



HAITIAN
PLASTICS MACHINERY



HAITIAN MARS III SERIES GLOBAL



TECHNOLOGY TO THE POINT

Application Fields Examples



CONSUMER GOODS

- Plastics parts used in daily life
- Highly efficient and cost effective



CONSUMER ELECTRONICS

- Parts and components in the consumer electronics industry
- Highly efficient solutions for high cavity applications



HOME APPLIANCE

- Plastics parts in home appliance
- Flexible, highly efficient and stable solution



AUTOMOTIVE

- Plastics parts in the automotive industry
- High efficient solution for a wide range of applications and process requirements

Mars Series Production Bases



- Production bases in Ningbo, Guangzhou and Wuxi
- Over 500,000 sqm production area

Development of Mars Series

Initial stage
2006 - 2007

Marketization generation I
2007 - 2012

Generation II
2013 - 2018

Upgraded version of Generation II
2015 - 2018

第三代技术
新技术提升
模块化理念
开放式集成

3
Generation III
2019



Launch of HTF series
MA servo technology

Introduction of servo
energy saving technology

Servo technology upgrading

More precise





Accumulative sales over
250,000 units

600-33,000 kN

Intelligent⁺



Smart algorithms for
a new machine
performance

Dynamic⁺



More efficient and
application oriented than
ever before

Interactive⁺



Open integration with all
common interfaces for
automation and MES

Mechanical Design Improvements

New graphite/steel bushings
providing better lubrication and lower lubrication consumption which improves the life of the clamping unit

Injection and the main moving parts are supported by **linear guides**, with lower friction coefficient, higher operation accuracy, and less energy consumption

Non-welding technology
for power pipeline

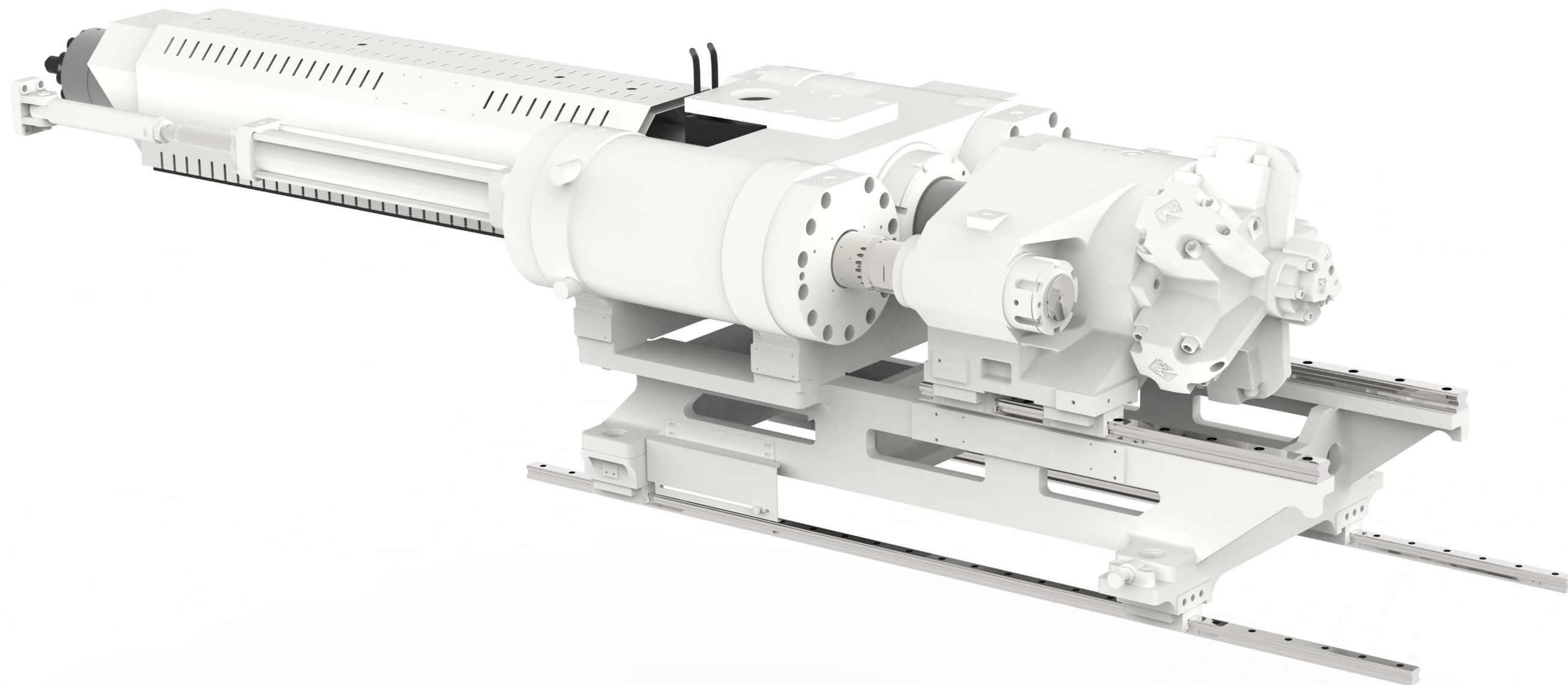
Optimised platen design
for centralised force transmission to the mold

Generous window design
made of PC glass for good light transmission and impact resistance

