ZHAFIR
PLASTICS MACHINERY

VE

ZE

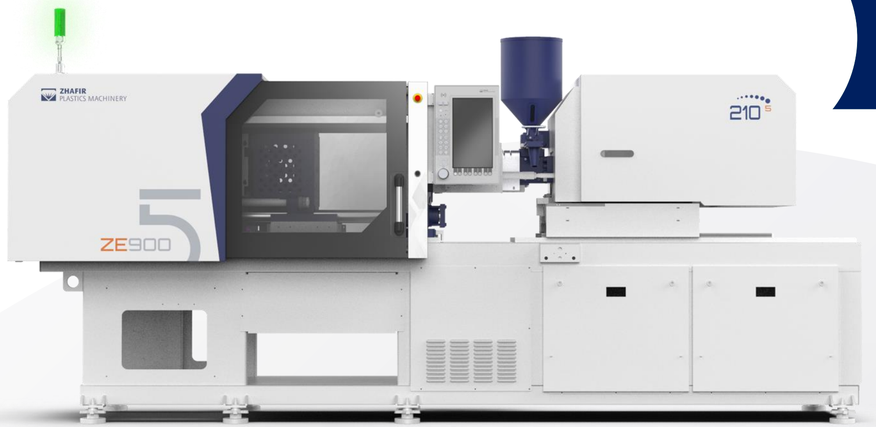
VE ZE SERIES

ELECTRIC SOLUTION

400 – 13,800 kN

Research & Development

20 Years of experience



2007

Generation I

- Premiere of Zhafirs all-electric Venus Series at K-Show

2012

Generation II

- Mechanical Upgrades
- Improvements in Reliability & Design
- Establishment of additional Series’

2019

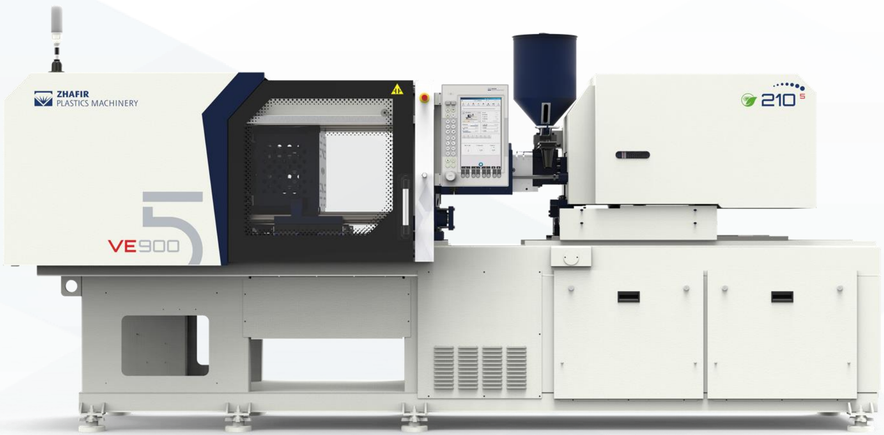
Generation III

- Servo Drive System Upgrade
- Industry-specific Series tailored to segmented markets

Generation V

- Improvements in Control & CPU Power
- New User Experience
- Integration of smart functions
- Reduced dry-cycle times

Zhafir Venus & Zeres Series



VE

Zhafir Venus Series

400 – 13.800 kN

All-electric

ZE

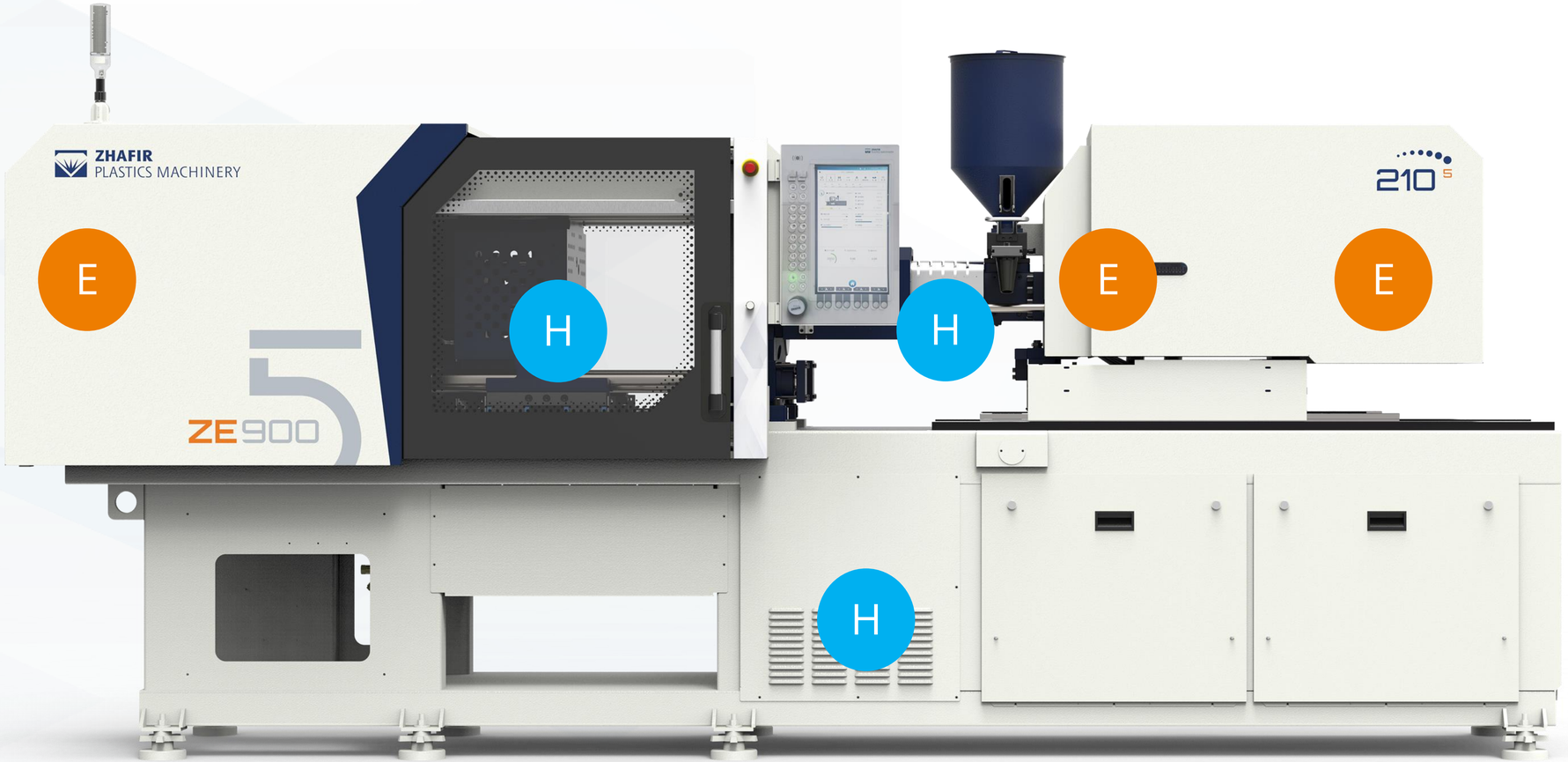
Zhafir Zeres Series

400 – 13.800 kN

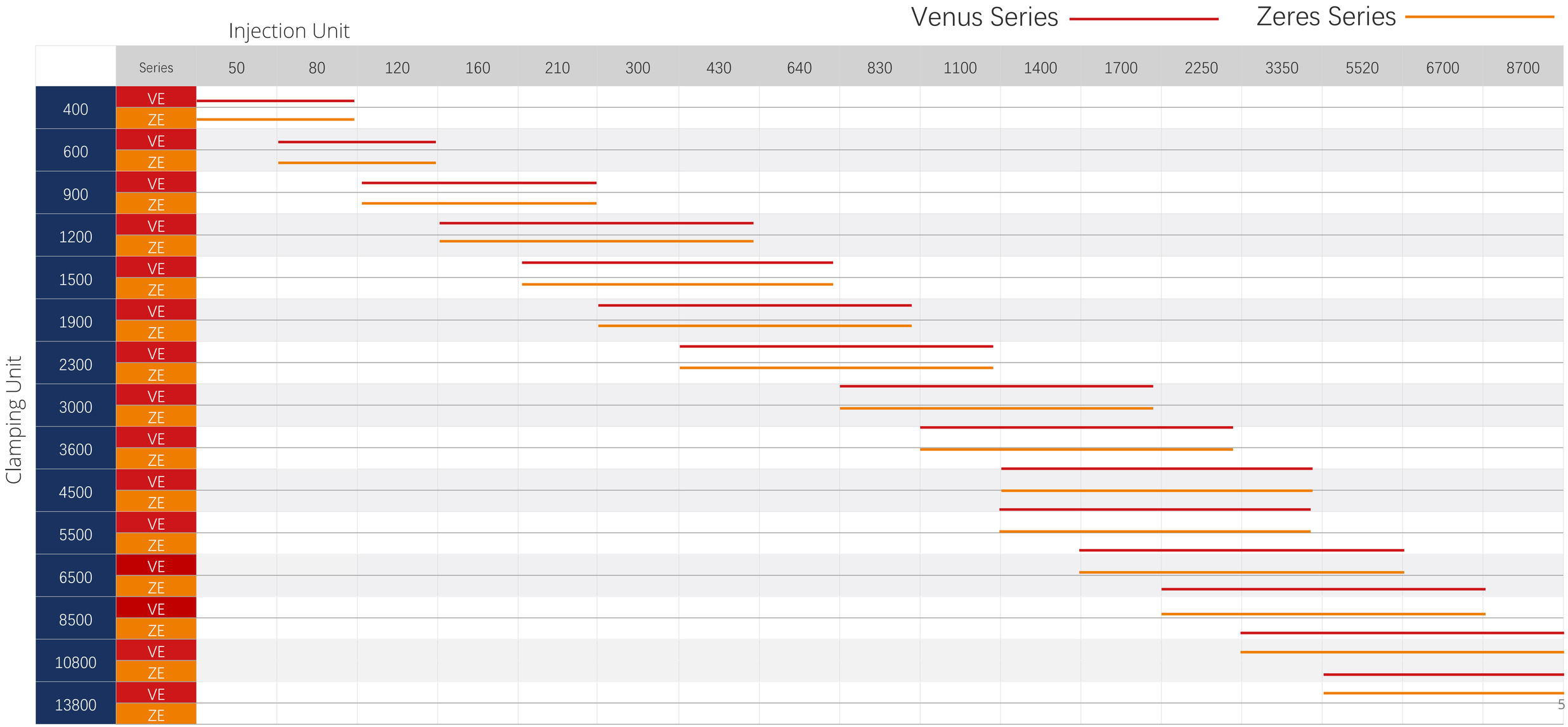
Electric with integrated hydraulics

Integrated Hydraulics

ZE



Modularity and Machine Range



Compact Design

Model	IU (III)	IU (V)	Machine length (m)			Machine width (m)			Floor space (m^2)		
			ZE III	ZE V	%	ZE III	ZE V	%	ZE III	ZE V	%
40T	80	80	3.7	3.67	-0.81%	1.3	1.14	-12.31%	4.81	4.18	-13.02%
60T	120	120	4.1	4.09	-0.24%	1.3	1.19	-8.46%	5.33	4.87	-8.68%
90T	160	160	4.4	4.33	-1.59%	1.4	1.23	-12.14%	6.16	5.33	-13.54%
120T	210	210	5.0	4.81	-3.80%	1.5	1.36	-9.33%	7.50	6.54	-12.78%
150T	300	300	5.40	5.26	-2.59%	1.5	1.41	-6.00%	8.10	7.42	-8.44%
190T	430	430	6.1	5.90	-3.28%	1.6	1.52	-5.00%	9.76	8.97	-8.11%
230T	640	640	6.5	6.15	-5.38%	1.8	1.64	-8.89%	11.70	10.09	-13.79%
300T	830	830	7.00	6.67	-4.71%	2.1	1.90	-9.52%	14.70	12.67	-13.79%
360T	1400	1400	7.8	7.35	-5.77%	2.2	1.99	-9.55%	17.16	14.63	-14.76%
450T	2250	2250	8.9	8.00	-10.11%	2.3	2.15	-6.52%	20.47	17.20	-15.97%
550T	3350	3350	9.4	8.74	-7.02%	2.5	2.29	-8.40%	23.50	20.01	-14.83%
650T	5200	5200	10.2	9.81	-3.82%	2.6	2.44	-6.15%	26.52	23.94	-9.74%
850T (900T)	5200	5200	11.8	11.17	-5.34%	3.0	2.49	-17.00%	35.40	27.81	-21.43%
1080T	7000	6700	12.6	12.27	-2.62%	3.20	2.82	-11.88%	40.32	34.60	-14.18%
1380T	9200	8700	13.3	12.72	-4.36%	3.6	3.31	-8.06%	47.88	42.10	-12.07%

