TAIWAN 台灣聯塑
UNION PLASTIC

# ES

## Electric
## Injection molding machine

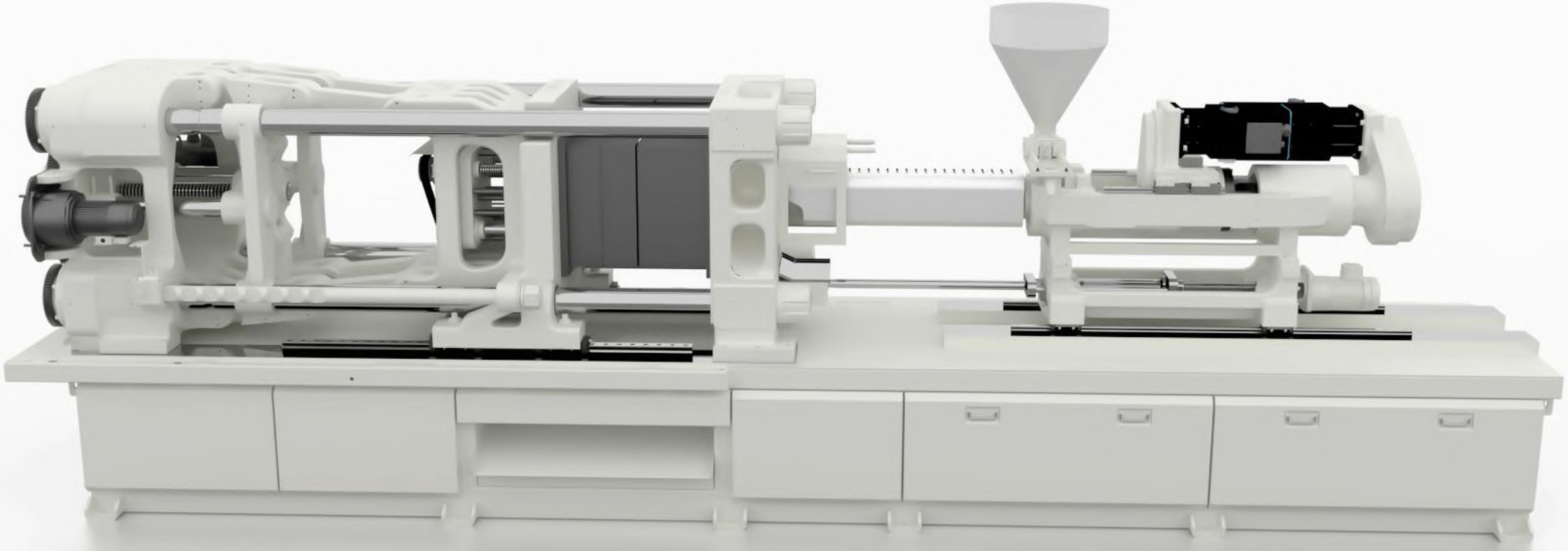

**HONZEN Union Plastic (Zhejiang) Machinery Co., Ltd.**

2025.05

Template action position repetition accuracy < 0.01 mm

Save over 30% in energy compared to hydraulic system

Max injection speed can reach 450mm/s



# ES Electric series

## High performance, high-end application

**Cleanliness** ：Suitable for packaging and medical industry applications.

**High performance** ：Efficient servo drive achieves high precision, high power, and low energy consumption.

**Modularization** ：Adjust according to personalized needs and derive various derivative models.

**Structural form:** Toggle system / Two-platen structure

**Drive type:** Fully electric/Hybrid

**Clamping force:** 90-450t

Standard speed 200∽350mm/s

High speed 450∽800mm/s

**Application field**：

Auto

Package

Home Appliance

Medical

# ES Electric series

Personalized needs： There is always one that suits you, supervised by the Fully electrical Division

Derivative machines:

## UN-E

Hybrid series

Toggle type, hybrid power
Suitable for standardized and diversified precision molding requirements


## HS-E

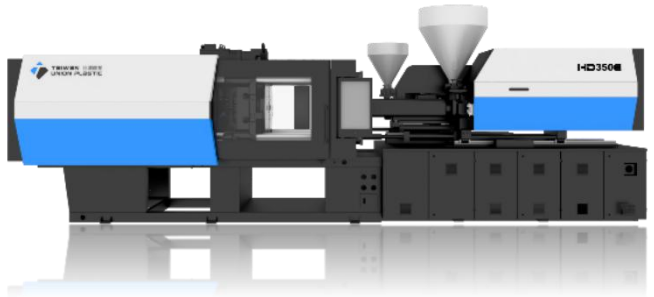
Two-platen hybrid series

Two platen type，hybrid power
Suitable for medium to large and precision forming requirements


## HD-E

Multi-color hybrid series

Multi injection unit，hybrid power
Suitable for multi-color and precision molding requirements



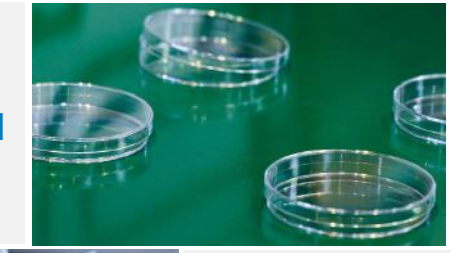
# Widely used in various fields

Precision、energy-saving、efficient

Electronics

Auto parts

Medical



Packaging

Home appliance

Daily

# 01 PRODUCT INTRODUCTION

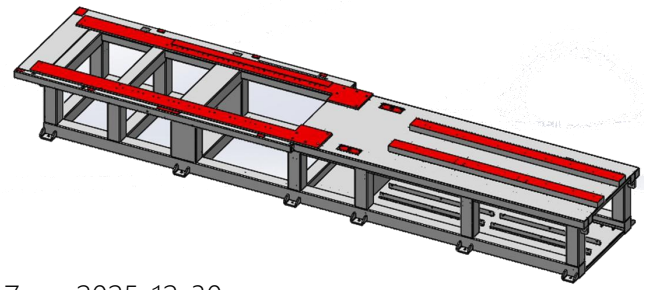
# More stable

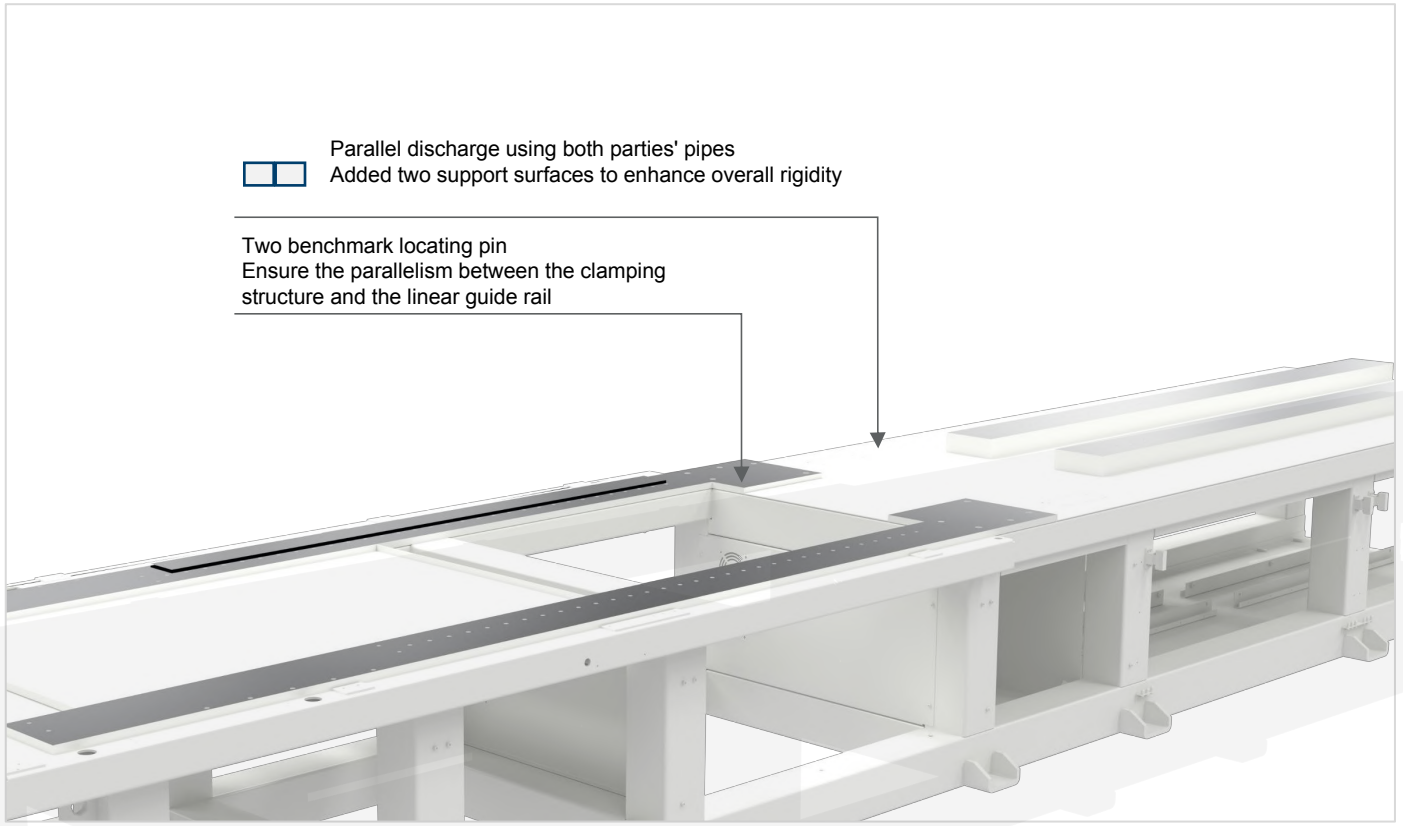
## From overall to details, from rack to template

Realize high-speed operation and smooth structural optimization of overweight and ultra thick molds, with uniform force distribution at the bearing points and no deformation

**Framework**:

- △ Ultra high inertia seismic design
- △ All series overall frame casting
- △ Overall tempering treatment to remove stress
- △ 30-year service life design