GreenVantage
highly efficient and energy saving power unit



INJECTION UNIT



Linear Guides for Carriage & Injection Unit

Efficient Plasticizing Components

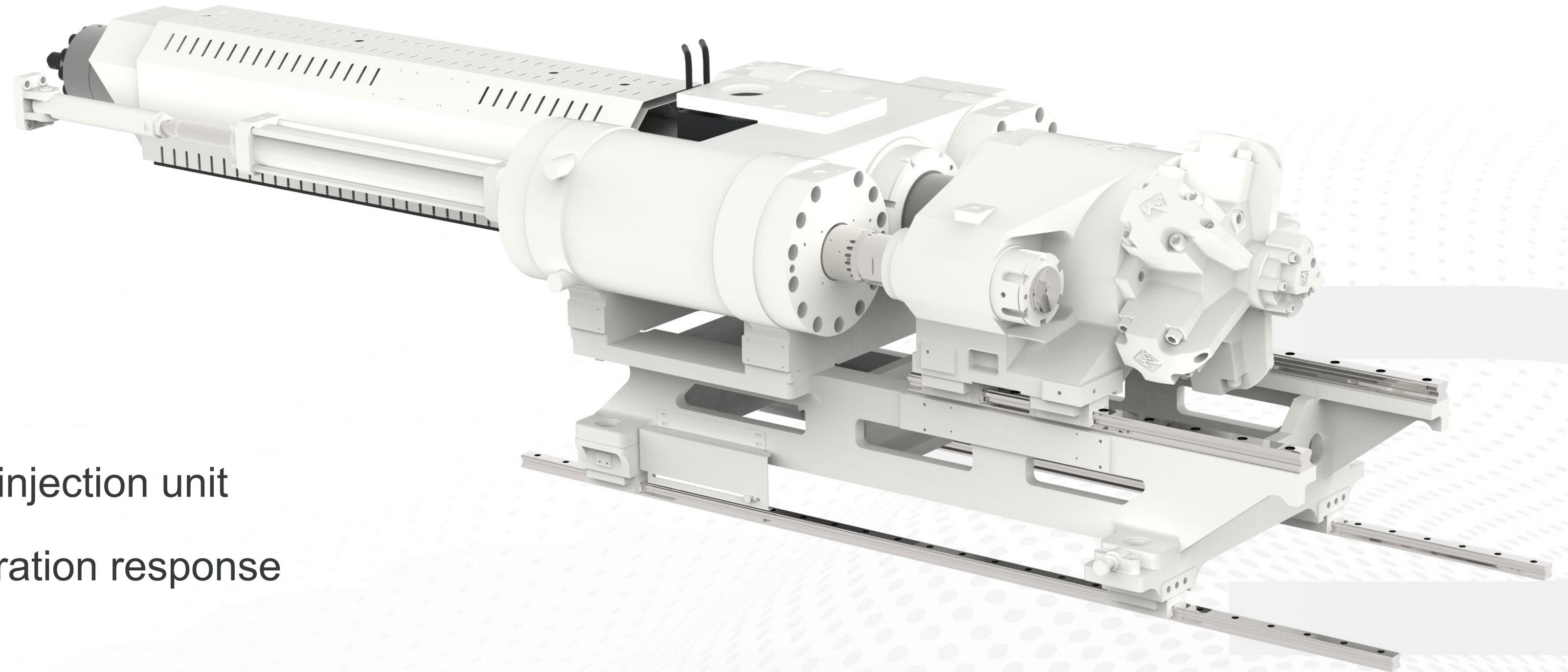
High Injection Speed

Maintenance-friendly



Injection Unit

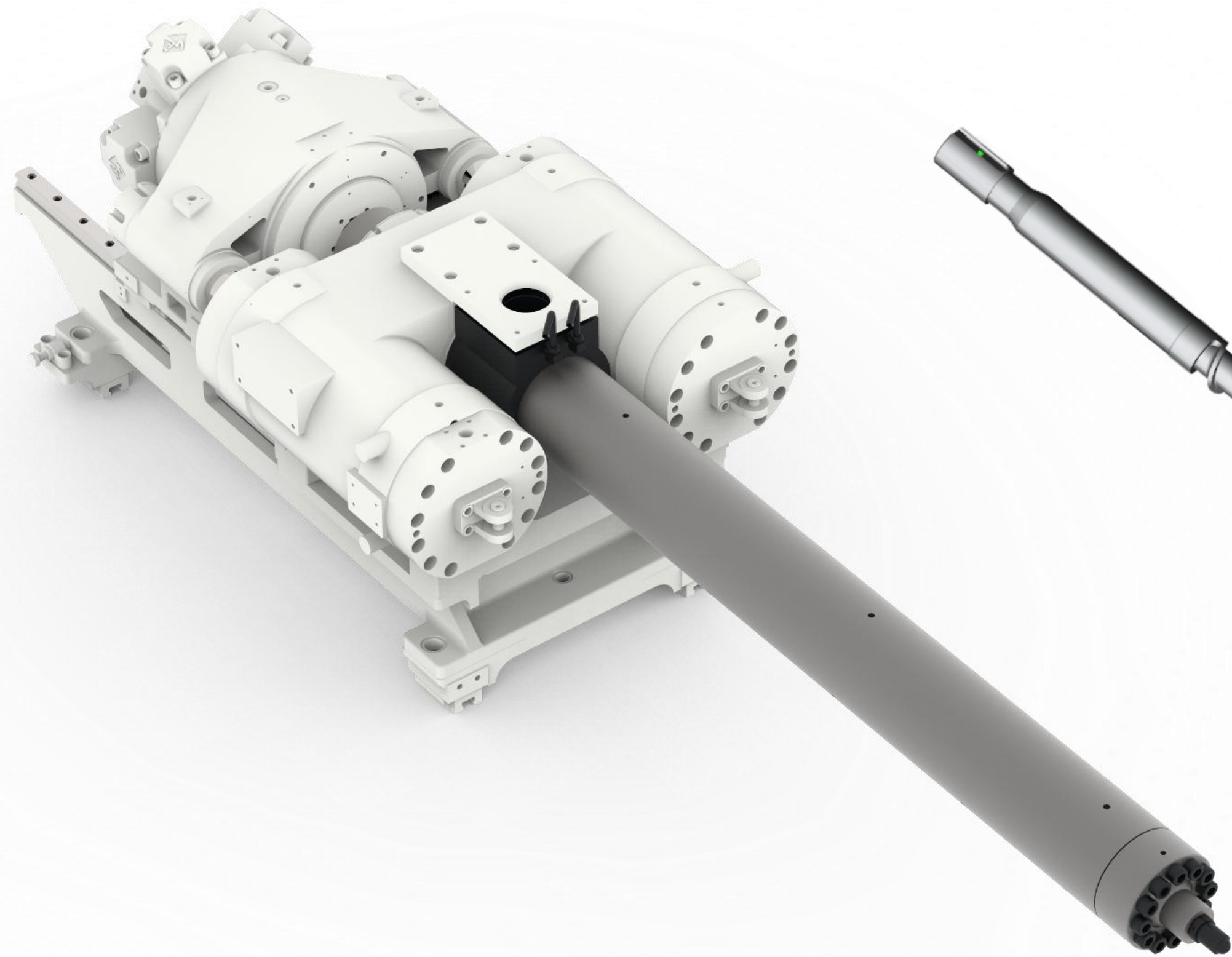
Linear Guides



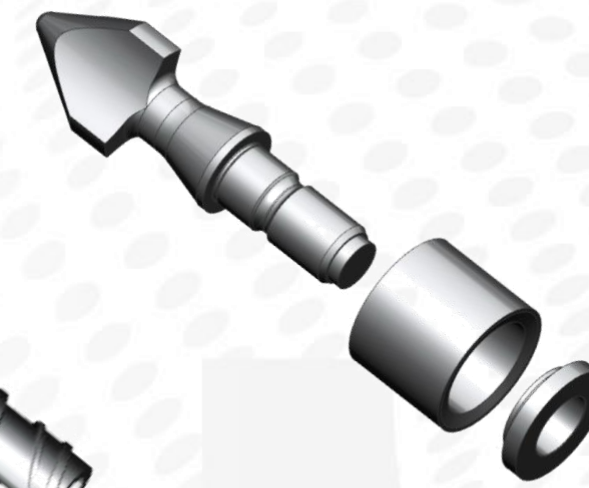
- Linear guides for carriage and injection unit
- Better acceleration and deceleration response
- Precise backpressure control

Injection Unit

Efficient plasticizing components

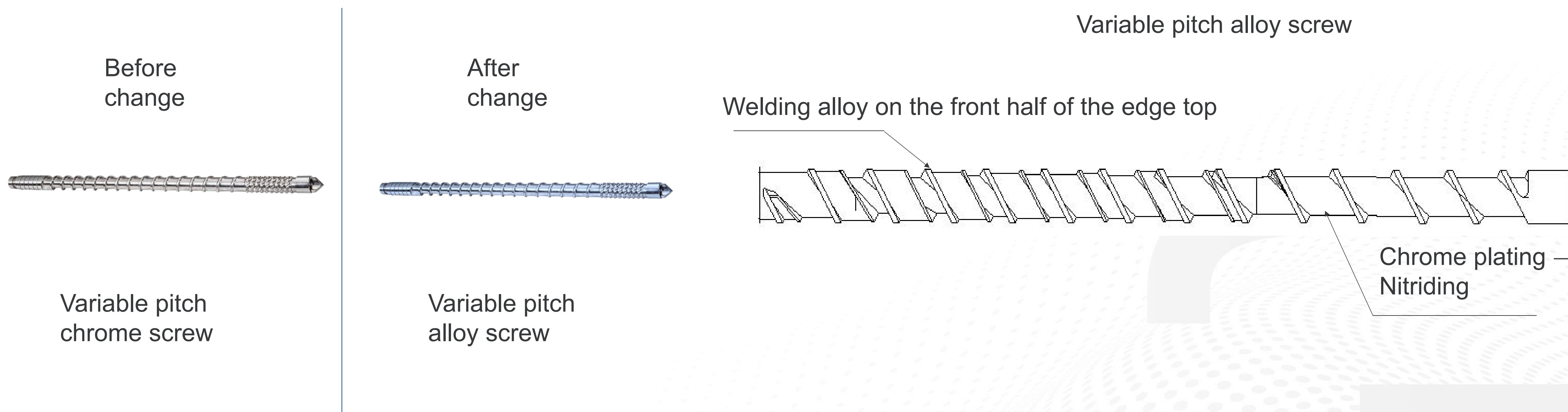


- New designed plasticizing components
- Further improvement of the plasticization efficiency



Injection Unit

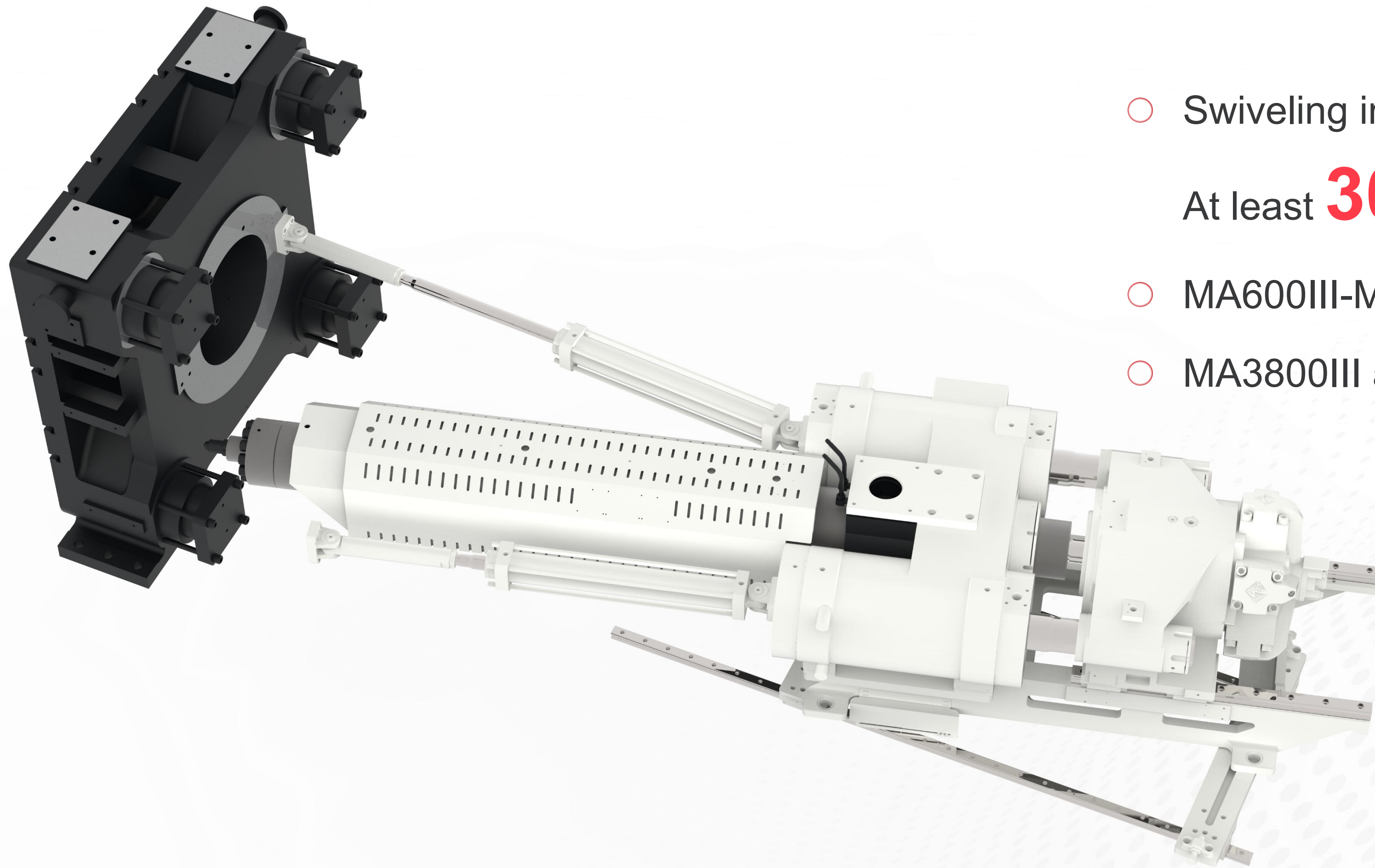
Change of standard C and D screw of machines between 5300-21000kN
(exclusive of 21000kN D screw)