Highlights Overview

01 Machine Design

- Overall small footprint
- Clean overall Design

02 Control System

- Powerful dual-core system
- Touchscreen and control for intuitive user experience

03 Injection Unit

- Structural Upgrades compared to last generation
- Highly resistant plasticizing components

04 Clamping Unit

- High platen parallelism
- High rigidity & precision

05 Drive System

- Fast Servo-Control Loop
- Fast Response

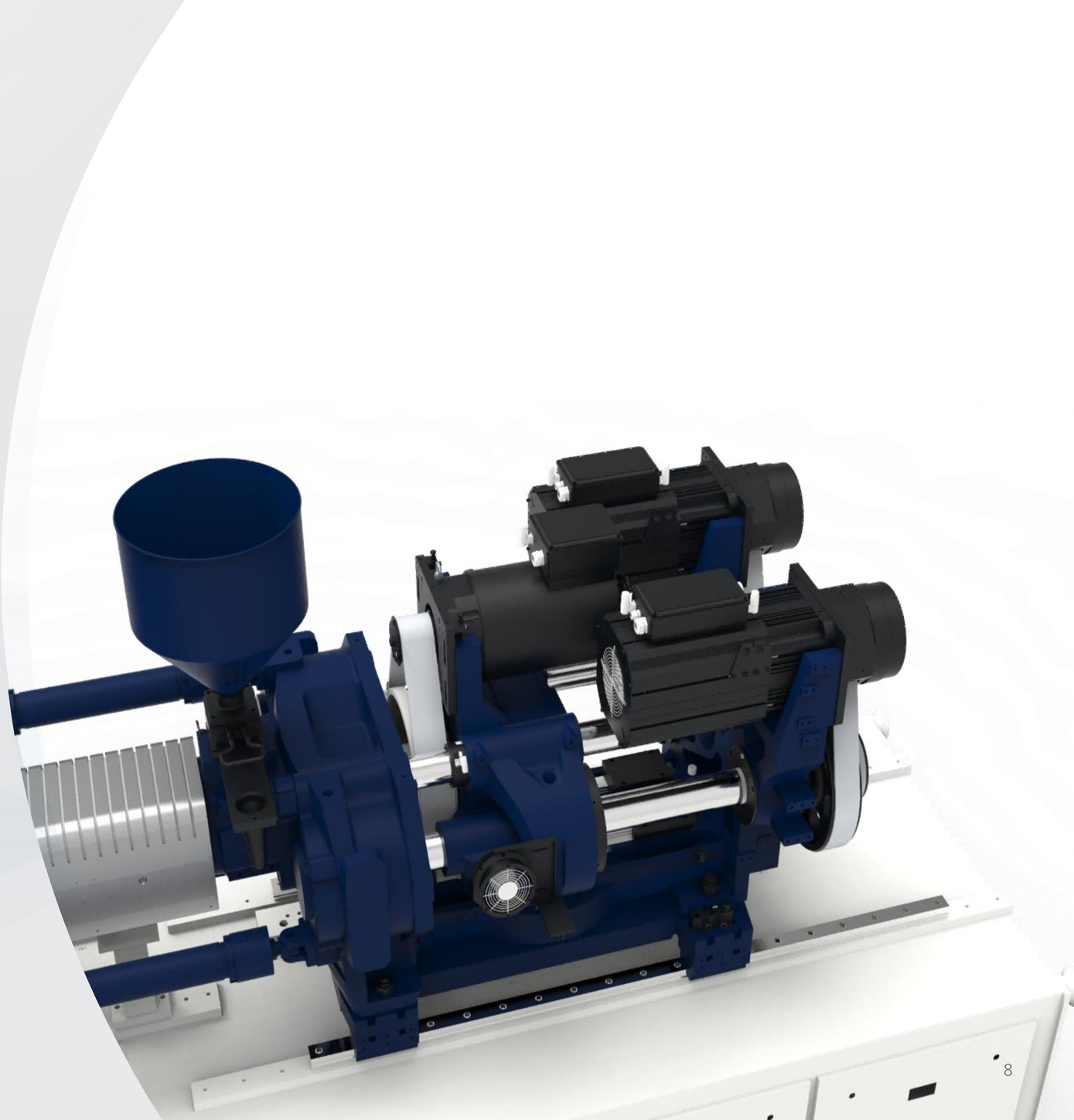
06 Smart Technology

- HT XTEND as a standard
- Flexible Integration

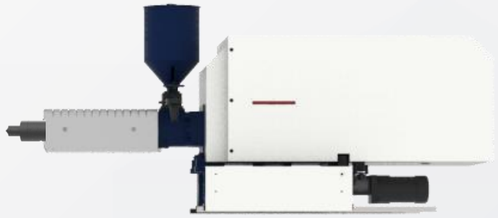
VE/ZE

Injection Unit

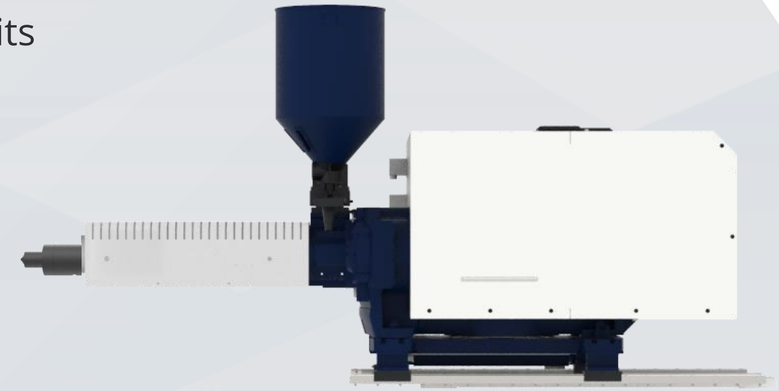
- Modular Design
- Diverse Injection Structure
- Temperature Control
- Box-type Injection Mechanism
- Linear Guides
- High-Precision Pressure Sensing Module
- Diverse Injection Characteristics
- Symmetrical Double-toggle Structure



Modular Design



Modular structure for diversified combination of clamping units and injection units



Diverse Injection Structure

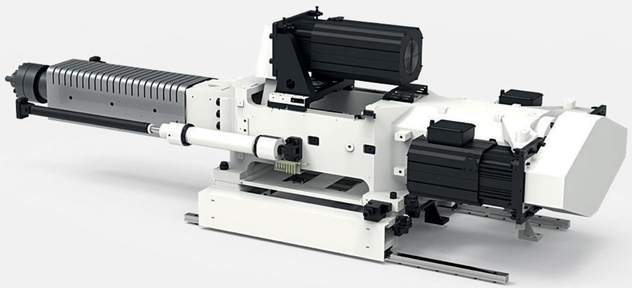
Single-spindle concept

A one-piece and extremely compact architecture

Spindle and screw are arranged in one line

High precision and efficiency

Injection unit: 50-1700

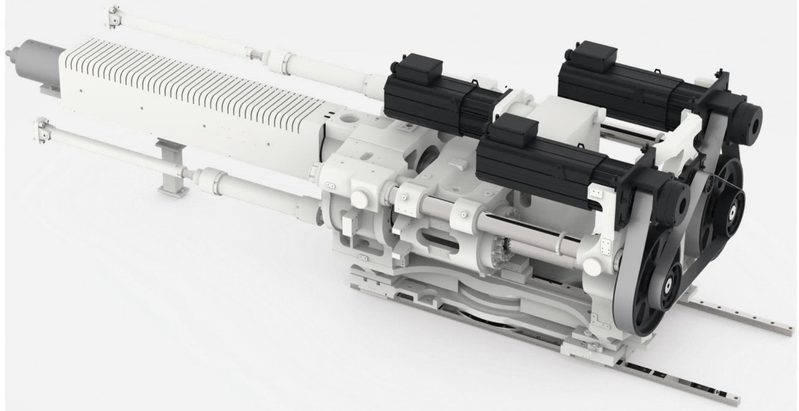


Dual-spindle concept

Synchronously placed servo motors

With symmetrical injection of a function for correcting deviations

Injection unit: 2250-12800

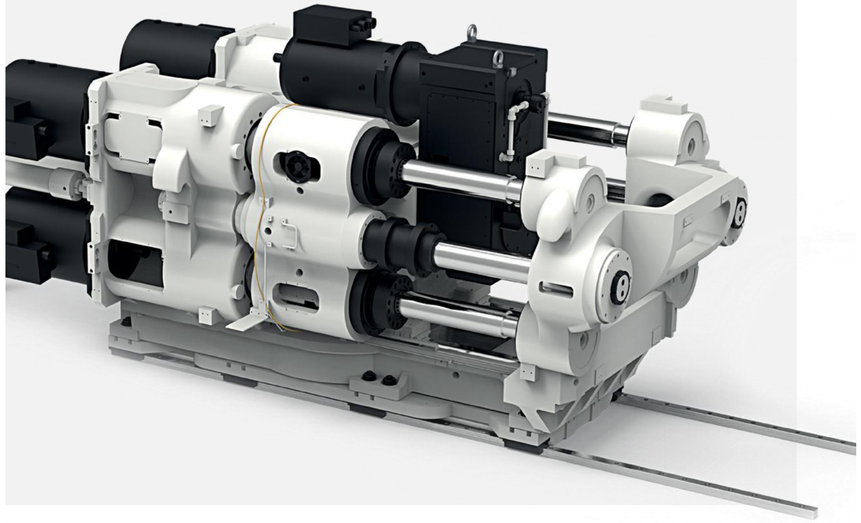


4-spindle concept

Exact synchronization of all drives with intelligent algorithms

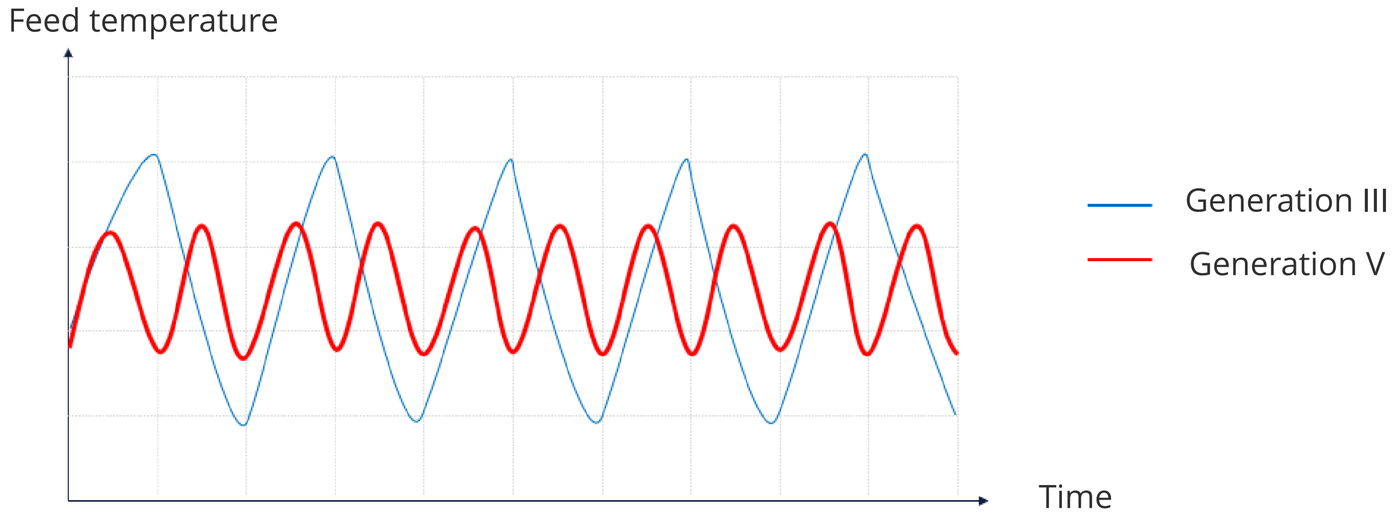
Dynamic acceleration and fast response time