# More stable

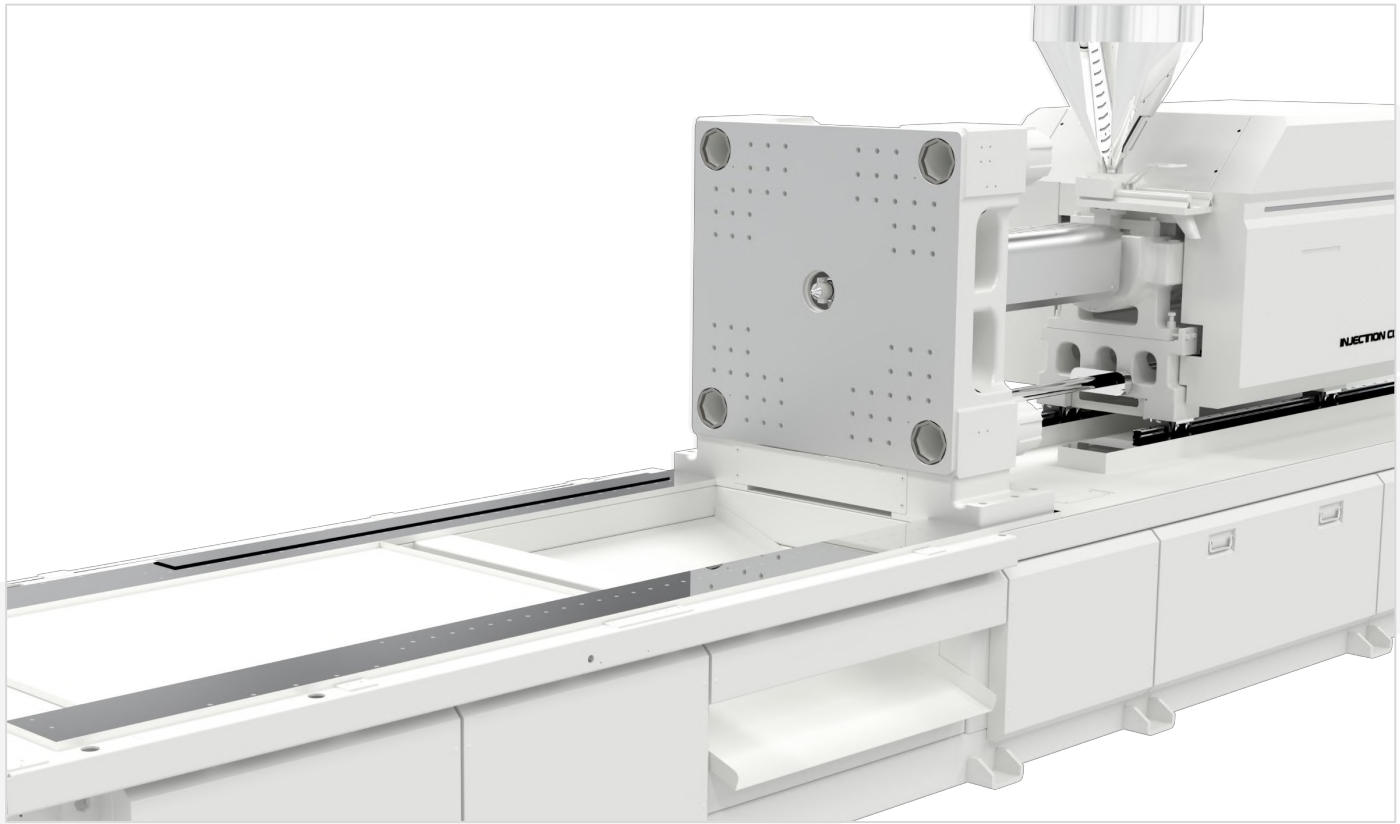
## Clamping structure

Opening and closing mold ultra static design

（Noise<60 dB）

**Front Template**：

- ANSYS optimizes rigid template design, ensuring even distribution of locking force
- T-shaped fixed nut with stronger locking force
- Using locating pins to fix the front page for higher installation accuracy



# More precise

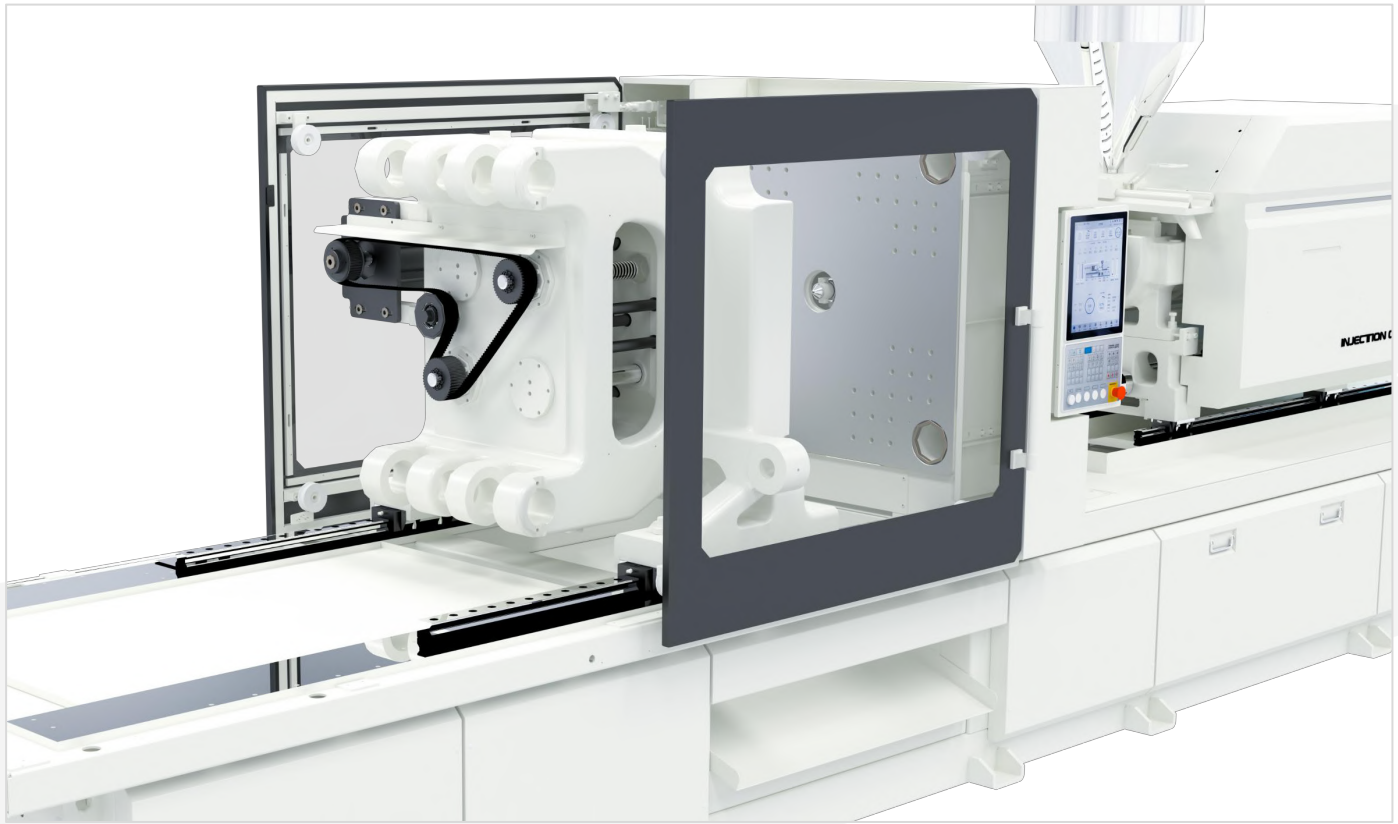
## Clamping structure

Template action position repetition accuracy 0.01 mm

The parallelism of the clamping guide rail ≤ 0.015mm

**Movable Template**：

- Integral cast arch bridge shaped structure, Enhanced Template, reduce formwork deformation
- Adjustable support feet for the movable platen to ensure the parallelism of the template
- Movable template equipped with double slider support structure, can smoothly and efficiently reciprocate motion
- The contactless design of the lever allows for up, down, left, and right adjustment of the moving plate, reducing friction during movement



# More precise

## Clamping structure

Template action position repetition accuracy 0.01 mm

The parallelism of the clamping guide rail ≤ 0.015mm

**Double screws ejection structure**

- Top out motor brake design for safe production
- Double screws eject，improve the parallelism of the top platen
- The precision of the ejection position is 0.01mm, which meets the requirements of high-precision insert molding
- Using THK linear bearings to support the ejector plate, with little error and high precision