Note :
Welding alloy on the front half of the screw of the variable pitch alloy screw and the chromium plating treatment is changed to nitriding treatment.
Mainly used in the logistics and civilian products industry to increase its wear resistance and service life.

Injection Unit

Easy Maintenance



- Swiveling injection unit as standard

At least **30%** time saving for screw replacement

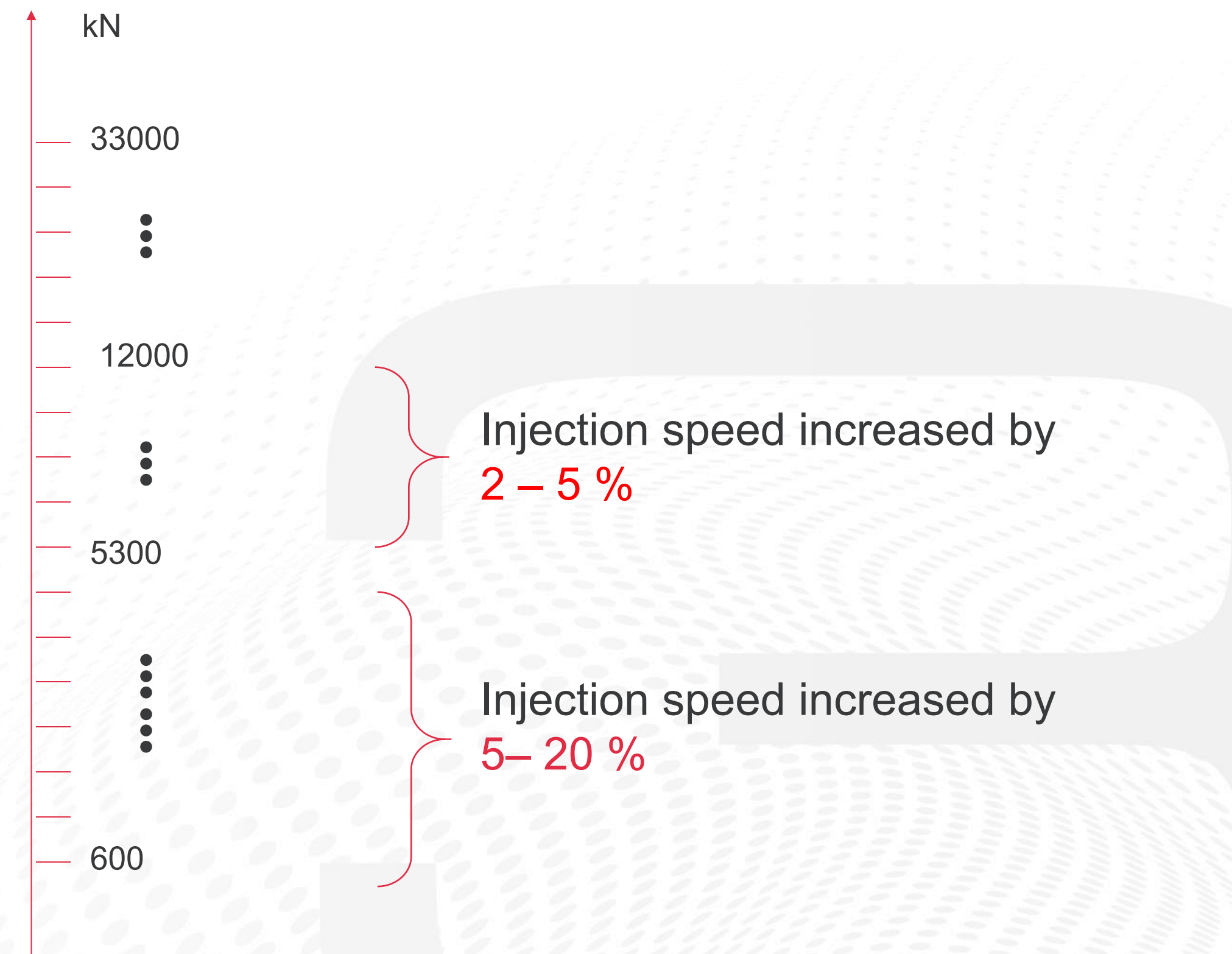
- MA600III-MA32000III: turn by manual
- MA3800III and above: turn automatically

Injection Unit

Higher Injection Speed

Strong injection capacity featuring high injection pressure & speed

- Shorter dry cycle time
- Better solution for thin-walled parts
- Prevention from deformation through cooling
- Improved process range and improve process forming capabilities