Injection unit: 17800-22800

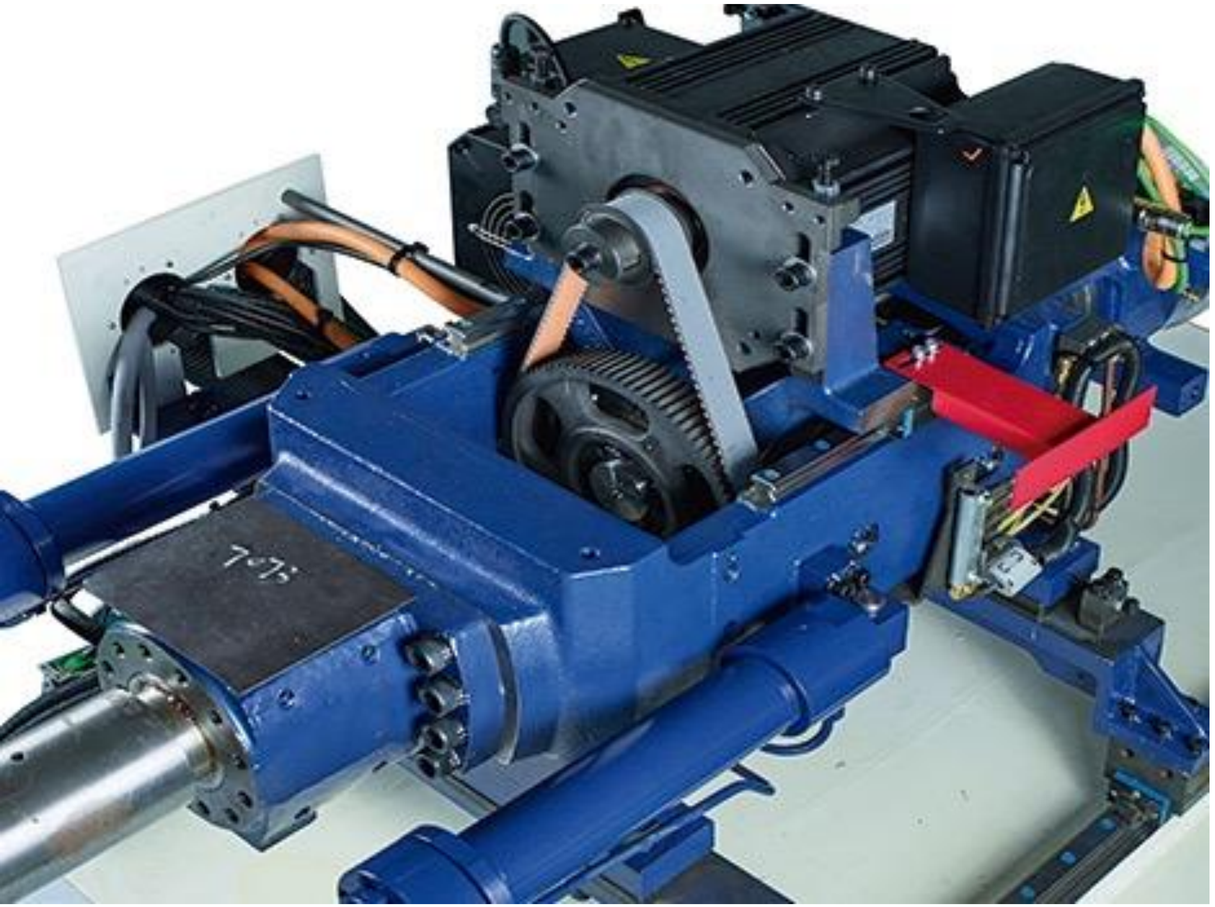


Temperature Control

- Precise regulation of the water valve at the discharge port
- Temperature fluctuation range at discharge port during the molding process has narrowed by over 70%
- For most machine models, the temperature fluctuation range has reduced to within ±0.5℃, significantly improving the stability issues in material storage for specific materials.



Box-type Injection Unit

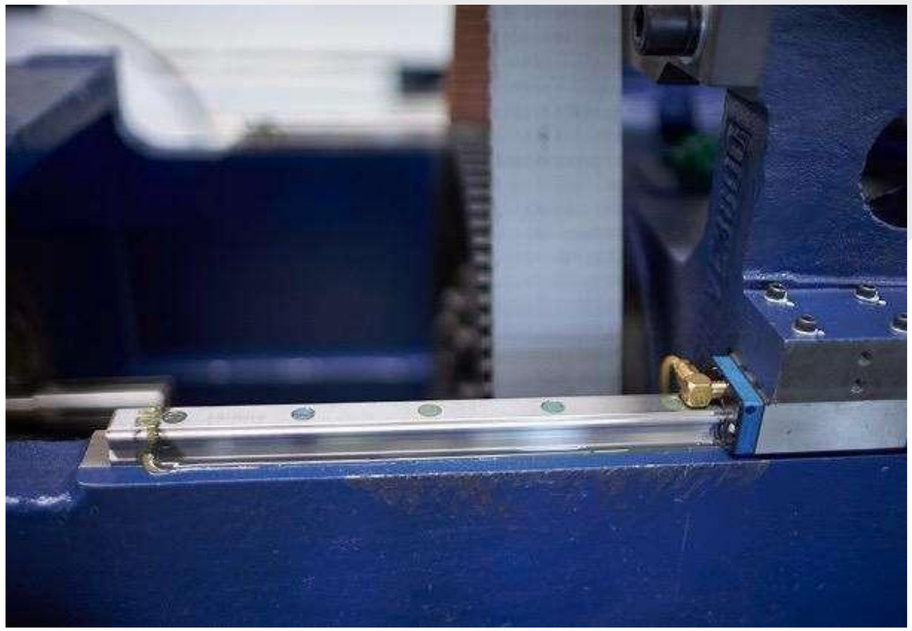


- A box-type and extremely compact architecture
- Solid piece to avoid cumulative errors
- Spindle and screw are arranged in one line
- High precision and efficiency

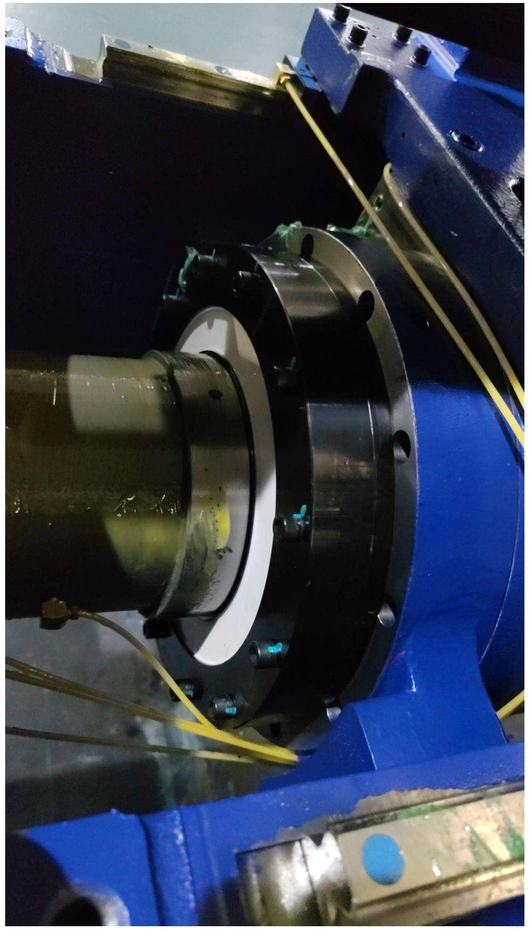
Box-type structure
(50-1700)

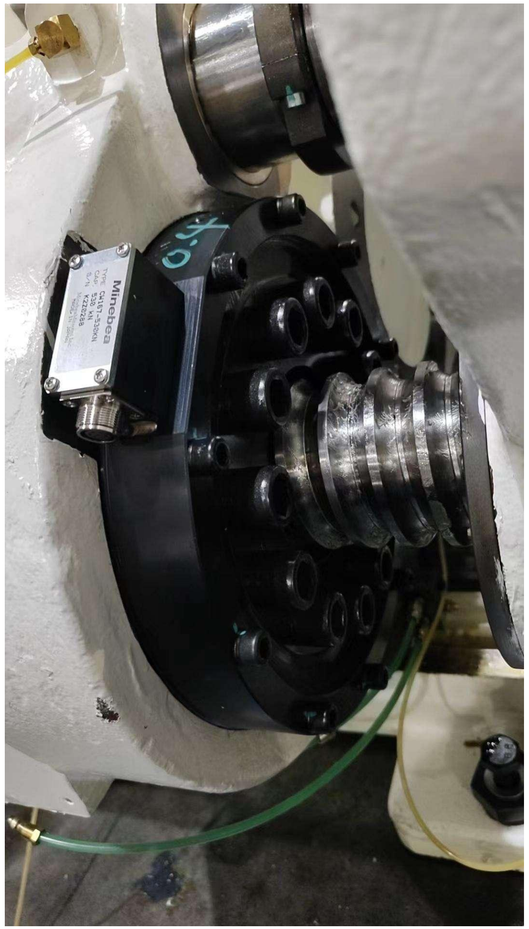
Linear Guides

- High-precision linear rails offer low-friction injection guidance, establishing a solid foundation for high-precision back-pressure and injection control
- High loading capacity
- Clean operation



High-precision pressure sensing module

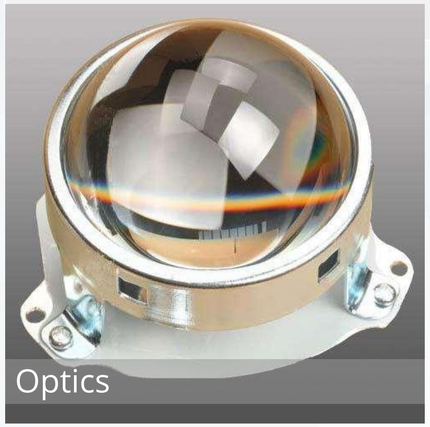




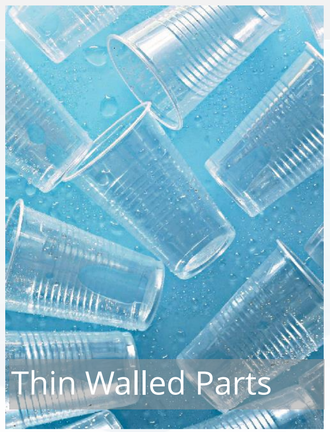
- Pressure sensing module, coupled with Zhafir's latest EMC and anti-drift technology, constitutes the essential core to guarantee high precision molding

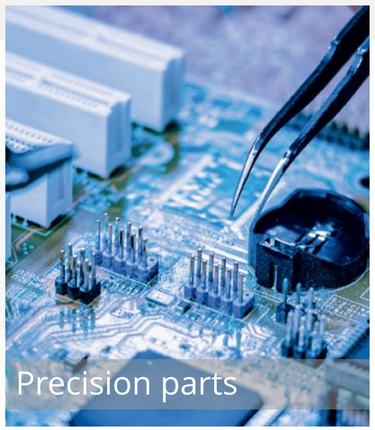
Diverse Injection Characteristics

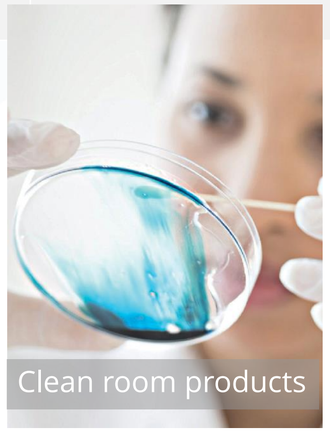
Long pressure holding	High speed (h)	High speed & high pressure (hs)
• Suitable for most applications • Particularly suitable for thick-walled parts that require long-term holding pressure, such as thick-walled optical lenses, thick-walled gears, etc.	• Suitable for thin-walled, precision technical parts, such as mobile phones, tablet computer shells, buttons, etc.	• Suitable for ultra-thin or thin-walled multi-cavity applications, such as LED brackets, precision connectors, light guide plates, etc.