# More efficient

## Clamping structure

Increase the speed of mold opening and closing by 20%

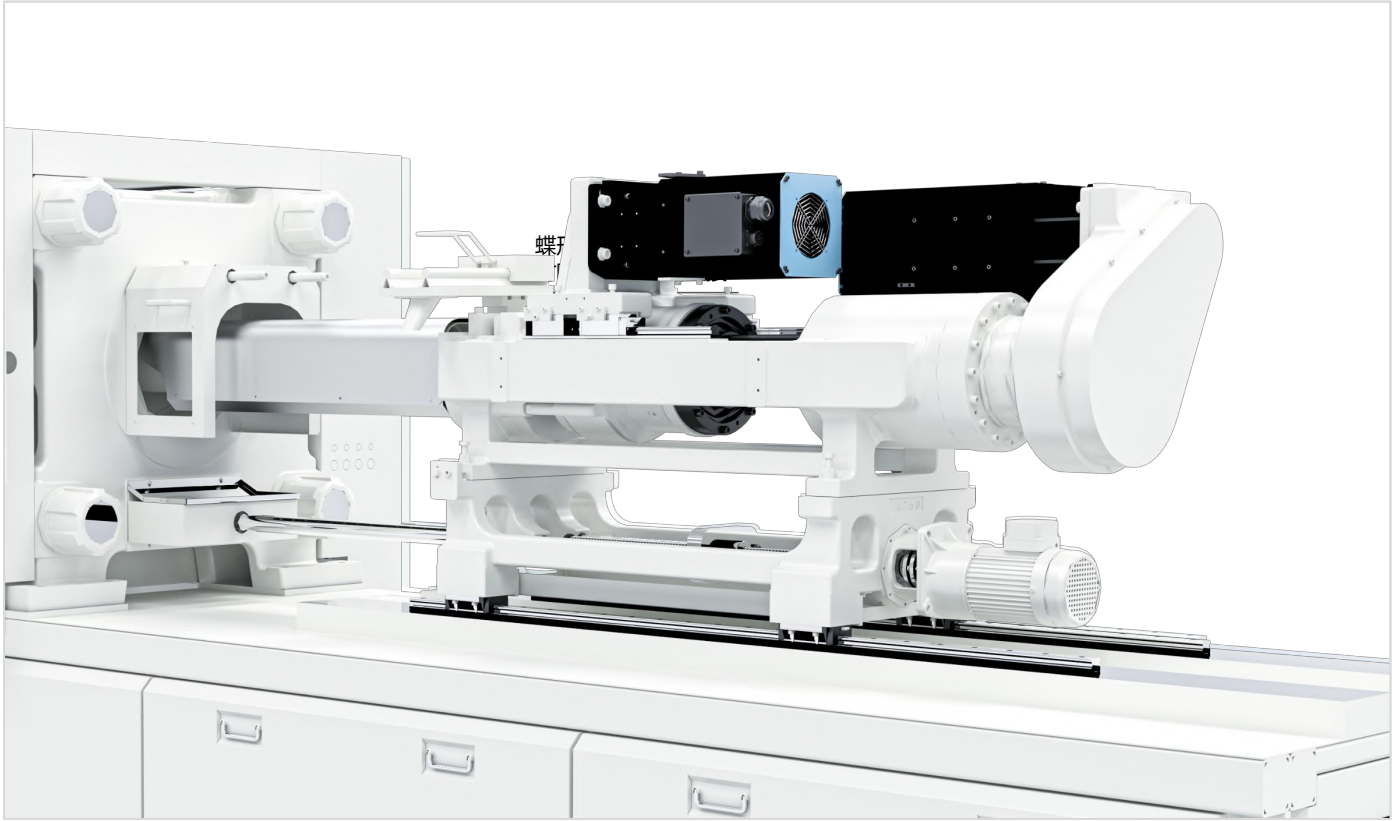

**Rear template**

- Adjustable mold thickness margin, reserves 40mm for extension
- Spacious space, convenient for later maintenance
- Fixed tailboard reduces movement of template during high-speed mold opening and closing
- Independent crosshead bracket: Improve the displacement accuracy of the crosshead guide rod; Extend the lifespan of the clamping screw

# More efficient

## Injection structure

Injection position accuracy 0.01mm



**Injection structure**

- Integrated frame, stronger rigidity of injection mechanism
- Supports 4 screw specifications, including high-speed packaging dedicated screws
- Quick detachable material barrel structure, quick replacement for different applications/scenarios
- Direct drive structure, more efficient power transmission
- Meet the process requirements of long holding pressure, micro foaming, etc.

# More efficient

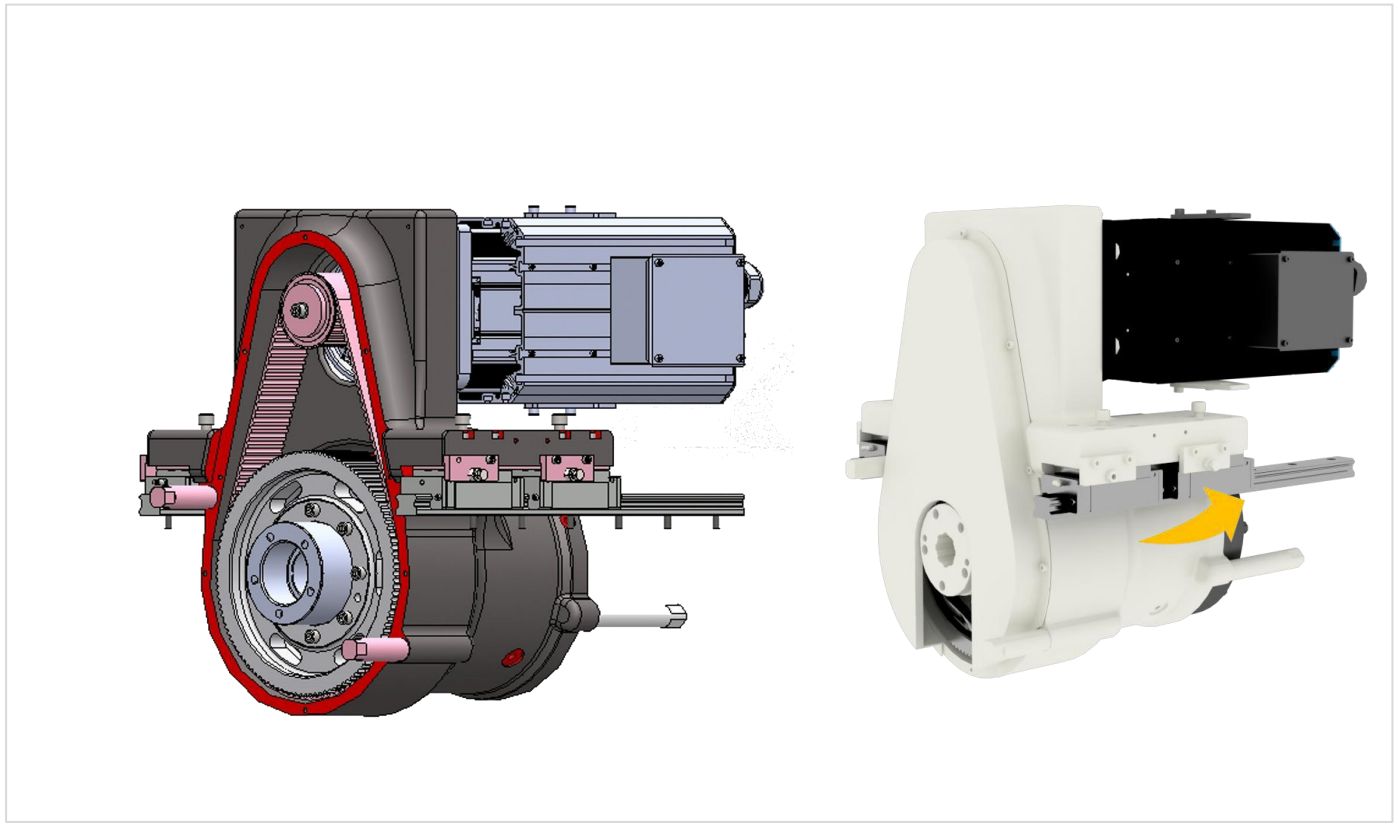
## Injection structure

Maximum speed of injection 450mm/s

Screw speed 400rpm

**Ejection structure**

- The sol motor is centrally arranged for more stable injection
- Movable template with double slider, structurally stable
- Using linear guide rails to reduce friction
- The sol seat can be adjusted up, down, left, and right to improve the concentricity and straightness of the lead screw and screw



# High precision and efficiency

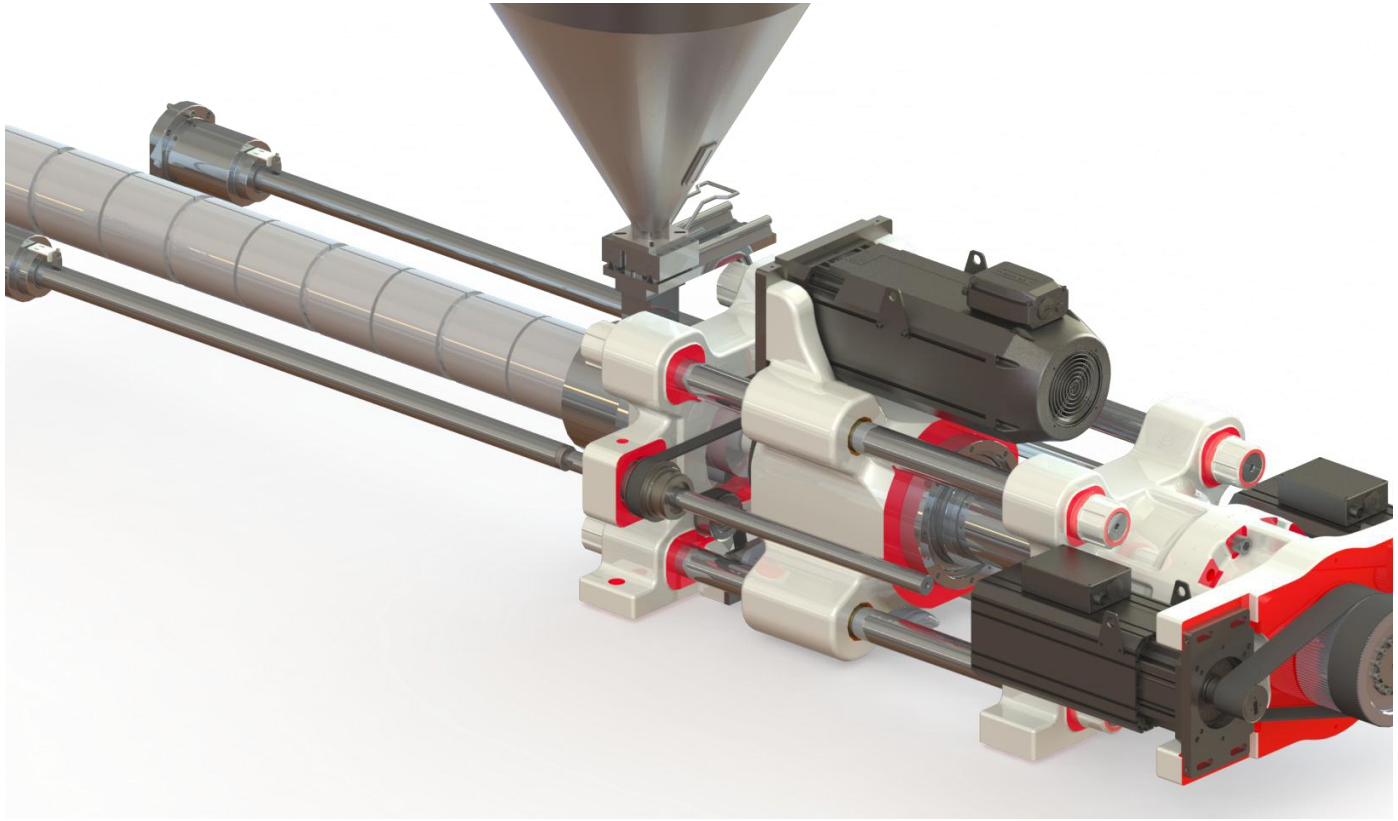
## Injection dual axis synchronization

Higher concentricity

Less deformation

**Injection dual axis synchronous structure**

- Plasticizing motor with low center of gravity, able to adapt to higher speeds
- Pull rod structure can better ensure the overall extension under compression
- Low radial force, equal tension on the left and right belts
- Synchronous output, two motors are completely synchronized