Injection Unit

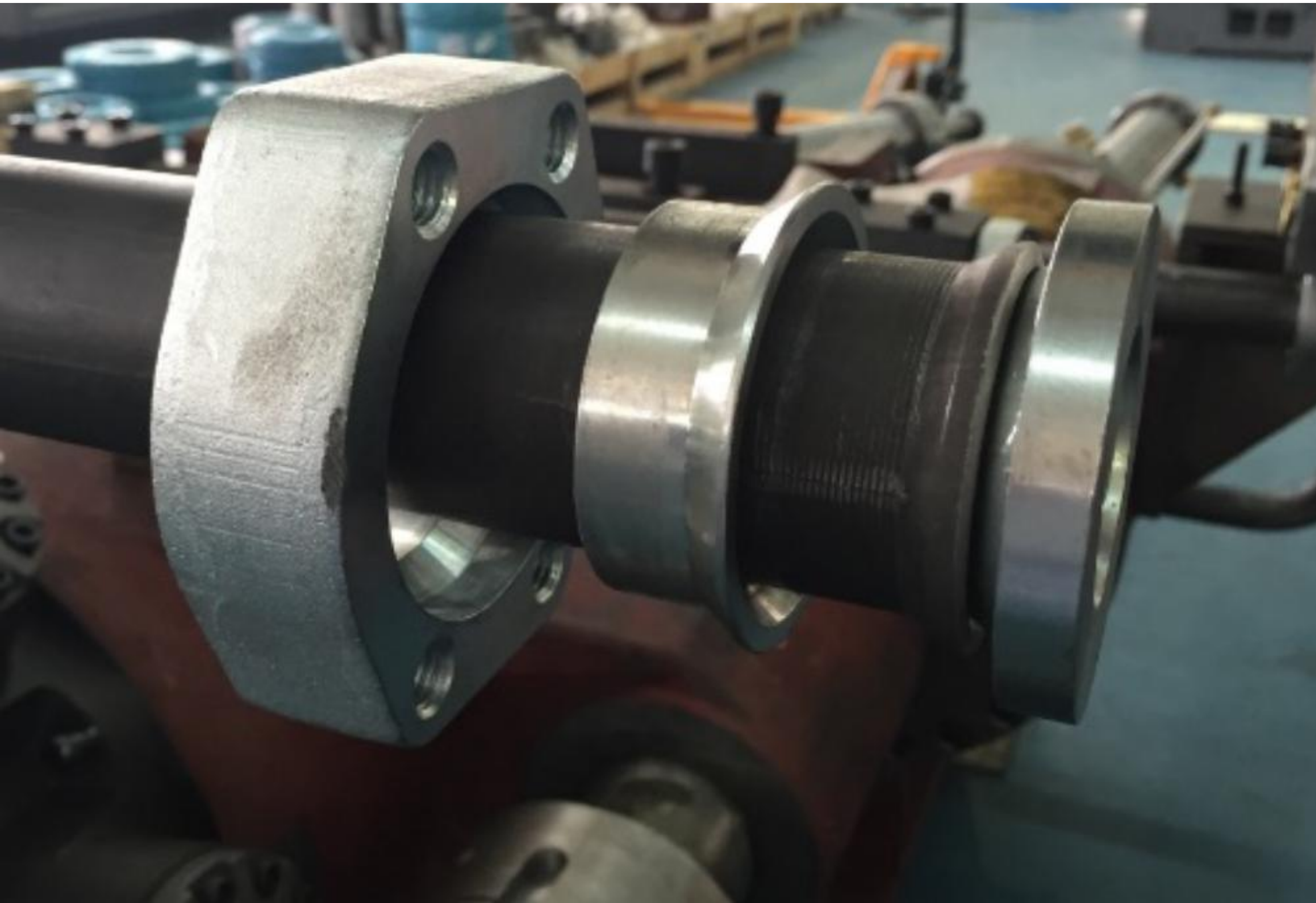
Higher Injection Speed

Model	MAIII Injection speed (mm/s)
MA600	155.4
MA900	139.9
MA1200	140.2
MA1600	136.0
MA2000	135.3
MA2500	135.9
MA2800	135.5
MA3200	120.4
MA3800	127.5
MA4700	127.2
MA5300 MA6000	122.8

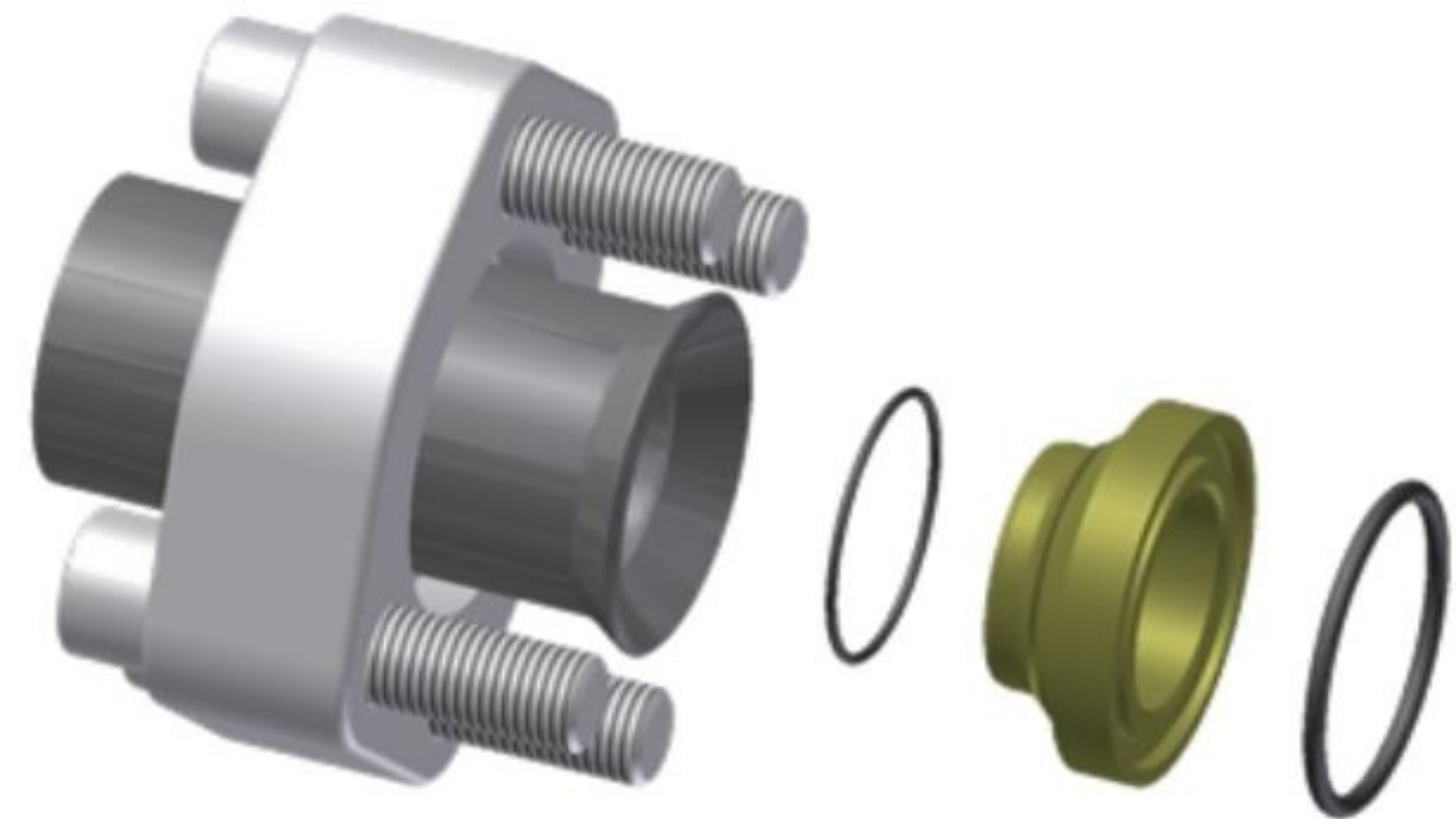
Model	MAIII Injection speed (mm/s)
MA7000	113.3
MA8000 MA9000	102.1
MA10000 MA12000	100.5
MA13000 MA14000	93.9
MA16000 MA18500	90.4
MA21000	88.8
MA24000	74.5
MA28000	71.4
MA33000	65.4

Model	MAIII/eco Injection speed (mm/s)
MA600	135.0
MA900	119.3
MA1200	114.4
MA1600	109.1
MA2000	109.9
MA2500	109.2
MA2800	110.0
MA3200	120.4
MA3800	104.4
MA4700	104.0
MA5300 MA6000	102.9

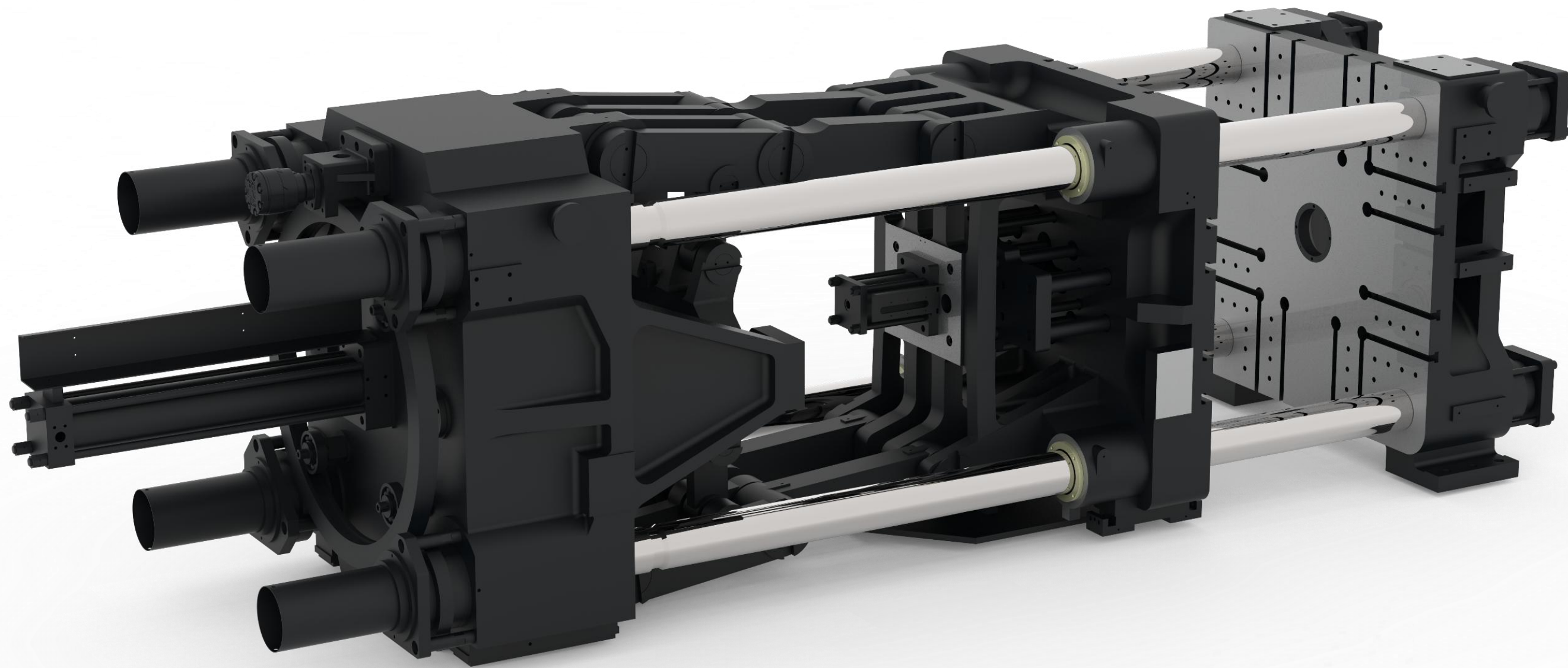
Non-welding power pipelines



- Non-welding technology for power pipeline
- Cleaner with less risk of oil leakage