Optics


Thick Walled Parts

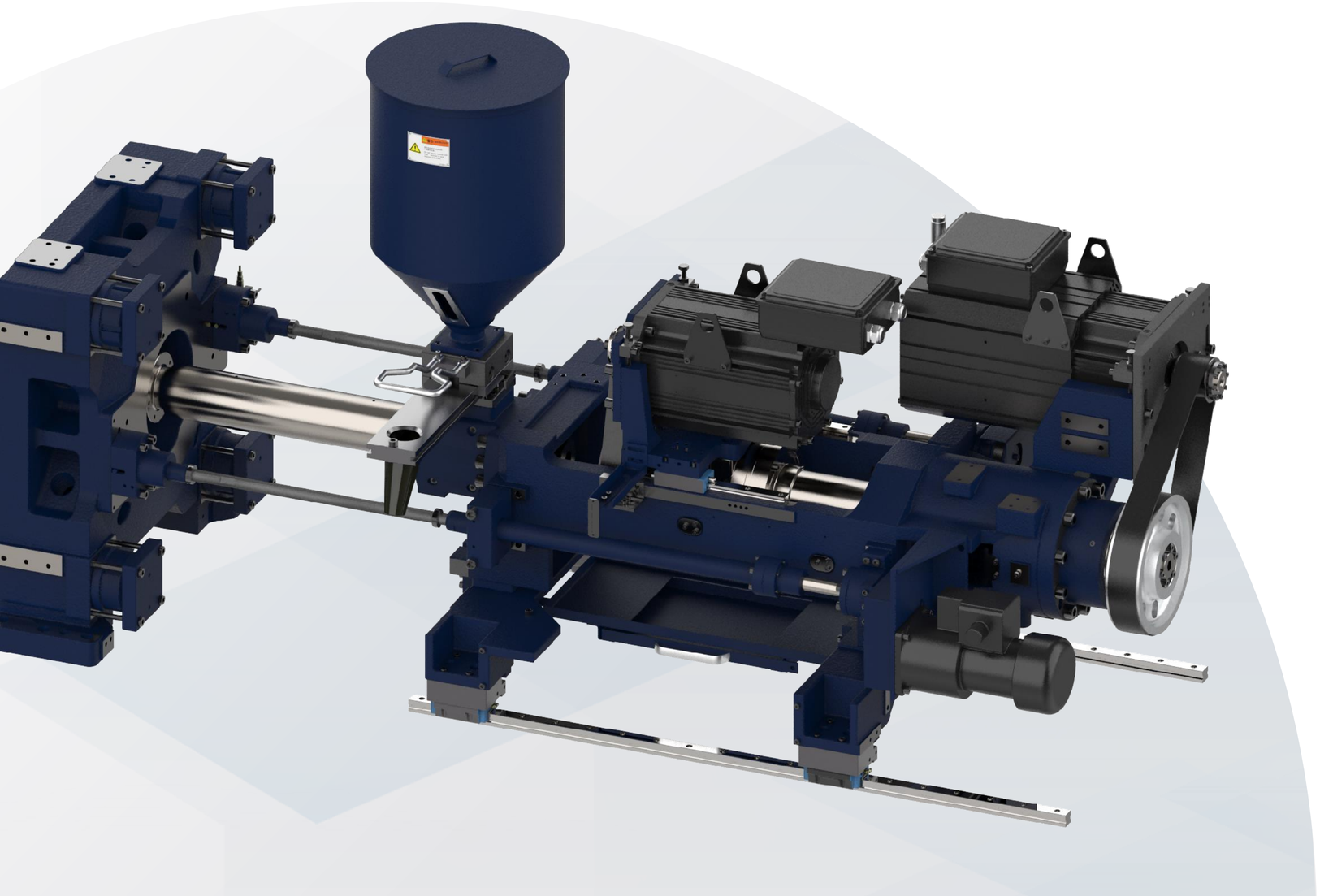

Thin Walled Parts


Precision parts


Clean room products


Precision Connector

Symmetrical Arrangement of Dual-toggle System

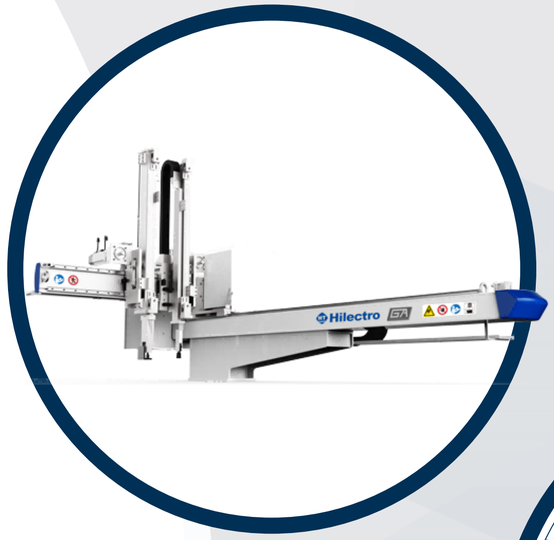


- Symmetrical arrangement of the dual-toggle system ensures complete balance in the forces on the fixed template
- Effective prevention of any tilting due to uneven forces.
- Mold operates in a normal open-and-close state, maintaining stable nozzle contact force throughout the molding process

Clamping Unit

- Removable Structure Design
- High Rigid Platen
- Movable Platen Architecture
- Compact toggle system
- HT· Clamp
- Dry Cycle Time
- Mold Opening/Closing Speed
- Automatic mold thickness measurement and precise clamping force control
- Mold Protection
- Smart Eject

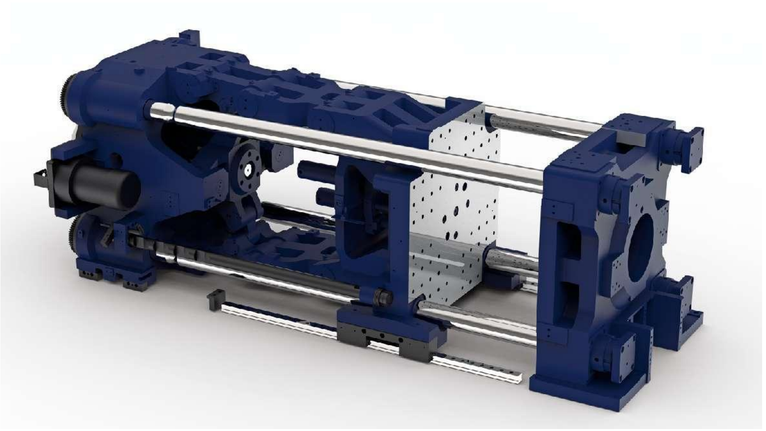
Removable Structure Design



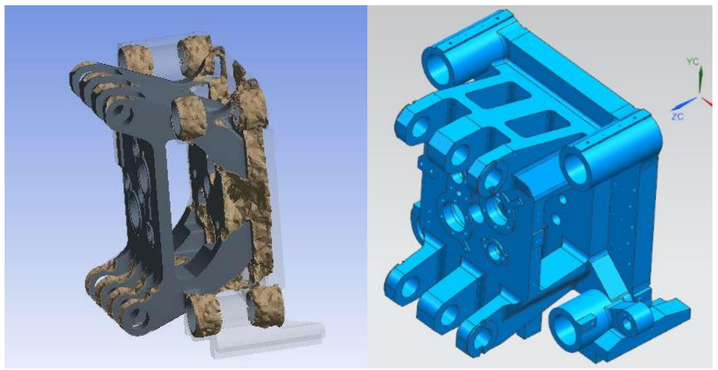
- Reserved space for robot movement above the non-operation side (removable structure design)

High Rigid Platen

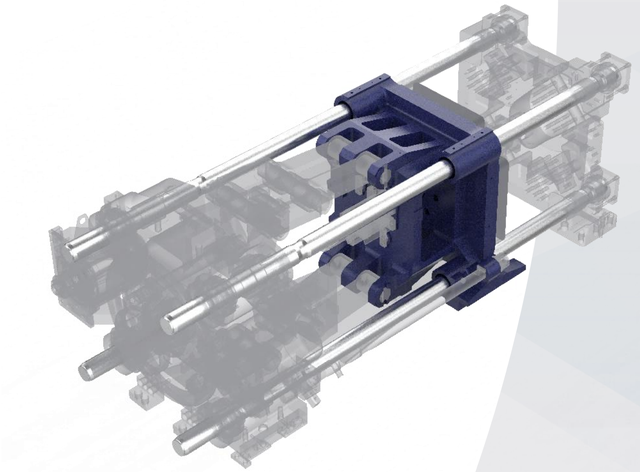
- Linear type and sliding foot type (for models under 650T)
- Mold parallelism & performance through optimized topology cloud mapping
- Implementing high-rigidity compound templates to control slight deformations on the moving template
- Uniform distribution of clamping force on the mold and ensuring stable molding and precision



Linear Guides

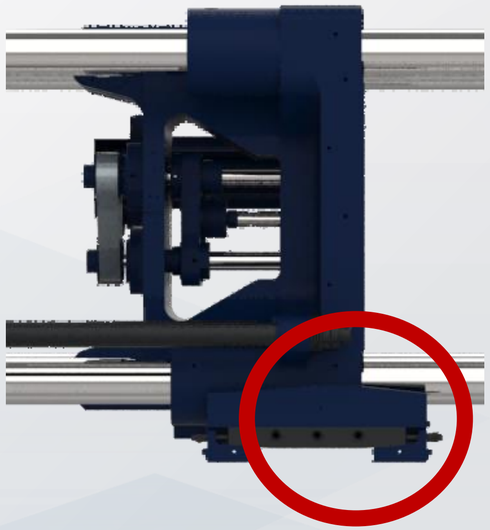


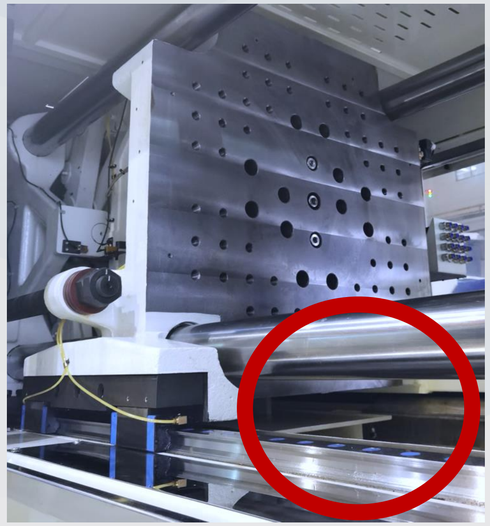
Optimized topology cloud mapping



Compound templates (option)