# Human computer interaction, revolutionary research

## Control system

100% independently developed software

**Control system**

- Double security protection, interlock before action, and interlock again while alarm activated
- Action switching with 0 delay, multiple special processes greatly shorten the molding cycle
- Adopting motion control, real-time monitoring and correction of motion motor trajectory
- Provide multiple software interfaces for data exchange, adapt to more processes and various molds

# More efficient

## Control system

Multi-action synchronization, dry cycle is shortened by 0.6s

**Plasticizing synchronization**

- ▵ Mold Opening finished: Simultaneously perform mold opening, and ejector actions while plasticizing
- ▵ Mold Closing finished: Simultaneously perform mold opening, ejecting, and closing actions while plasticizing

**Plasticizing synchronization**

- ▵ In the mold opening process :Simultaneously perform the ejection action while opening the mold

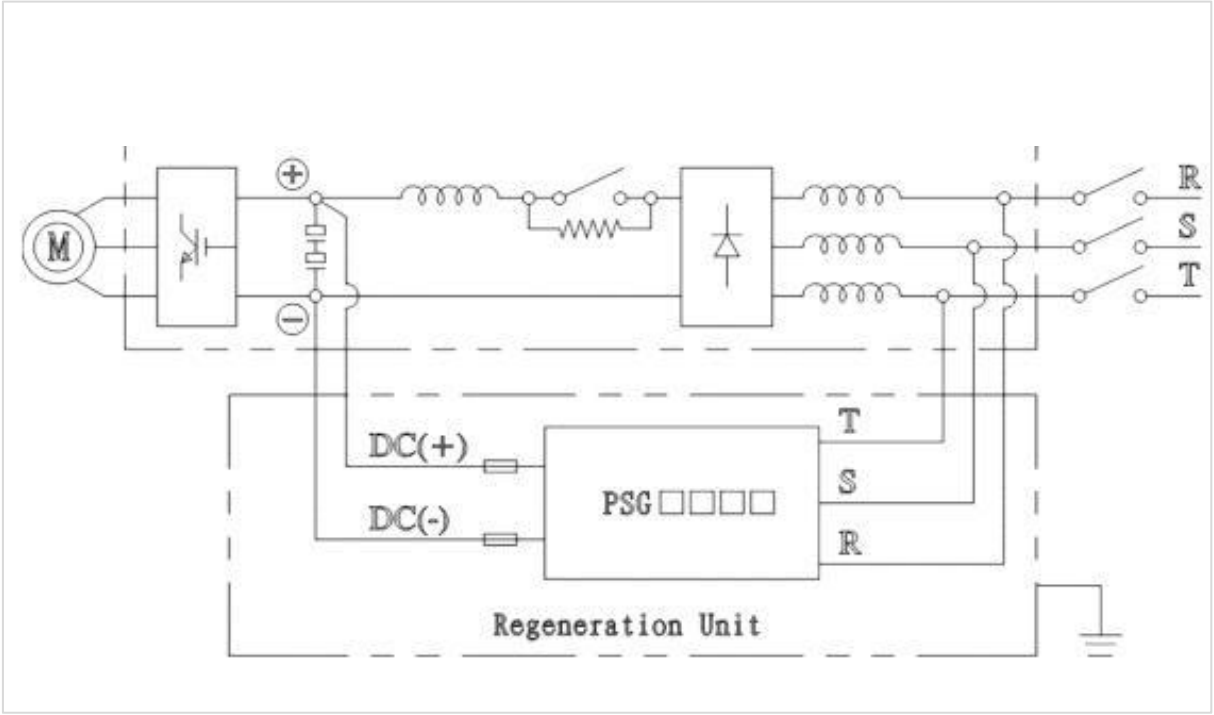
# More energy-efficient

## Control system

Energy saving 8% to 15%

**Energy recovery device**

- △ The energy generated during motor braking is recovered into the power grid
- △ Energy saving of 8% to 15% during high-speed Injection molding cycle



# More application technologies

## Control system

**Compression molding**

- Realize low-pressure forming and improve product stress
- Synchronized injection operation during clamping, shortening the molding cycle
- Applied to deep cavity and thin-walled products

**Mold cavity exhaust**

- Release the air in the mold cavity
- Improve product stress，shortening the molding cycle
- Synchronized injection operation during clamping
- Widely used for process optimization incases of poor mold exhaust

**Release the pressure of mold cavity**

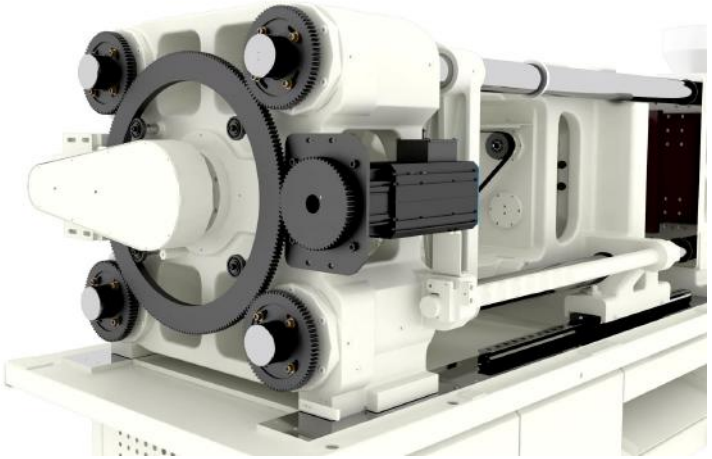
- Release the pressure of mold cavity
- Saving cooling time
- Shorten the stress time of the pull rod and mold
- Release stress，reduce product deformation
- Mold cavity pressure release is widely used in 80% of product molding

# More appliance technologies ( Optional )

## Control system

**Automatic clamping force adjustment**

- Clamping force detection
- Real time computation
- Position closed loop
- Adjust the position of mold thickness



**Screw cooling device**

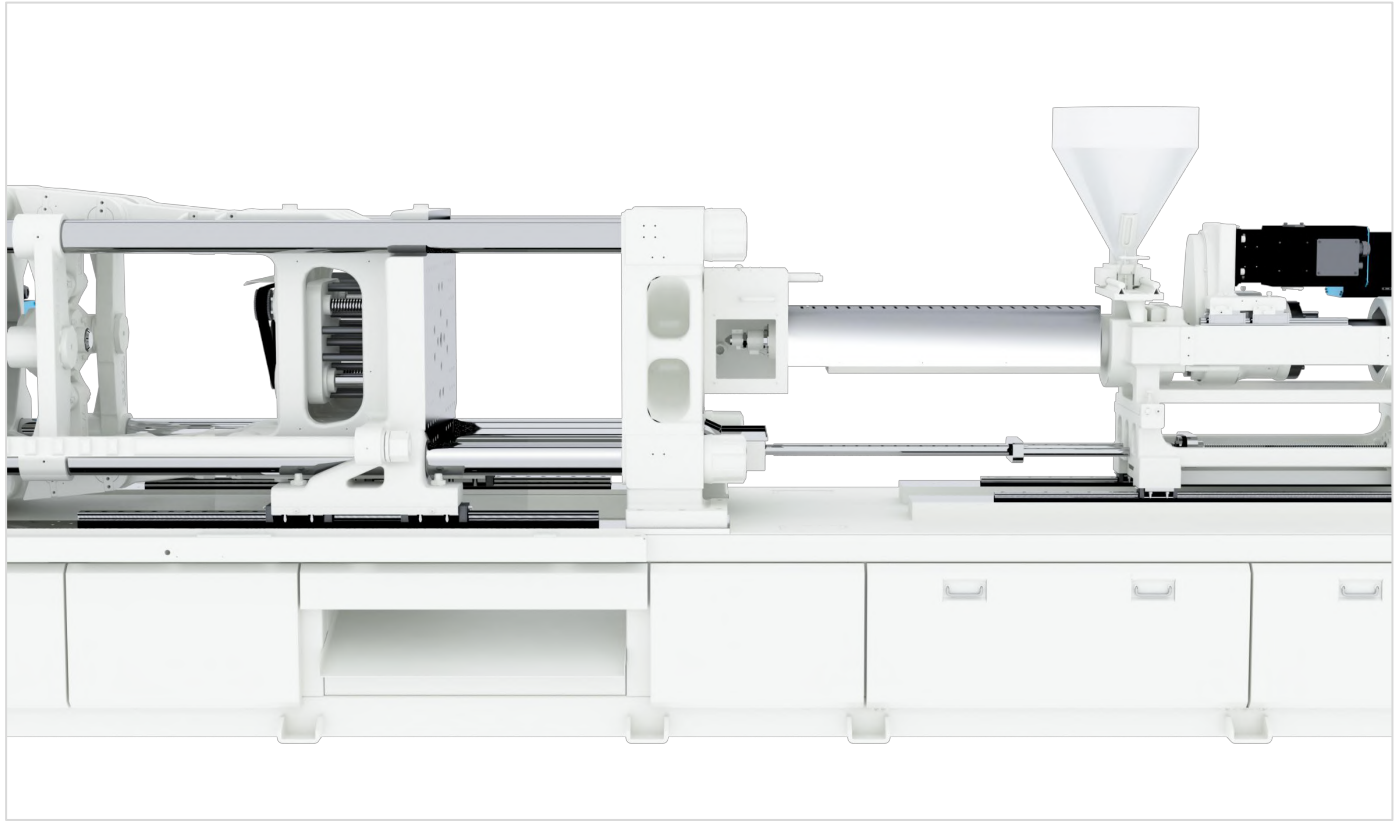
- Screw operation protection
- Temperature detection
- Temperature control
- Air cooling/water cooling

# More humanized designs

## All electric series design

**More humanized designs**

- Intelligent mold protection function, effectively protects the mold
- Self lubricating design (ball screw, bearings, clamping motion) reduces maintenance costs
- Patent design, reasonable and spacious spatial distribution, convenient operation and maintenance
- Optional rotating injection unit