CLAMPING UNIT



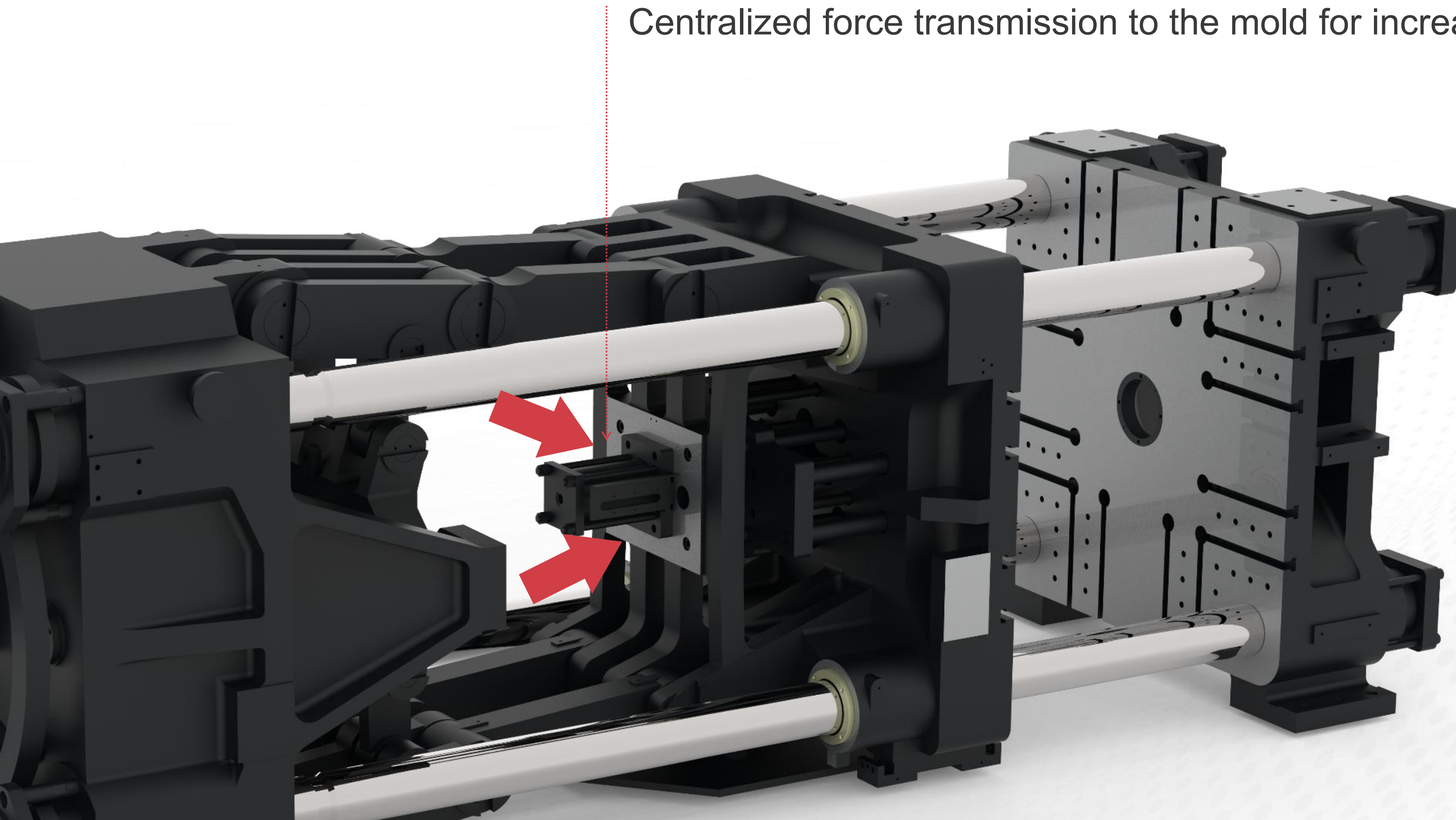
Optimized Platen Design

Enlarged Center Hole
(Chinese Market only)