Movable Platen Support





Supporting structure

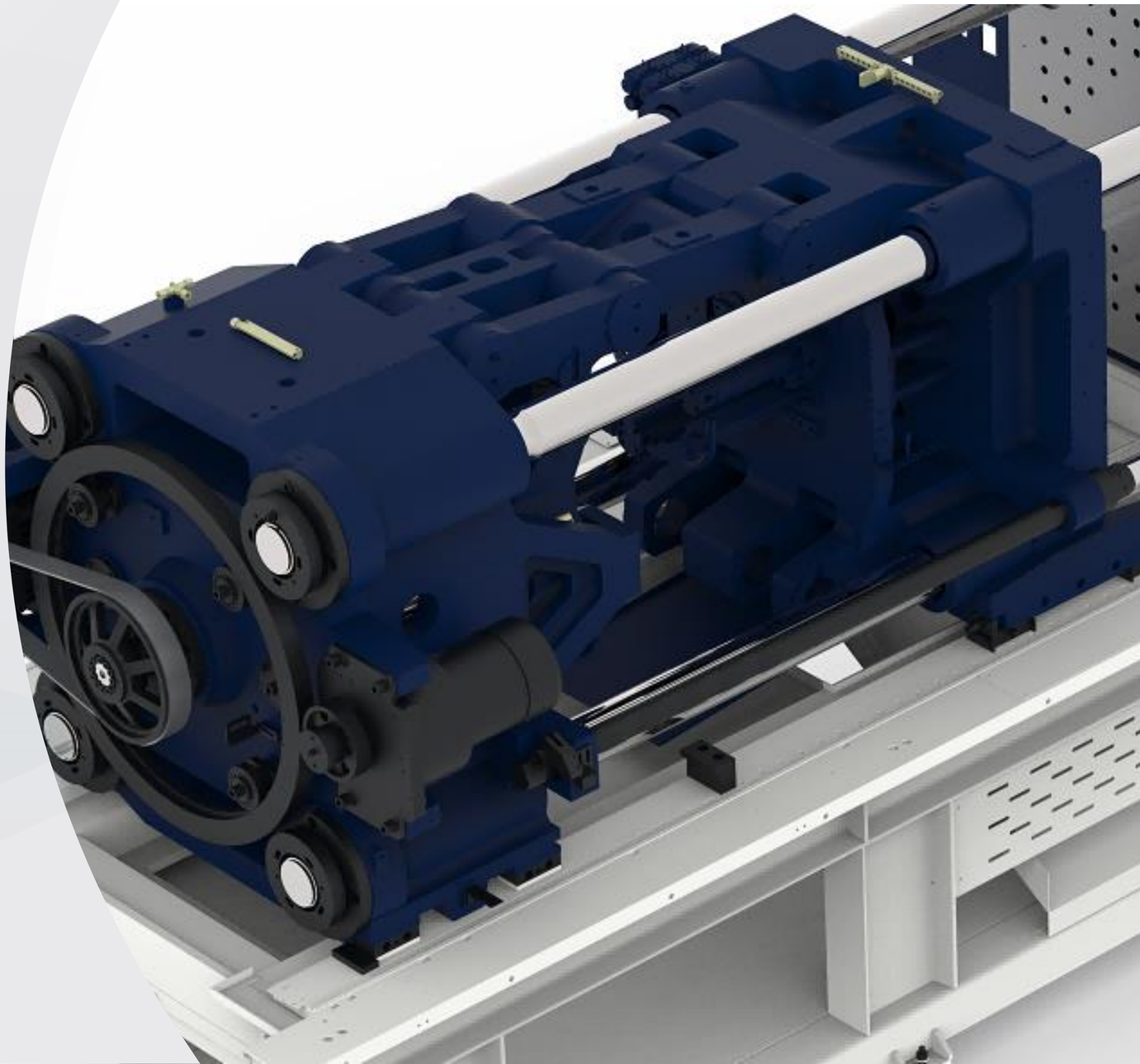
- More balanced supporting structure
- Increased platen parallelism
- Increased loading capacity

Linear Guides (optional)

- Non-touch tie bar design
- More clean and higher parallelism of platen
- Effective prevention of mold tilting, extending the service life of the mold and ensure higher precision

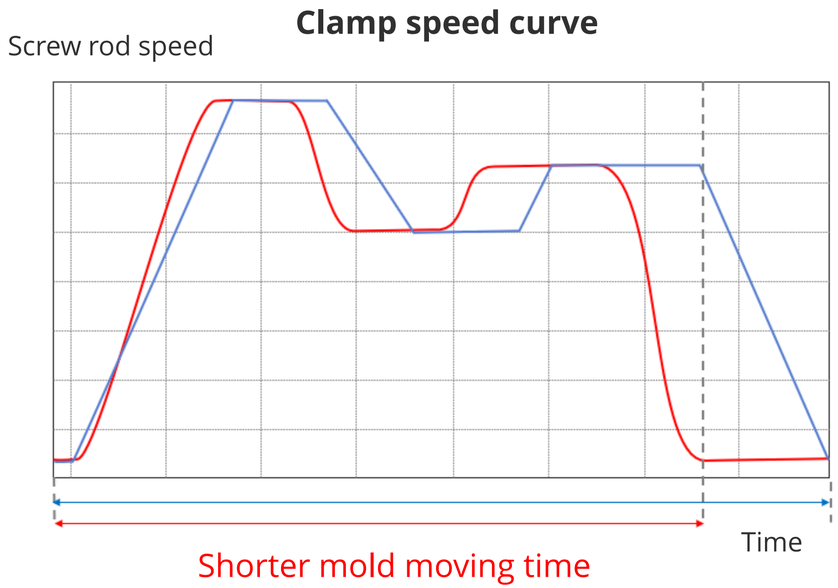
Compact Toggle System

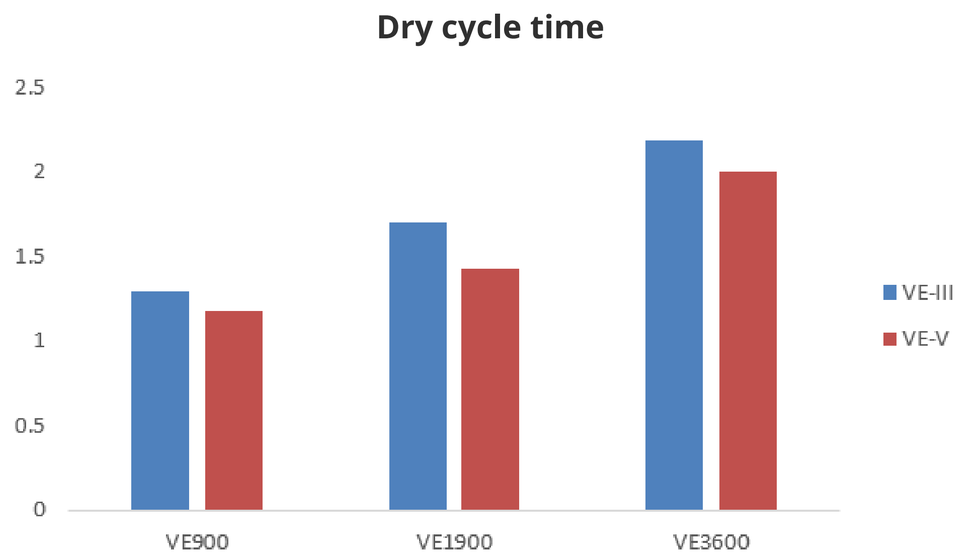
- Redesigned, compact structure of the toggle system
- High rigidity and optimum platen parallelism
- Fast dry cycle time



HT Clamp

- The maximum mold opening and closing speed has increased by about 20% compared to the third generation machine.
- The S-Curve control function for resisting mold vibration during acceleration and deceleration is smooth. This suppresses vibration of mold opening and closing, and enables quicker dry cycle times.



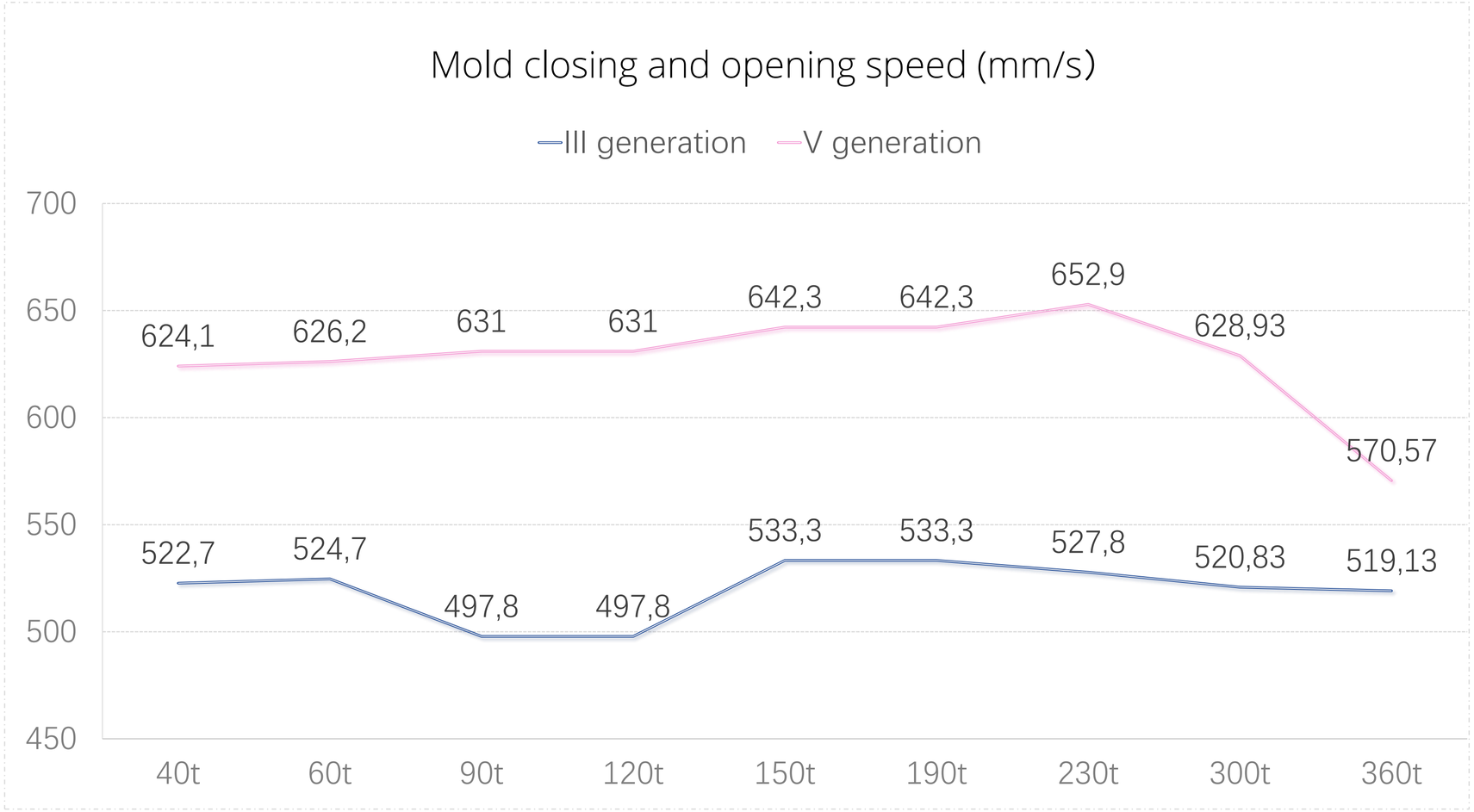


Dry Cycle Time

Machine	Dry cycle time reduction compared to 3rd Gen
VE400/ZE400	6.7%
VE600/ZE600	7.8%
VE900/ZE900	13.2%
VE1200/ZE1200	11.2%
VE1500/ZE1500	14.1%
VE1900/ZE1900	15.9%
VE2300/ZE2300	15.9%
VE3000/ZE3000	14.4%
VE3600/ZE3600	8.7%