# Intelligent Plant

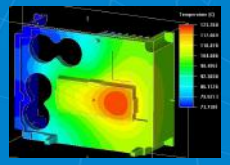
## Internet of Everything





## Auxiliary functions

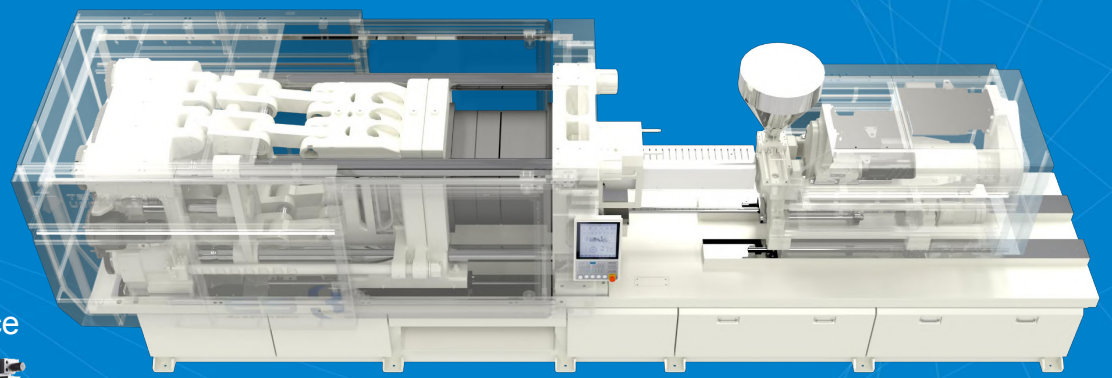
Mold temperature and pressure monitoring



Hot runner temperature control

Mold sequence valve control

EUROMAP Interface 12、13、67、70、71



# Quality assurance

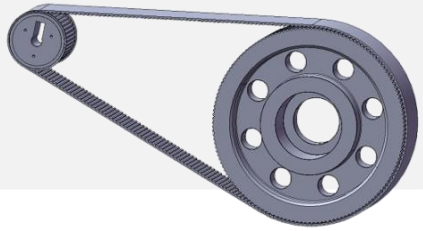
## Core brand components

Inovance Controller

Inovance's servo

Enske, Muranajima, Lane Screw

Enske that eats bearings



Continental, Bandong belt

Subaki pulley power lock

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# 02 PERFORMANCE COMPARISON

# Cycle improved by 26%

## Dry cycle/empty cycle time

Dry cycle/empty cycle time： Only open/close mold action @stroke 600mm

| Project | Cycle(s) | Mold opening(s) | Mold closing(s) | The time periodic program scanning takes up (s) |
|---|---|---|---|---|
| INNOVANCE | 3.25 | 1.65 | 1.57 | 0.03 |
| HON | 2.40 | 1.21 | 1.17 | 0.02 |
| Time saving | -0.85 | -0.44 | -0.40 | -0.01 |
| Percentage | 26.15% | 26.67% | 25.48% | 33.33% |

Time stability ： Fully automatic operation @100pcs

| Project | Units | Cycle | Closing | Injection | Recovery | Opening | Ejection | Calculation time |
|---|---|---|---|---|---|---|---|---|
| INNOVANCE | Time | 8.05 | 1.57 | 1.460 | 1.34 | 1.65 | 1.54 | 0.490 |
| | Repeatability | 0.13 | 0.02 | 0.020 | 0.00 | 0.01 | 0.07 | |
| HON | Time | 6.51 | 1.17 | 1.517 | 1.30 | 1.21 | 1.30 | 0.019 |
| | Repeatability | 0.01 | 0.00 | 0.001 | 0.00 | 0.00 | 0.00 | |
| Time saving | | -1.54 | -0.40 | +0.057 | -0.04 | -0.44 | -0.24 | |

# Performance comparison

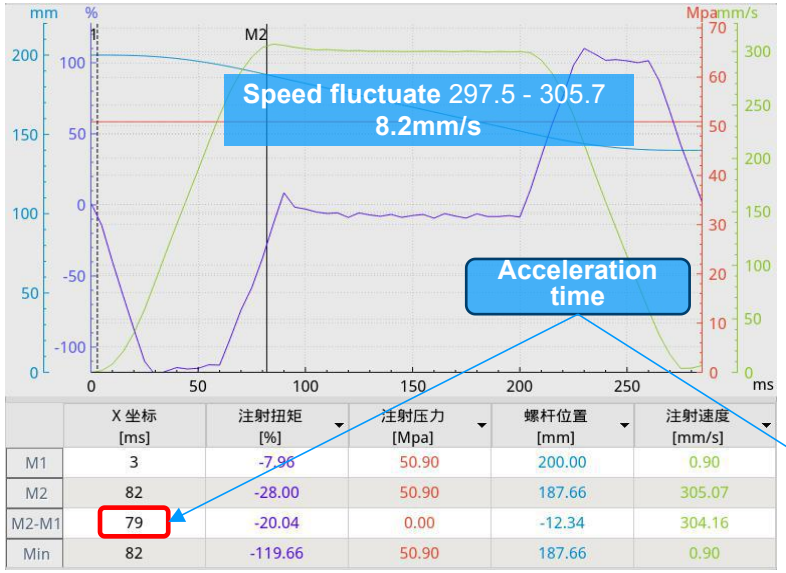
Acceleration/deceleration

0 <–> 300 mm/s

| Project | Unit : ms | Acceleration time | Deceleration time | Upper limit of speed fluctuation | Lower limit of speed fluctuation | Speed fluctuation |
|---|---|---|---|---|---|---|
| INNOVANCE | Time | 79 | 70 | 305.7mm/s | 297.5mm/s | 8.2mm/s |
| HON | Time | 46 | 46 | 300.7mm/s | 299.1mm/s | 1.6mm/s |
| **Precision difference** | | **-33** | **-24** | **-5.0mm/s** | **-1.6mm/s** | **-6.6mm/s** |

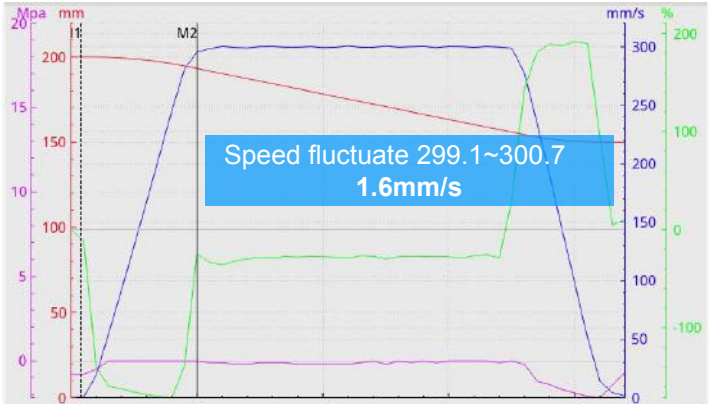
Accelerated testing : 0 → 300 mm/s

INNOVANCE




| | X 坐标 [ms] | 注射扭矩 [%] | 注射压力 [Mpa] | 螺杆位置 [mm] | 注射速度 [mm/s] |
|---|---|---|---|---|---|
| M1 | 3 | -7.96 | 50.90 | 200.00 | 0.90 |
| M2 | 82 | -28.00 | 50.90 | 187.66 | 305.07 |
| M2-M1 | 79 | -20.04 | 0.00 | -12.34 | 304.16 |
| Min | 82 | -119.66 | 50.90 | 187.66 | 0.90 |

HON




| | X Coordinate [ms] | 螺杆位置 [mm] | 注射速度 [mm/s] | 注射压力 [Mpa] | 注射扭矩 [%] |
|---|---|---|---|---|---|
| M1 | 4 | 200.00 | 0.4 | -0.8 | -9.2 |
| M2 | 50 | 193.27 | 295.6 | 0.0 | -24.9 |
| M2-M1 | 46 | -6.73 | 295.2 | 0.8 | -15.7 |
| Min | 50 | 193.27 | 0.4 | -0.8 | -171.6 |

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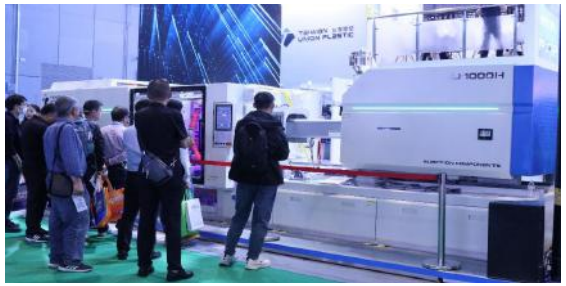
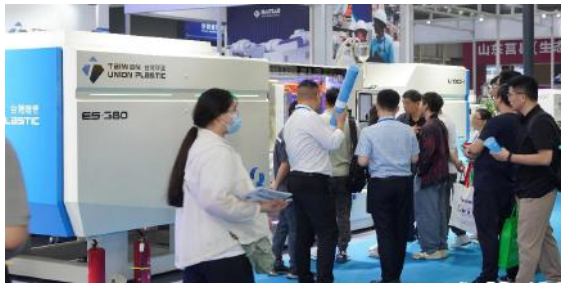
# 03 PRODUCT APPLIANCE

# Appearing at major international exhibitions



Chinaplas



AP-RubberPlas 亚太橡塑展

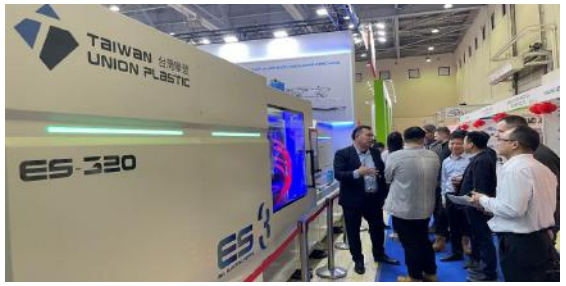

DMP

深圳国际高性能医疗器械展 BrightMD Fair China


VietnamPlas Hybrid
The 20th Vietnam Int'l Plastics and Rubber Industry Exhibition