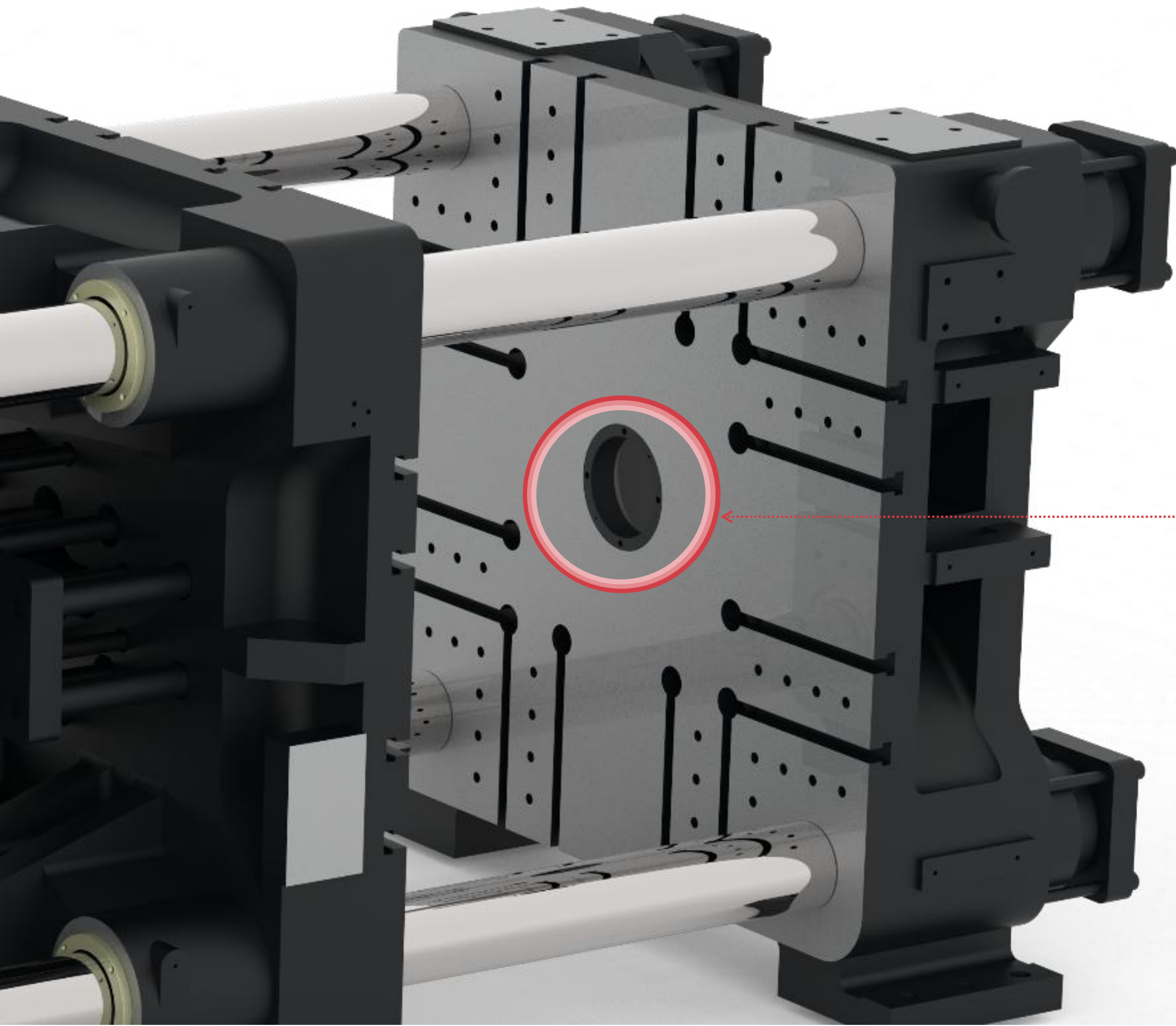


Optimized Platen Design

Centralized force transmission to the mold for increased rigidity

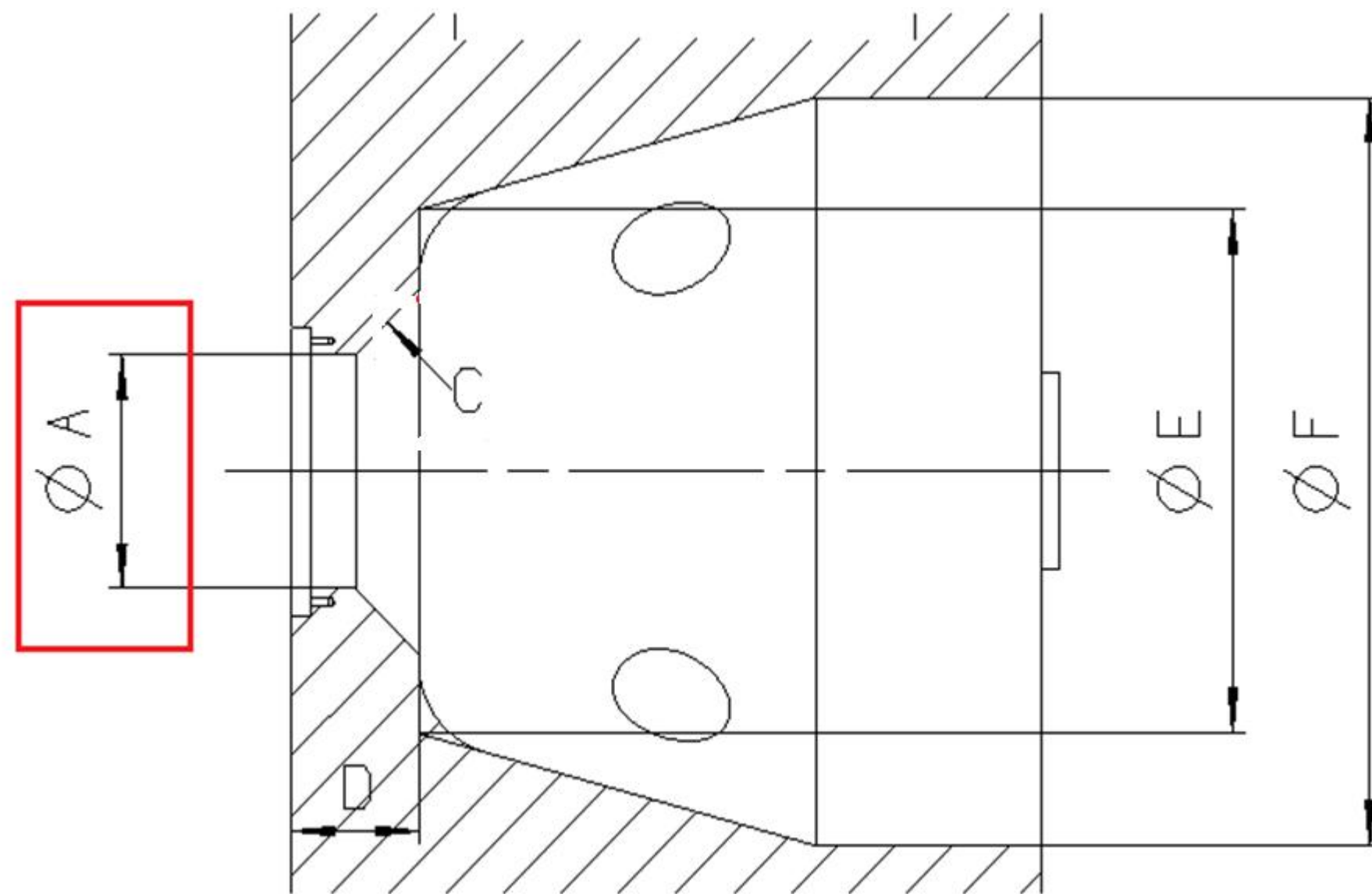


Enlargend Center Hole



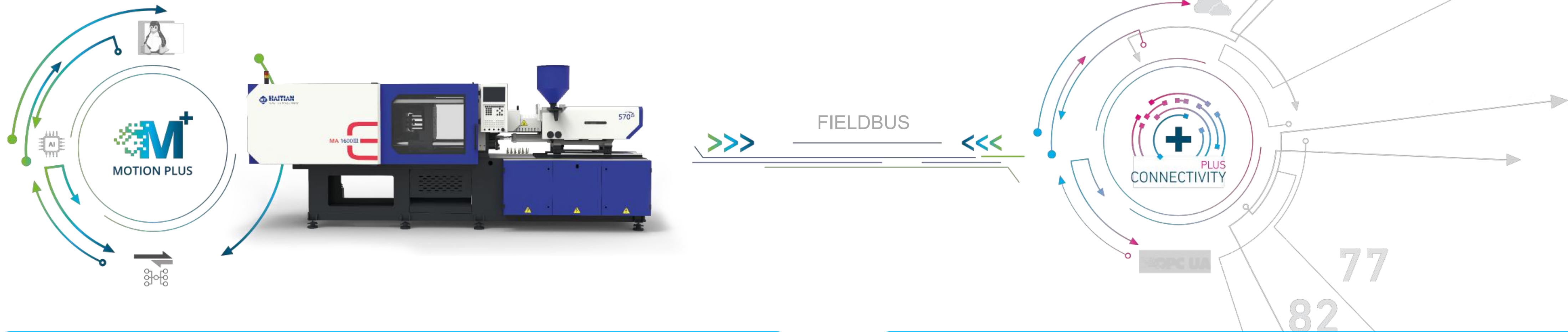
- Increased Rigidity
- According to new chinese market standards

Hole Positioning of fixed platen



Model	MAIIS Center positioning hole	MAIII Center positioning hole	Note
60	100	100	Unchanged
90	125	100	
120	125	100	
160	125	125	Unchanged
200	160	125	
250	160	125	
280	160	125	
320	160	125	
380	160	160	Unchanged
470	200	160	
530	200	160	
600	200	160	
700	200	200	Unchanged
800	250	200	
900	250	200	
1000	250	200	
1200	250	200	
1300	250	200	
1400	250	200	
1600	315	250	
1850	315	250	
2100	315	250	
2400	315	250	
2800	315	250	
3300	315	250	

The new Performance at a Glance



MOTION PLUS

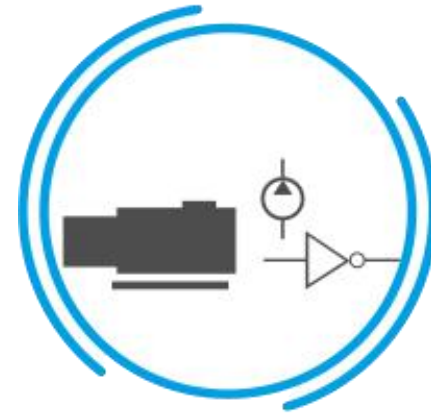
... is the bundling of already established and new developments around intelligent motion control.

CONNECTIVITY PLUS

...the ability for open integration of all common interfaces, interaction with periphery and smart factories

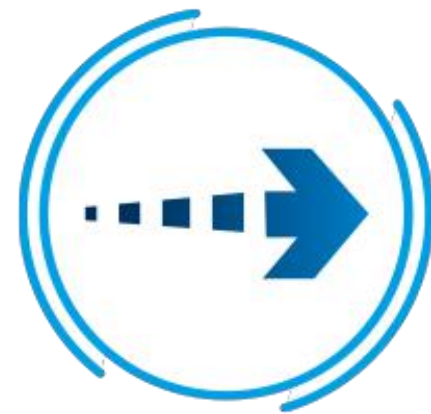
Motion Plus

At a Glance



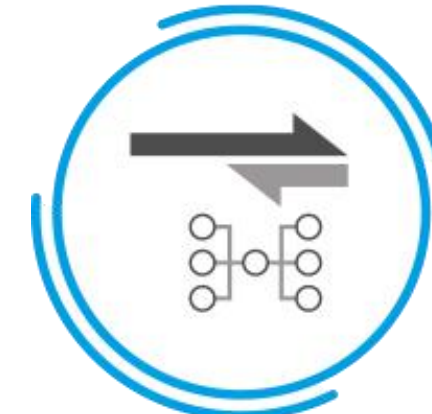
Dynamic+ servo drive system

New power generation.
strong, fine execution,
high response



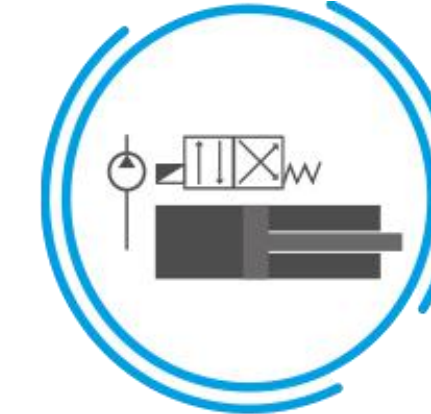
Efficient+ Multi-Stage Control

More flexibility for
different applications



High-Speed+ realtime fieldbus

Fast communication,
rich data exposure



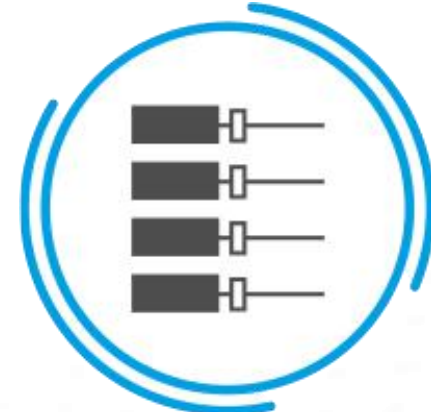
High Performance+ Hydraulics

Agile design, smooth,
precise, energy efficient



Open+ Linux platform

Freedom and maximum
compatibility



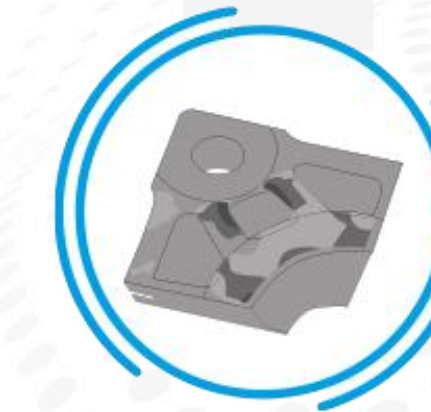
Precise+ digital sensors

In Standard for all JU Series
Optional for MA Series



Safety+ Protection Concept

High standard to protect
operator and equipment



Longlife+ clamping unit design

Optimized clamping unit
design

Intelligent algorithm for mold open/close

Easier operation



Standard Mode of MALLs machine

OpnStroke

	#1	#2	#3	LowP	HighP
Position	19.5	5.6	3.0	0.86	
Press	50	30	30	15	60
Speed	50	30	30	25	40