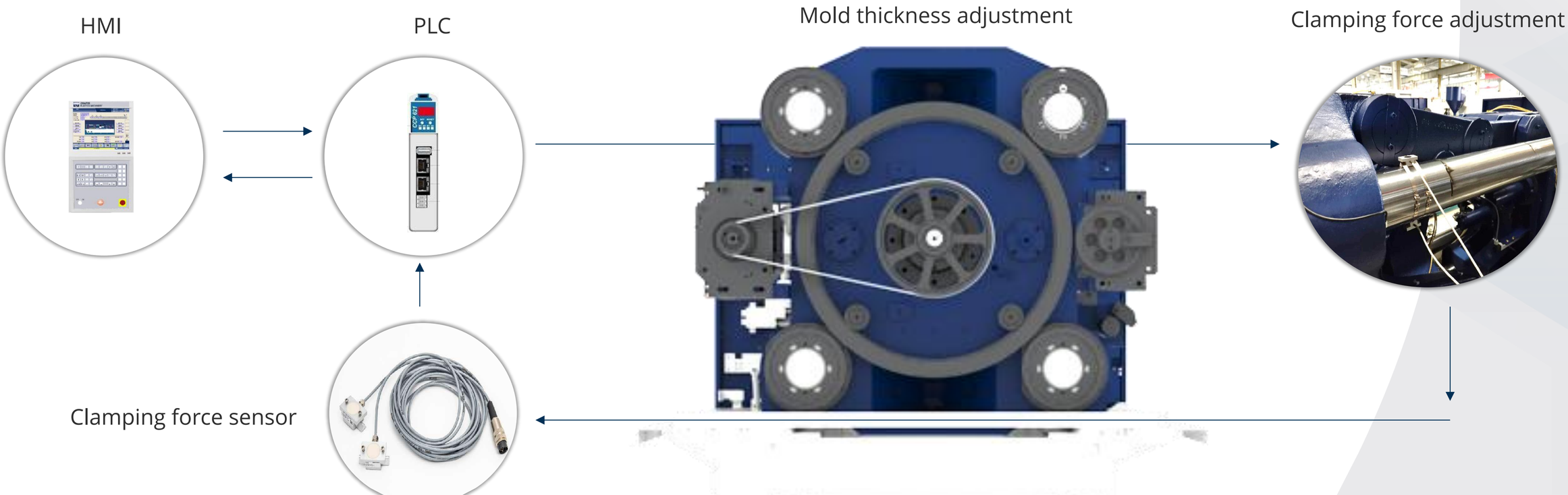
*4500 kN and above remains the same

Mold Opening/Closing Speed

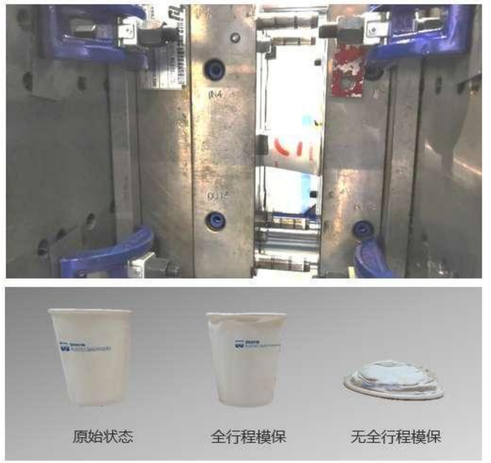


Automatic mold adjustment and improved clamping force accuracy

- Automated mold adjustment algorithm for clamping force linearity and repeatability accuracy
- Clamping force closed-loop for high-precision control (optional)
- Control capabilities - both online adjustment of clamping force closed-loop and automatic optimization of clamping force - result in notable increase of precision

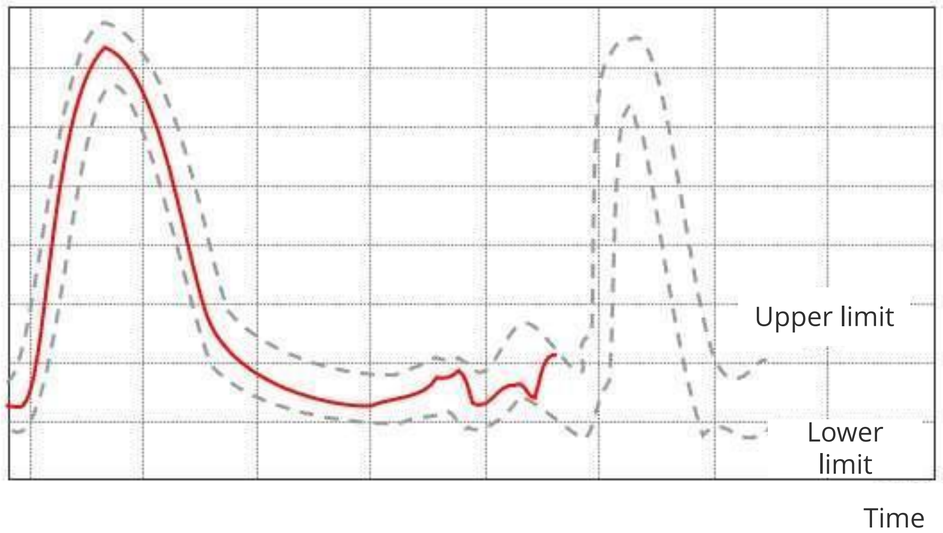


Mold Protection

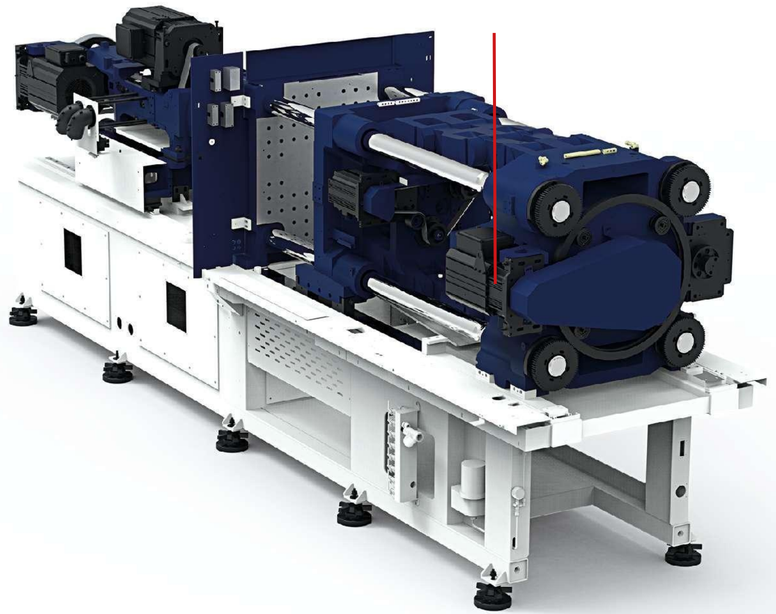


- Upgraded intelligent full-cycle mold protection
- Highly sensitive proactive mold protection instantly detects minor deviations in load throughout the entire mold closing process
- Minimizing mold protection response time to the lowest possible

Clamp curve



Clamp servo motor



Real-time monitoring

Monitoring the load on the servo motors during each cycle.

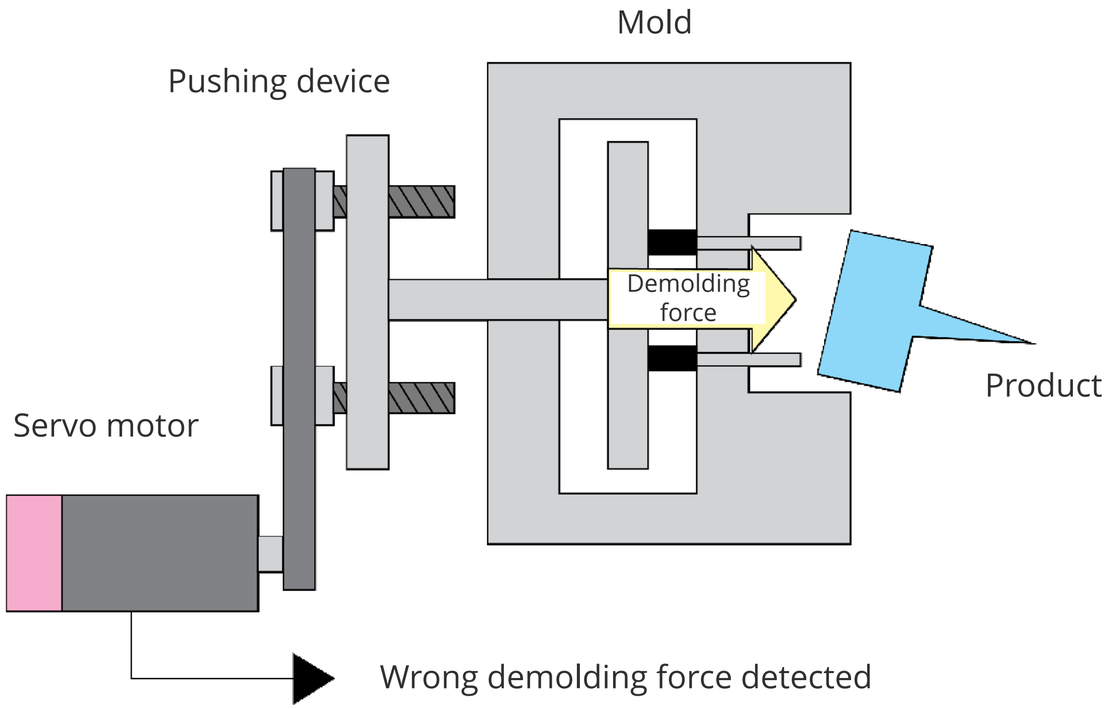
Anomaly detection

High-precision detection of load variations caused by molding product insertion.

Protection

Immediately halt the mold opening/closing and the movement of the ejector rod.