InterPlas Thailand 2024


HanoiPlas




RUPLASTIC

# Package

## Multi cavity

**Machine :** ES320-IU790H

**Screw dia. :** 50mm

**Technology :** Multi-cavity High Speed

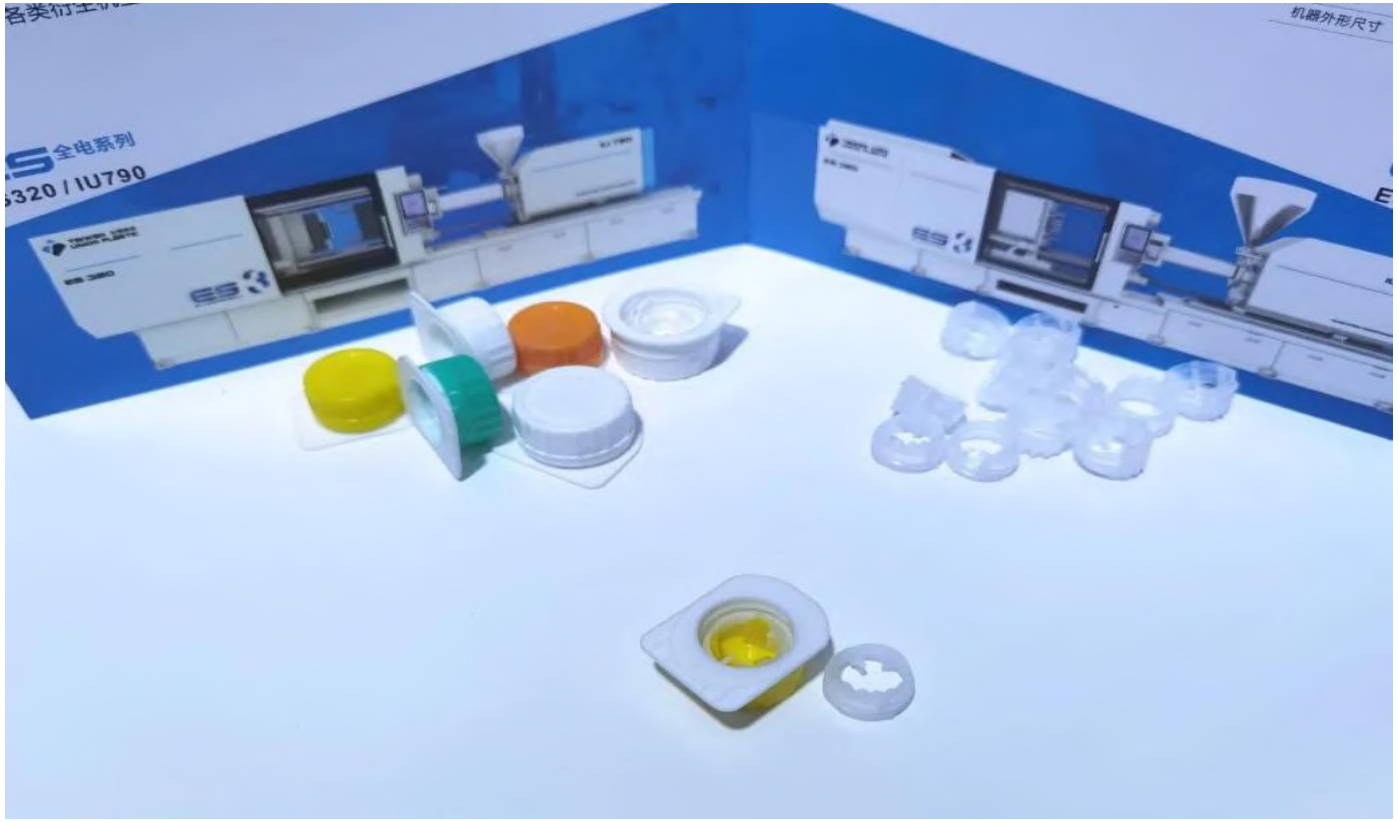
**Product :** Tetra Pak Cap inner teeth

**Material :** PE

**Cavity :** 48

**Weight :** 1g

**Cycle :** 5.5s



# Package

## Multi cavity

**Machine :** ES320-IU790H

**Screw dia. :** 50mm

**Technology :** Multi-cavity High Speed

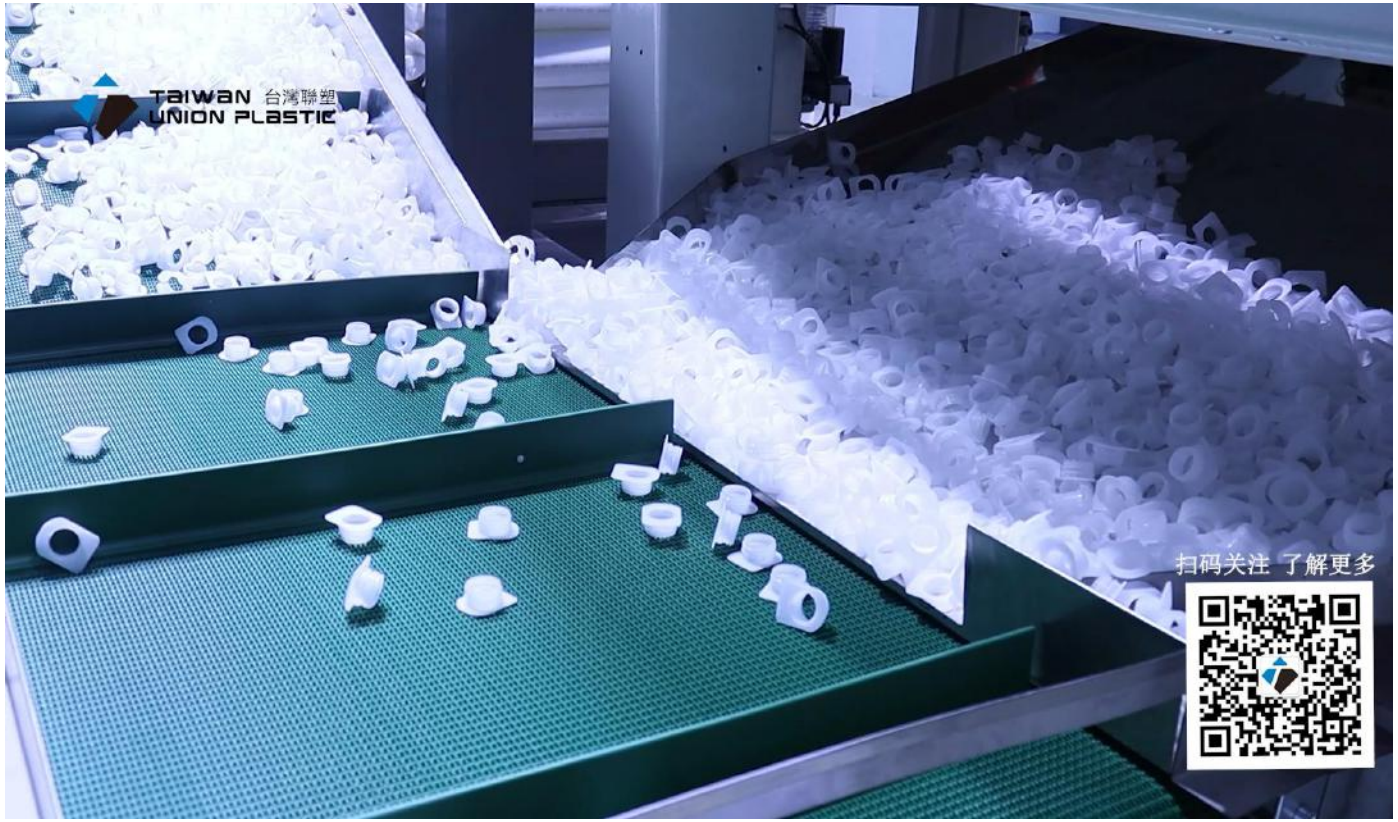
**Product :** Tetra Pak Cap

**Material :** PP

**Cavity :** 32

**Weight :** 2g

**Cycle :** 5.6s



# Package

## IML Thin-wall technology

**Machine :** ES380-IU1000

**Screw dia. :** 55mm

**Technology :** IML

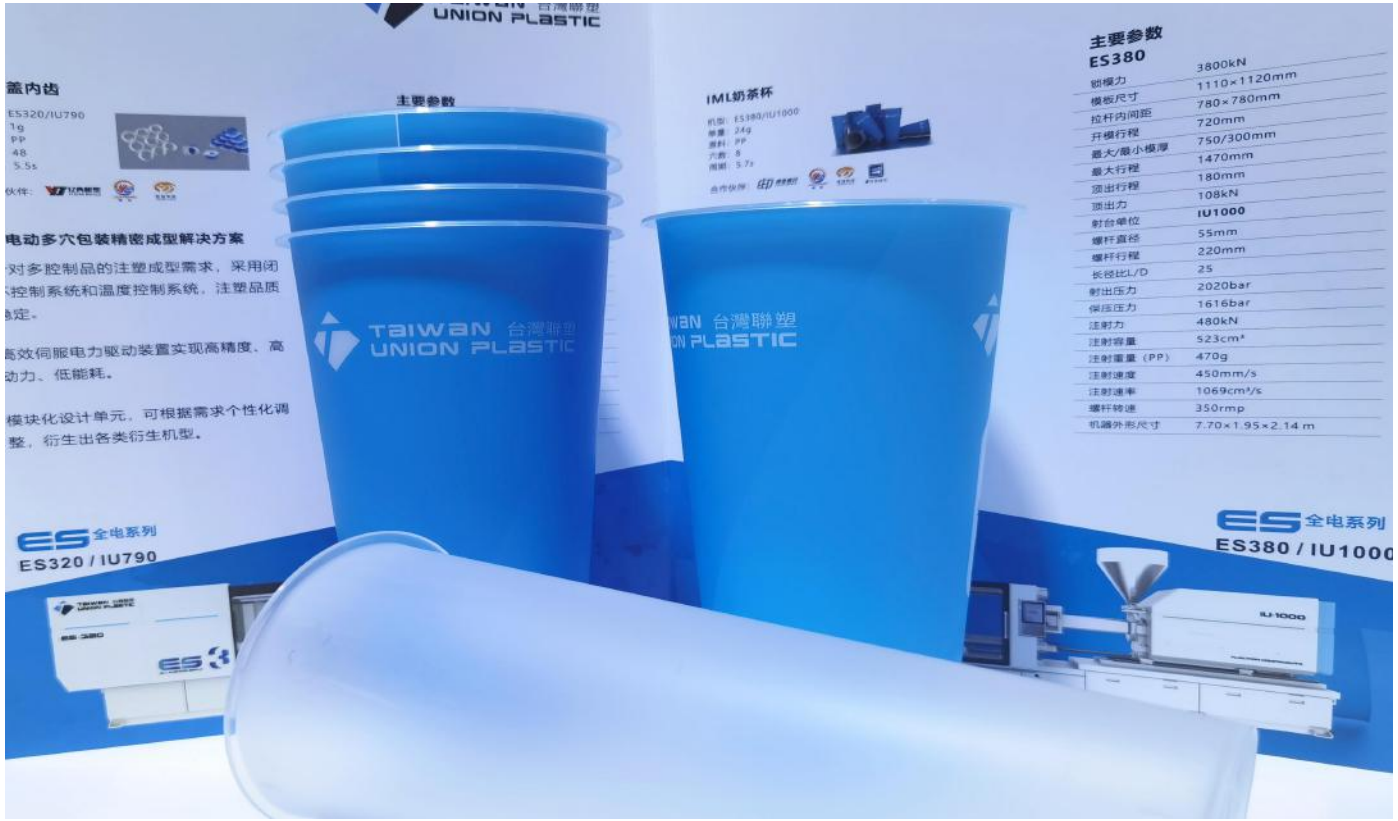
**Product :** 700ml milk tea

**Material :** PP

**Cavity :** 8

**Weight :** 24g

**Cycle :** 5.7s



# Package

## IML Thin-wall technology

**Machine :** ES380-IU1000

**Screw dia. :** 55mm

**Technology :** IML

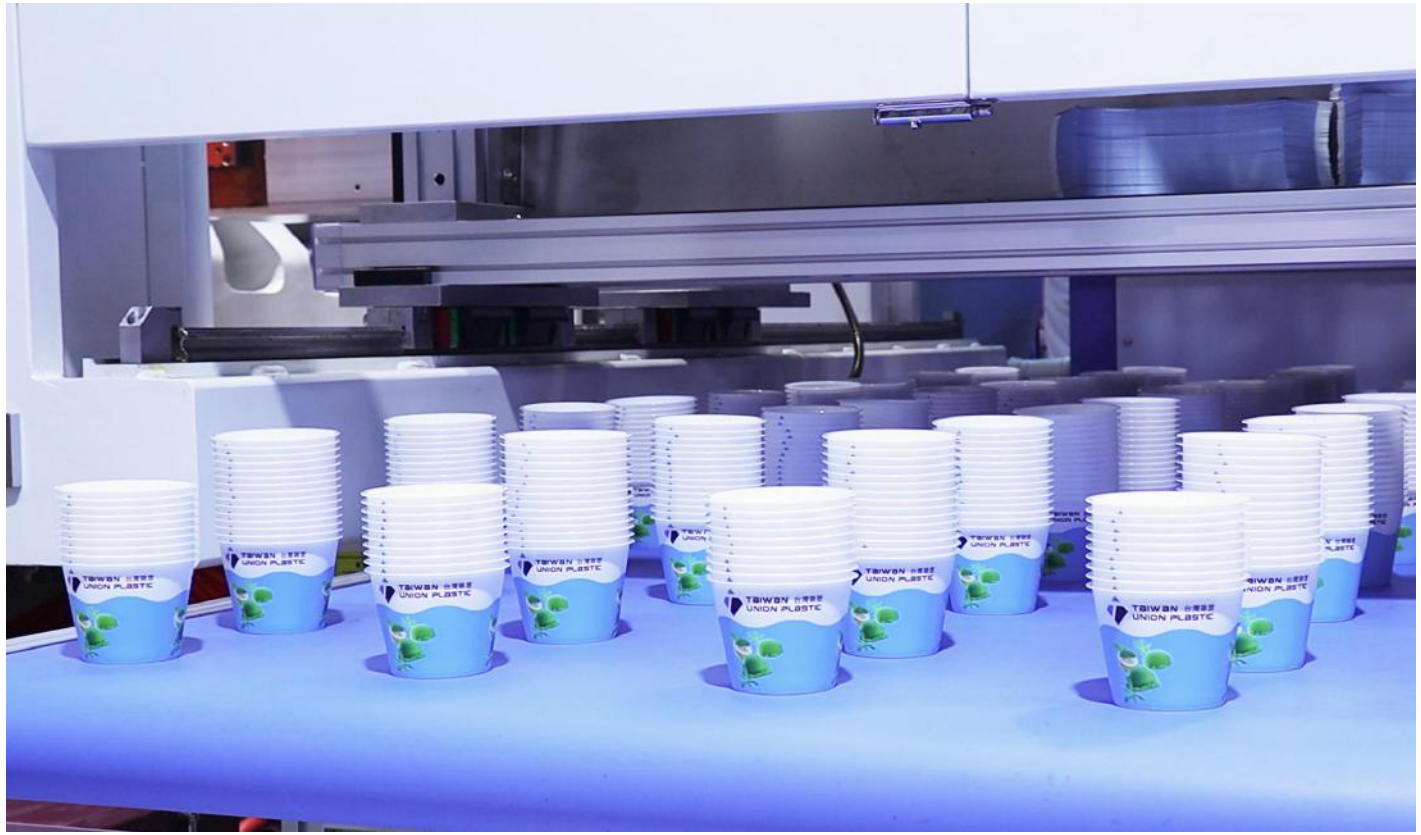
**Product :** IML Yogurt tub

**Material :** PP

**Cavity :** 12

**Weight :** 9.8g

**Cycle :** 4.9s



# Package

**Machine :** ES320-IU790H

**Screw dia. :** 50mm

**Technology :** IML

**Product :** 1L Yogurt bucket lid

**Material :** PP

**Cavity :** 4

**Weight :** 9.5g

**Cycle :** 7.5s

# Package

## Double-Shot Molding

**Machine：** HD350E-IU1400 –IU180

**Screw dia.