	#5	#4	#3	#2	#1
Position	359.5	172.7	49.1	5.6	0.9
Press	50	50	70	70	70
Speed	30	50	40	50	35

Intelligent Mode of MALL machine

MoldP	ClsMld
Position <input type="text" value="9.3"/>	Position <input type="text" value="3.48"/>
Pres <input type="text" value="15"/>	Pres <input type="text" value="60"/>
Speed <input type="text" value="25.0"/>	Speed <input type="text" value="40.0"/>
ClsSpd <input type="text" value="30.0"/>	

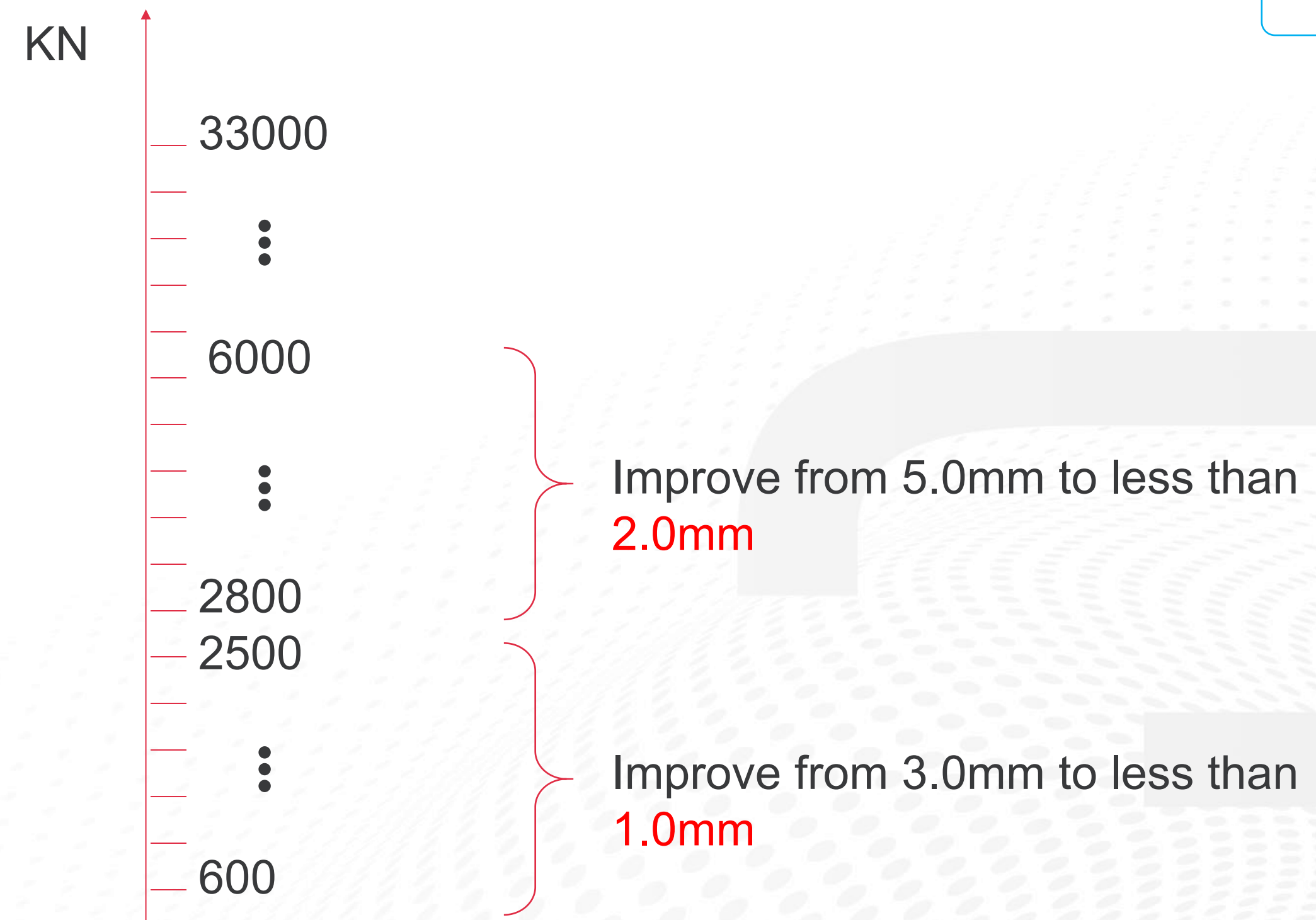
Open	MldRel
Trav. <input type="text" value="399.5"/>	Position <input type="text" value="3.5"/>
OpnSpd <input type="text" value="50.0"/>	Pres <input type="text" value="70"/>
	Speed <input type="text" value="35.0"/>

HiPresTime	<input type="text" value="0.00"/> sec
LoPresTime	<input type="text" value="0.00"/> sec
Act. Time	<input type="text" value="0.00"/> sec
ClmpPosn	<input type="text" value="137.7"/> mm
OpenTime	<input type="text" value="0.00"/> sec
Sensor	<input type="text" value="0"/> Ton
Cls. Time	<input type="text" value="0.00"/> sec
Mold Opn	<input type="text" value="0.0"/> mm

Intelligent algorithm for mold open/close

Higher repeatability accuracy

Improved repeatability of the mold opening and closing by further optimizing the overall structure, oil circuit and programming