Smart Eject
(optional)



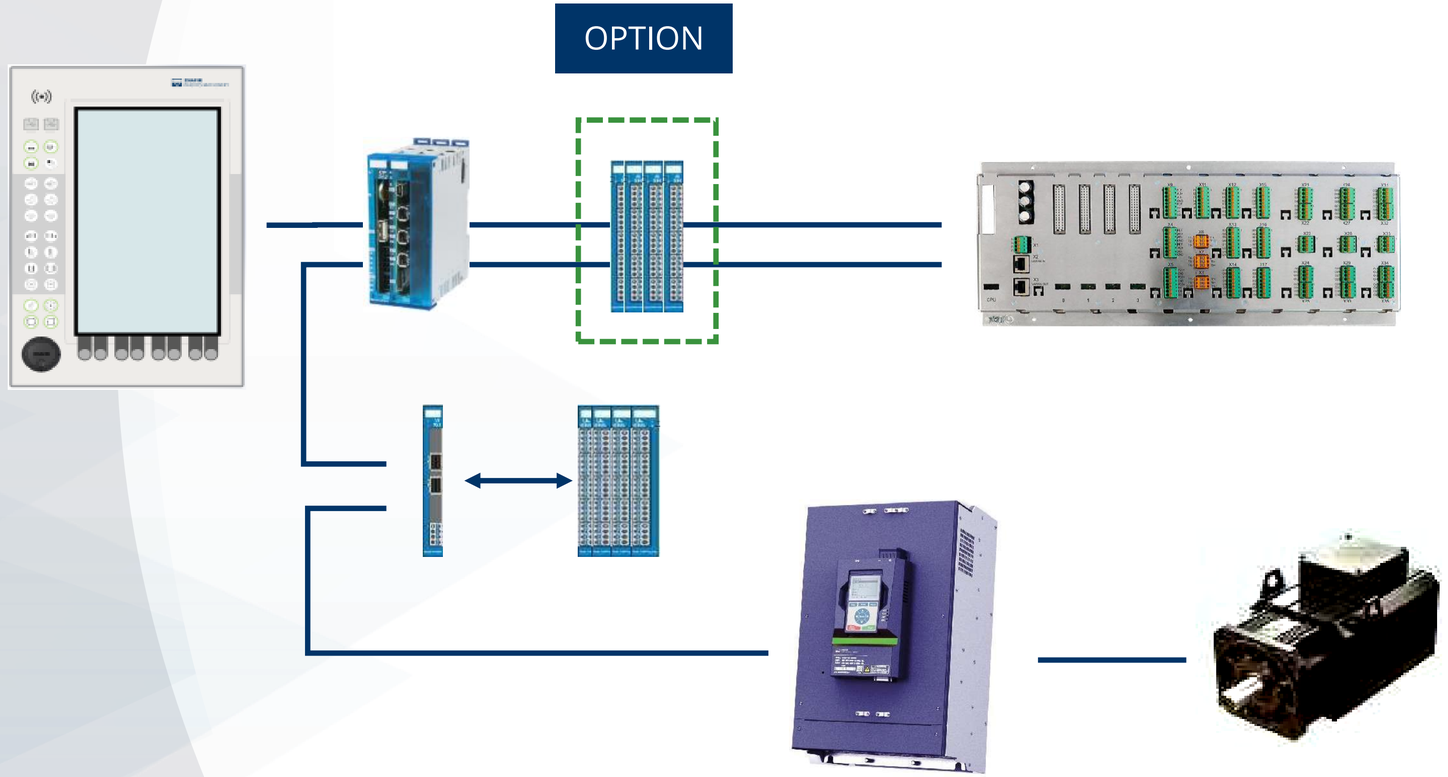
- The machine detects the motor torque during product ejection, immediately halting the ejection action in case of abnormalities.
- This function safeguards the ejection mechanism from damage and serves as quality monitoring for the products.
- With the high-response servo motor with a low inertia ejection mechanism, the 5th generation machine's ejection response speed is significantly enhanced.

Clamping Unit

- Removable Structure Design
- High Rigid Platen
- Movable Platen Architecture
- Compact toggle system
- HT· Clamp
- Dry Cycle Time
- Mold Opening/Closing Speed
- Automatic mold thickness measurement and precise clamping force control
- Mold Protection
- Smart Eject

Control System

- Redesigned control architecture
- Adopts a distributed multi-CPU control architecture, significantly enhancing system computing power and integration ability
- Latest communication protocol enables improvement in control computing capabilities and control sampling frequency, forming the foundation for ultra-high precision molding.
- The new servo control card elevates control accuracy and enriches numerous intelligent functionalities.



Control System

Hi Series

400 - 4500 kN

KEB F6 series

5500 kN and above

Control System

- New HMI
- The 15-inch high-resolution color display screen is equipped with a capacitive touch screen and an independent image processing CPU
- Fast and smooth operating experience
- User-friendly interface is intuitive and easy to adopt
- Shuttle knob for page and parameter navigation
- Vertical screen separates the setup area from the monitoring area for better user observation
- Configurable buttons and customized layout to easily arrange personalized function keys

Controller Layout

New HD large screen:

Display more information at the same time, respectively, the rate of 1080 *1920

Customization:

More configuration buttons for easy operation

Humanization:

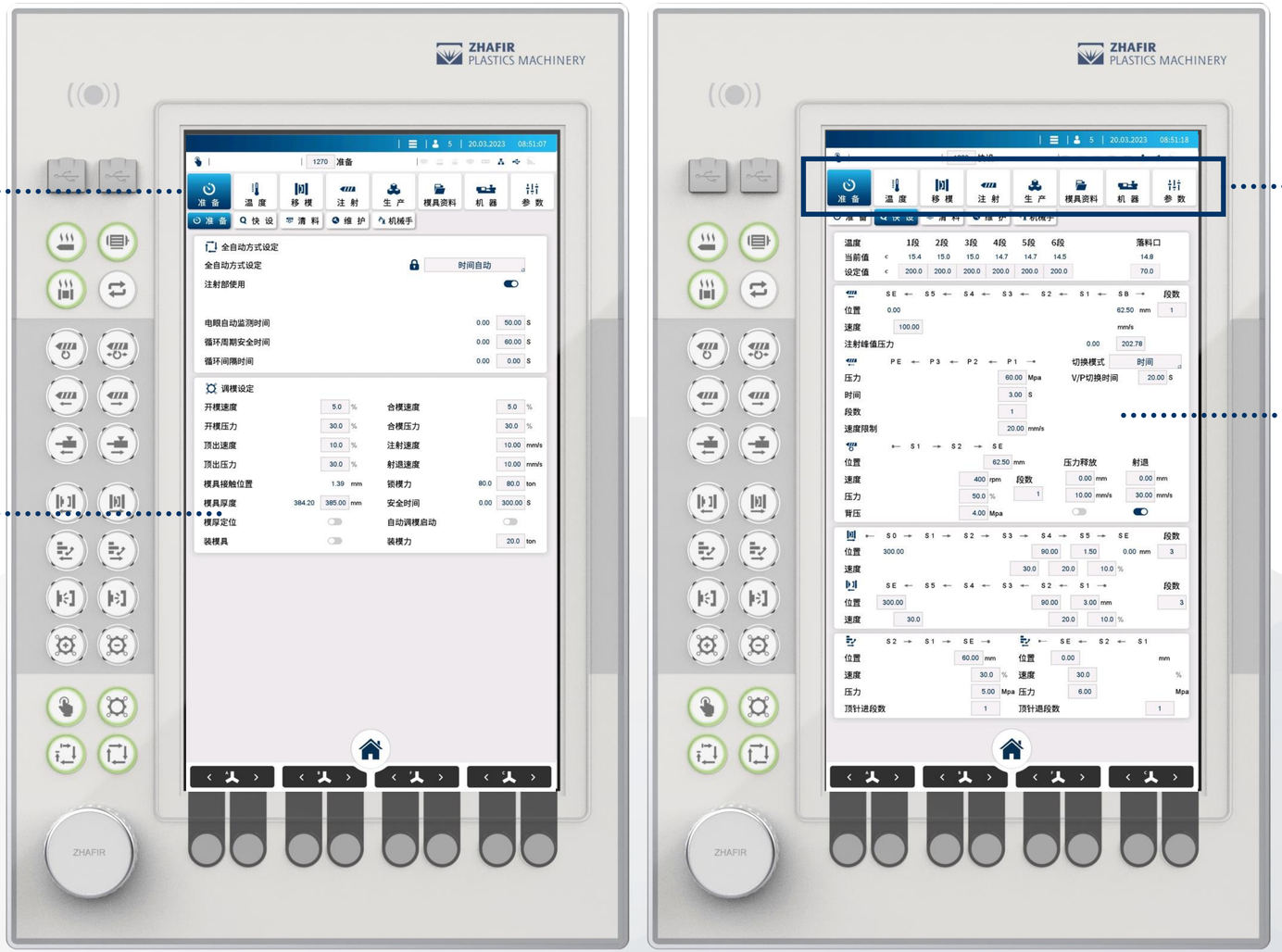
New UI design, pleasant user experience

Controller Layout

Production Preparation

With a quick mold installation function, simply follow the steps on the screen to achieve fast and accurate mold installation and clamping force adjustment

New 'HT Clamp' function



Icons are simple and easy-to-understand

Quick Setup

Once the mold is installed, all basic process parameters can be set within a single quick screen

Sequencer

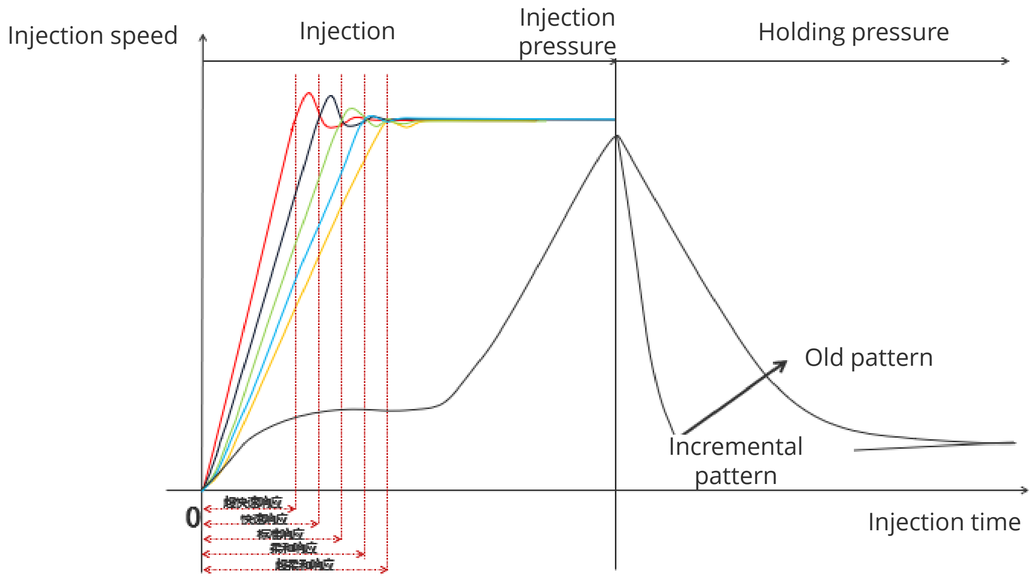
- The development of open molding free configuration programming functions is important for the increasingly complex process requirements and automated, unmanned production models.
- Flexible, open design with free IO, free timing, stop sequence, start sequence, and other functions

Controller Performance

Injection acceleration and pressure response capabilities

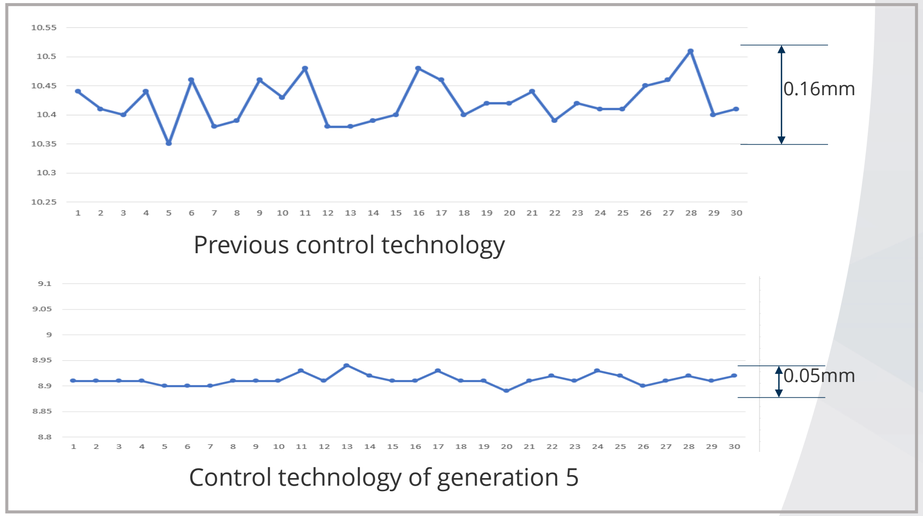
Filling Stage: Various injection acceleration and deceleration modes available

Packing Stage: Multiple pressure response modes available to meet various molding process requirements, achieving excellent stability.



Improved injection stability

The comprehensive enhancement of 5th generation control technology and the adoption of intelligent functions like precise measurement have notably boosted the machine's molding repeatability.