：** 55mm 30mm

**Technology：** Double-shot Molding

**Product：** Smart cap

**Material：** PE+TPU

**Cavity：** 24+24

**Weight：** 8.4g

**Cycle：** 11s

# Medical

**Machine :** ES320

**Screw dia. :** 50mm

**Technology :** Medical Cleanliness

**Product :** 1ml Syringe

**Material :** PP

**Cavity :** 72

**Weight :** 1.3g

**Cycle :** 9.0s

# Medical

**Machine :** ES320

**Screw dia. :** 50mm

**Technology :** Multi-cavity Clean and Precision

**Product :** 2.5ml Syringe

**Material :** PP

**Cavity :** 64

**Weight :** 1.4g

**Cycle :** 6.5s

# Medical

**Machine :** ES380

**Screw dia. :** 58mm

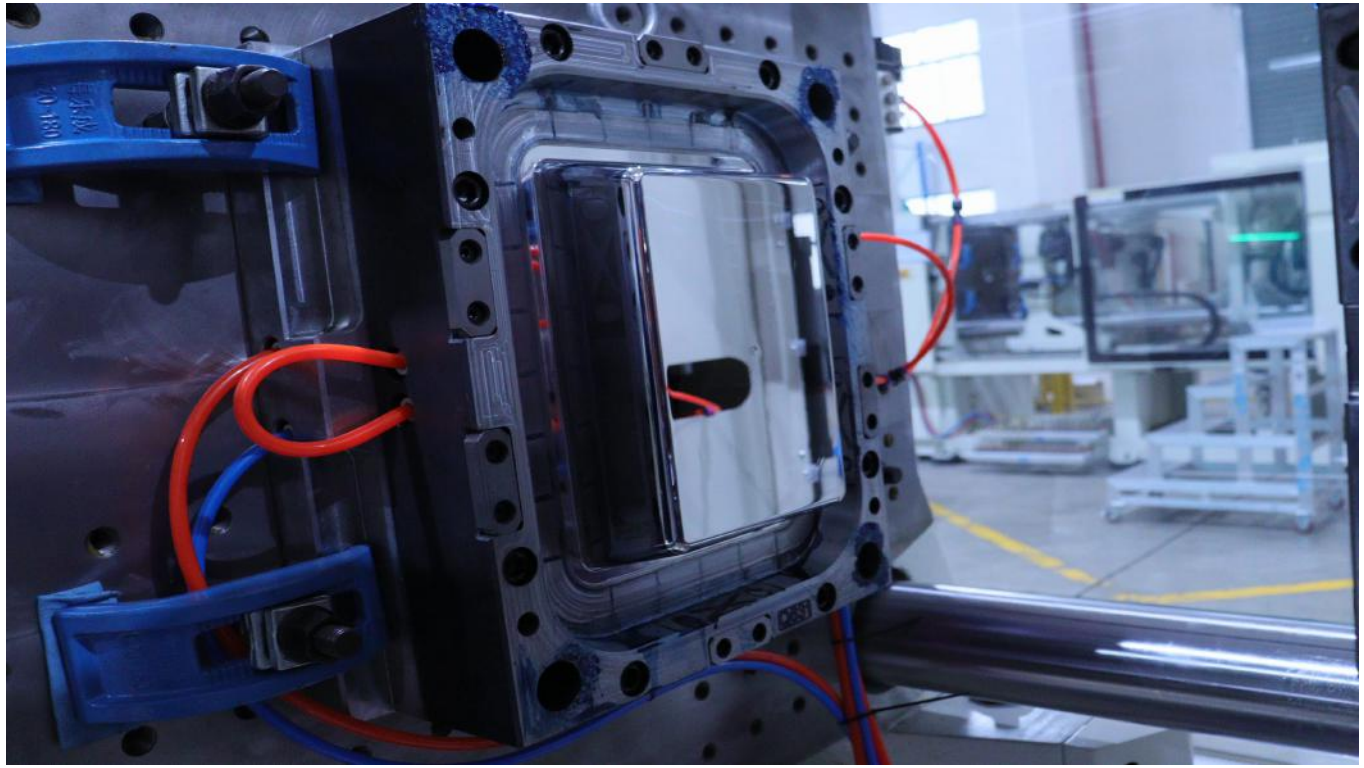
**Product :** Medical square tray

**Material :** PP

**Cavity :** 1

**Weight :** 116g

**Cycle :** 8s



# Daily Necessities

## Beauty Makeup

**Machine：** ES260-IU580

**Technology：** Electric High Speed

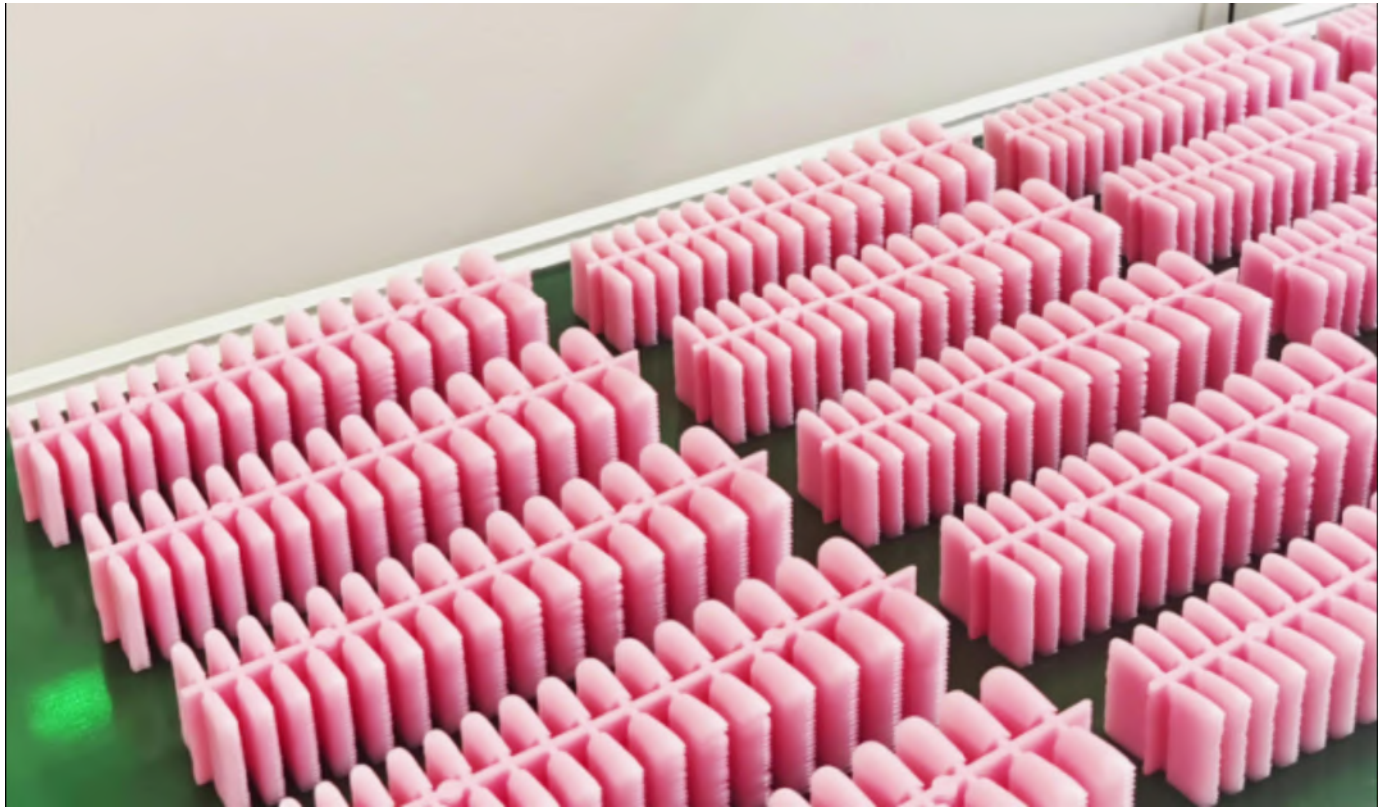
**Product：** Faker nail

**Material：** ABS

**Cavity：** 2

**Weight：** 6g

**Cycle：** 4s



# Daily Necessities

**Machine :** ES320

**Product :** Disposable tableware

**Material :** PP

**Cavity :** 32

# Medical

**Machine :** ES320

**Screw dia. :** 50mm

**Product :** Bucket handle for bottled water

**Material :** PP

**Cavity :** 24

**Weight :** 7.1g

**Cycle :** 8.31s

# Medical

**Machine :** ES160-IU410

**Screw dia. :** 35mm

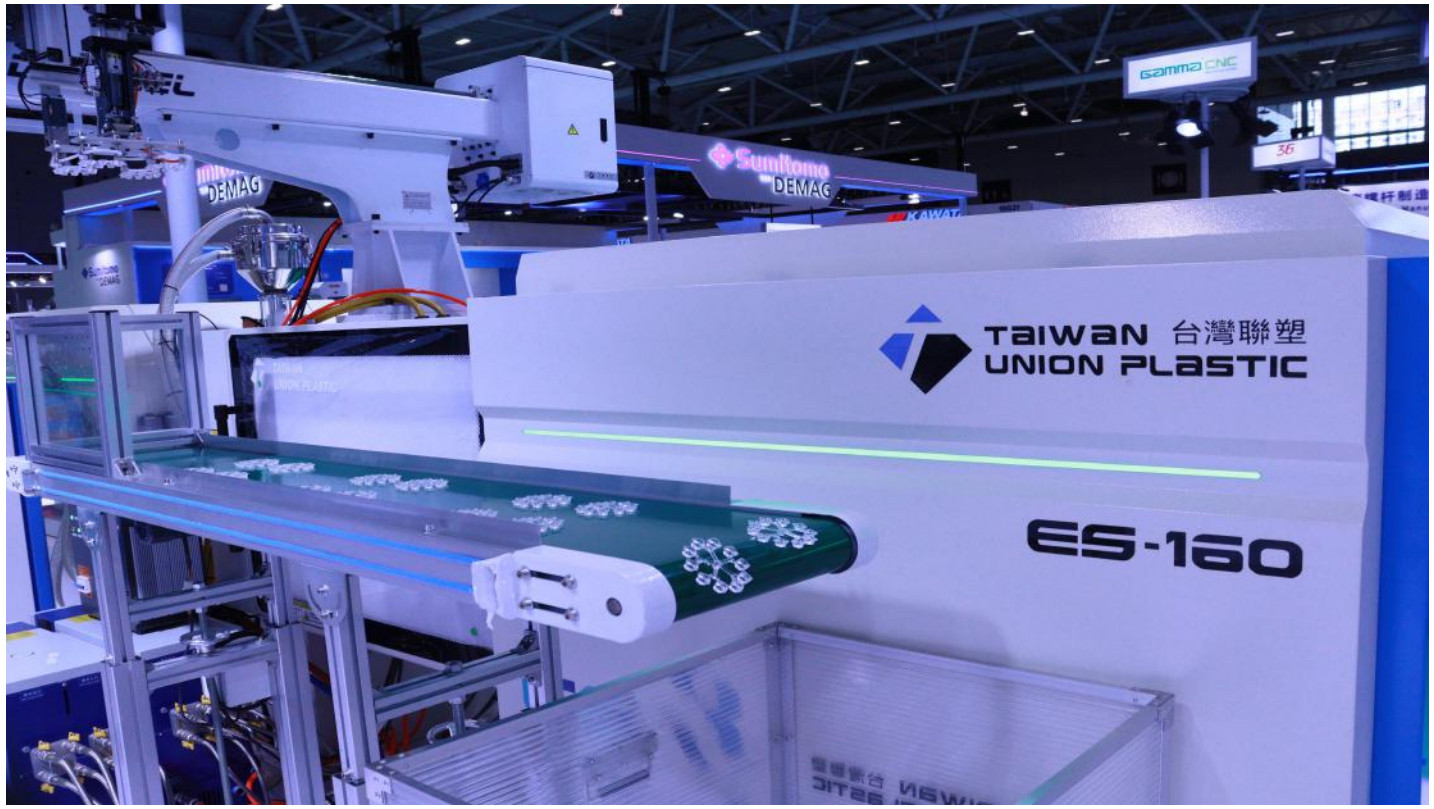
**Product :** Bucket handle for bottled water

**Material :** PMMA

**Cavity :** 40

**Weight :** 0.85g

**Cycle :** 45s



# Automotive Parts

## Two-Color Molding

**Machine :** UN260E -IU790

**Screw dia. :** 45mm

**Product :** Automotive Parts

**Material :** HDPE

**Cavity :** 4

