supply          | voltage | -   | -         | -       | -       |
| 主機尺寸      | Machine dimension     | M       | -   | -         | -       | -       |
| 機台重量      | Machine weight        | kg      | -   | -         | -       | -       |
| 理論產能      | Theoretical output    | B.P.H.  | 4500  | 6000      | 2300    | 3500    |
| 實際產能      | Actual output         | B.P.H.  | 依客戶提供的瓶型規格、瓶胚設計和品質而定。<br>Based on the bottle shape, preform design and quality. |           |         |         |



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