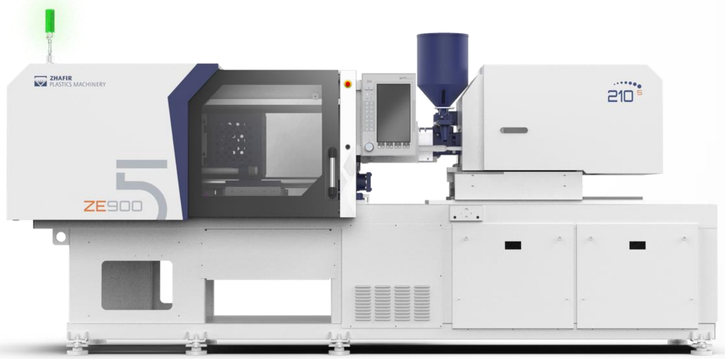


The fluctuation range of residual amounts

Flexible Integration

- Injection molding machines as the core of automated production, interconnecting with auxiliary equipment
- Provides state-of-the-art IoT interface and MES communication interface

HT·XTEND



Smart Machine Technology

HT· OptiForce

HT· Integrate

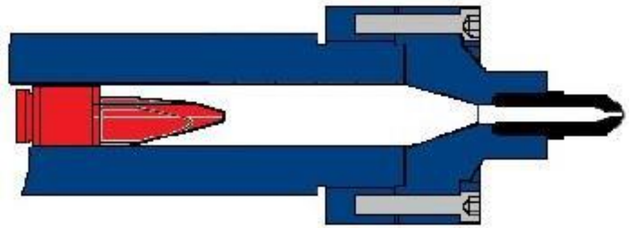
HT· Inject

HT· Energy

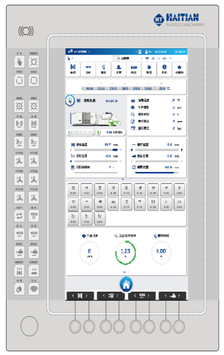
HT· INJECT

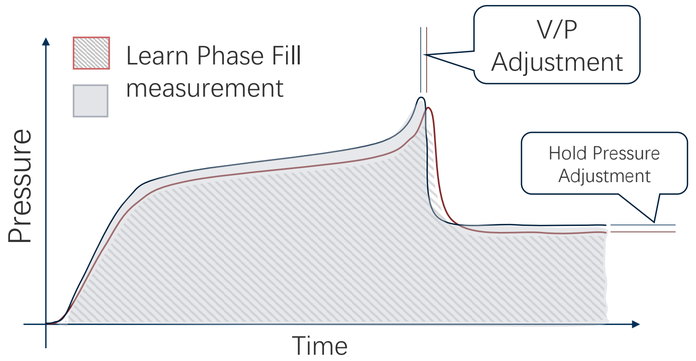
Better Product Weight Variance

- During the injection phase, disruptive factors are detected and quantified by continuously monitoring process data.
- Adaptation of key process data in real time
- Eliminating process malfunctions and ensuring consistency in every production cycle.



mechanical control output





Data processing

Algorithms

HT· INJECT

Better Product Weight Variance

- During the injection phase, disruptive factors are detected and quantified by continuously monitoring process data.
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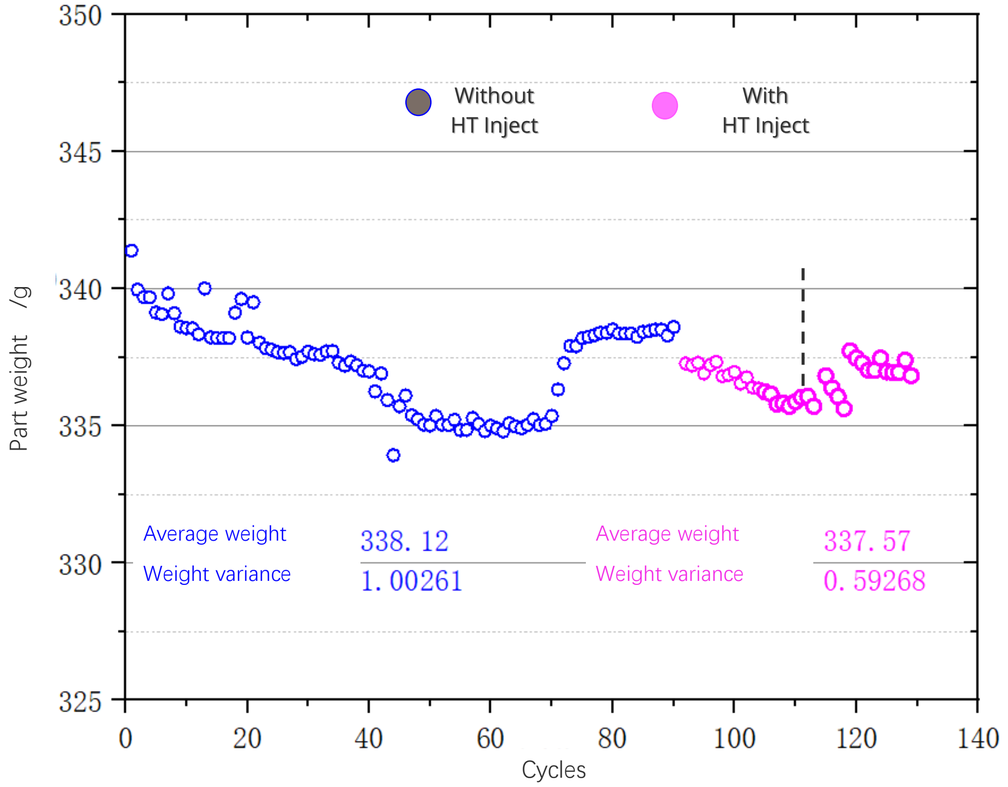
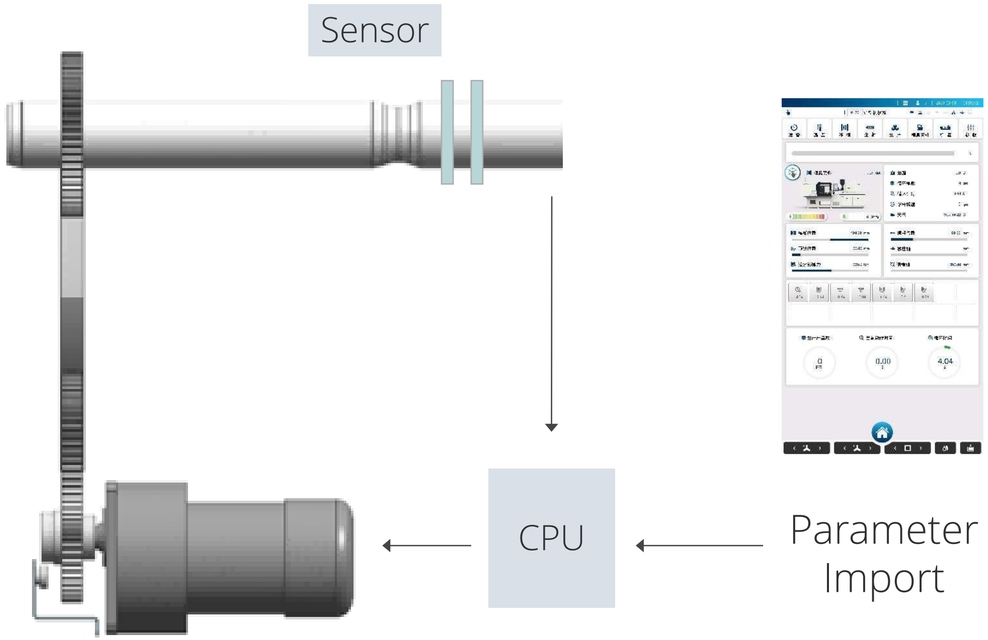


HT· OptiForce
(optional)

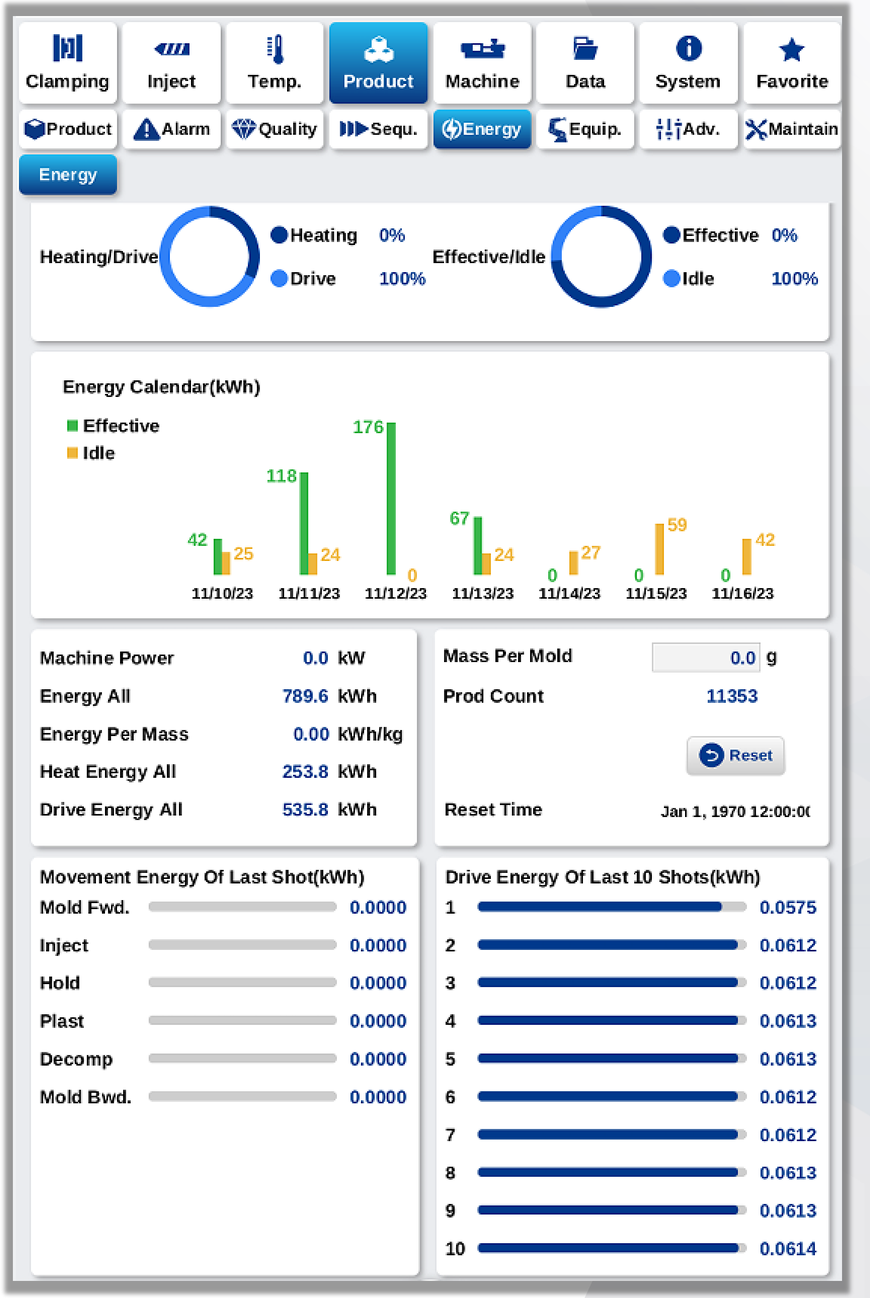


Achieving optimal Clamping Force

- The intelligent clamping force adjustment function, combined with simulation methods, fits response curve functions to intelligently match the actual clamping force required for producing different products.
- It can automatically detect the minimum clamping force that ensures complete contact of the mold parting surface, significantly reducing clamping force, lowering energy consumption, and extending the mold's lifespan.

HT· Energy

- HT Energy can accurately estimate energy consumption without adding detection hardware
- Calculation through functions like driver detection, analysis of electrical power occupancy ratio and standby power consumption calculation.
- Energy consumption analysis with anomaly alerts



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Thank You!