**Weight :** 11.2g

**Cycle :** 41s

# New breakthrough in the beauty industry

△ In the faker nail industry, the application of multi-color often requires additional processes to be implemented. The on-site hybrid multi-color production solution, which forms various styles of multi-color nail plates at once, improves market competitiveness.

| Machine |
| --- |
| ES120 Fully electric high-speed series |
| HD160D Multi-color hybrid series |


**Advantage**:

△ Compared to the hydraulic press that has been used in the industry, electric equipment can save more than 35% energy

△ More stable production and high product qualification rate

△ Our professional team provides more cost-effective solutions

△ Introducing multi-color hybrid motors as more orders are obtained for electric motor models

△ Multi process one-time molding, new application of dual color faker nail, leading in production efficiency compared to peers

# TUP Machine Series

Technology Never Stop

## HD160-3350t

**Multi components series**

Derivative models:
HS-W Opposite platform series
( 1600-3350 t )
HD-D Two-platen multi-color series
( 650-3300 t )

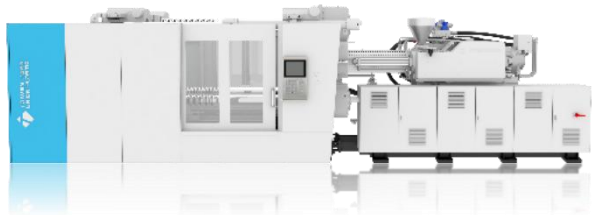
## ES90-450t

**Electric series**

Derivative models:
UN-e Hybrid series
( 90-1000 t )
HS-e Two-platen hybrid series
( 450-1000 t )
HD-e Multi-color hybrid series
( 160-1700 t )

## UN90-2900t

**Hydraulic series**



## HS450-6600t

**Two-platen series**

TAIWAN 台灣聯塑
UNION PLASTIC

# Thank You.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