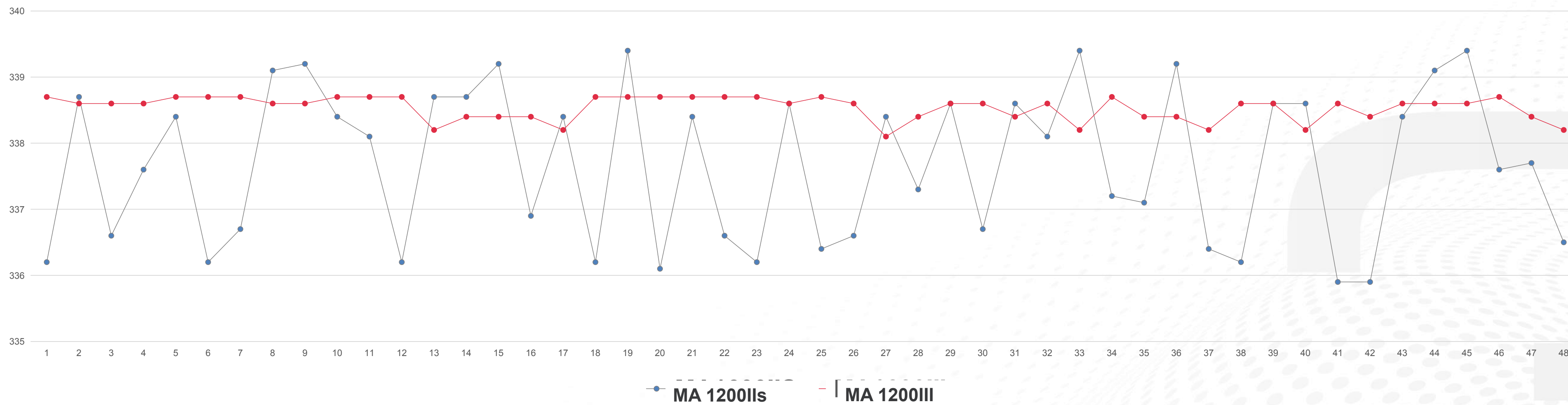


Intelligent algorithm for mold open/close

Higher repeatability accuracy – test example



Repeatability Accuracy of 1200KN Mold Opening and Closing



Less than
1.0mm

Intelligent algorithm for mold open/close

Shorter dry cycle time



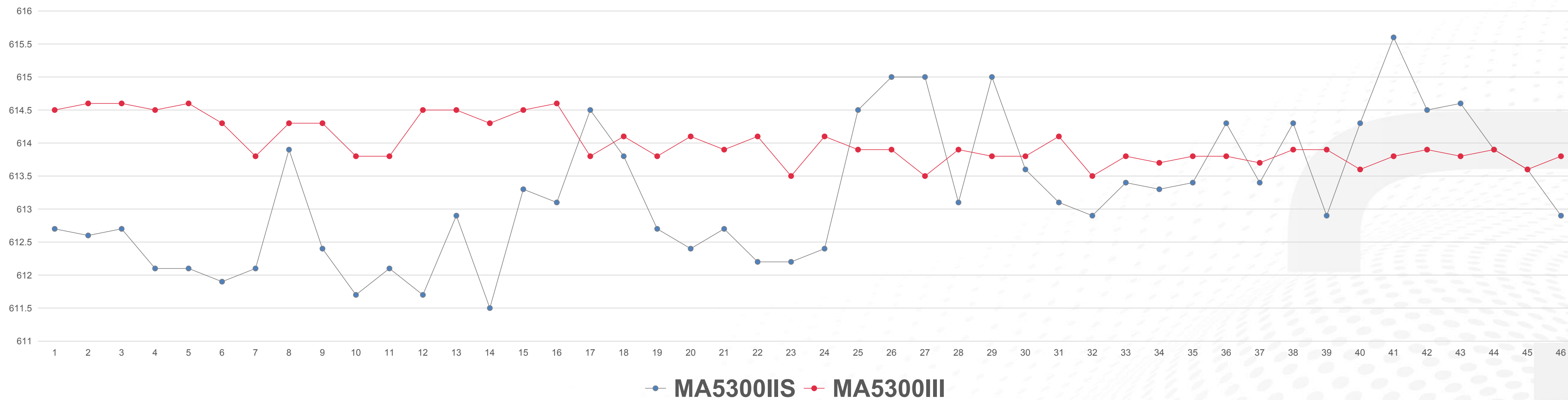
	MA1200IIS	MA1200III
Mold close (s)	0.81	0.70
Mold open (s)	0.72	0.74
Cycle time (s)	1.65	1.55

Intelligent algorithm for mold open/close

Higher repeatability accuracy – test example



Repeatability Accuracy of 5300KN Mold Opening and Closing

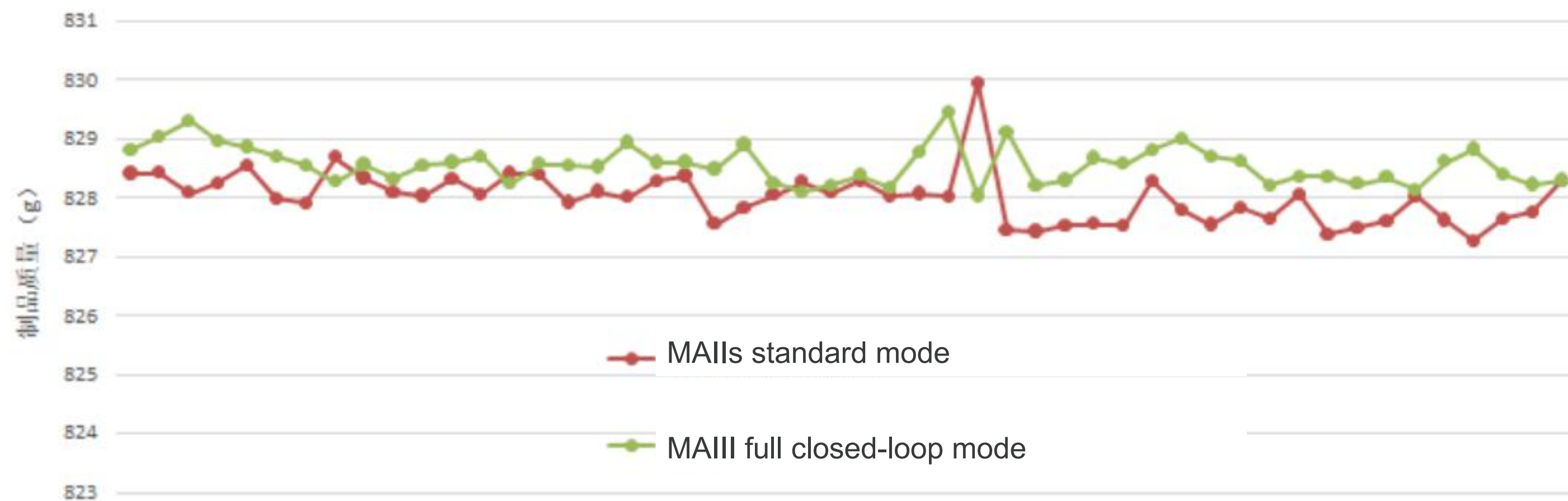


Less than
2.0mm

Full closed-loop control high injection repeatability accuracy



Part quality repeatability accuracy



Part: plate (PS)
Machine: MA4700

	MA4700IIS Standard Mode	MA4700III Full closed loop Mode
Max. part weight (g)	829.95	829.47
Min. part weight (g)	827.27	828.04
Max. weight deviation (g)	2.68	1.43
Repeatability (old standard)	0.324%	0.173%
Repeatability (new GB standard)	0.054%	0.038%

Full closed-loop control

Stable injection for thick-wall parts

Part: acrylic cosmetic box
Machine: MA3200



Diagram under standard mode

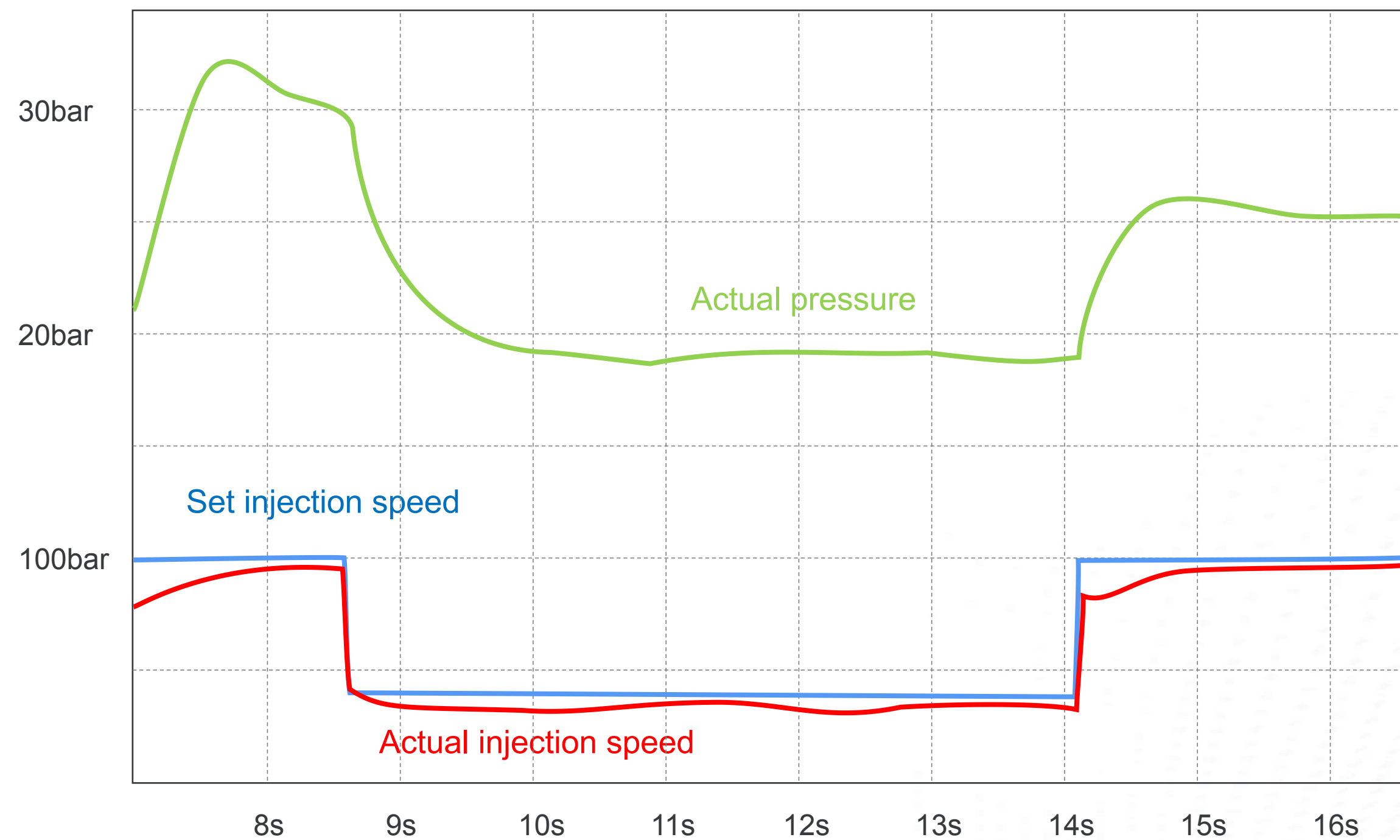
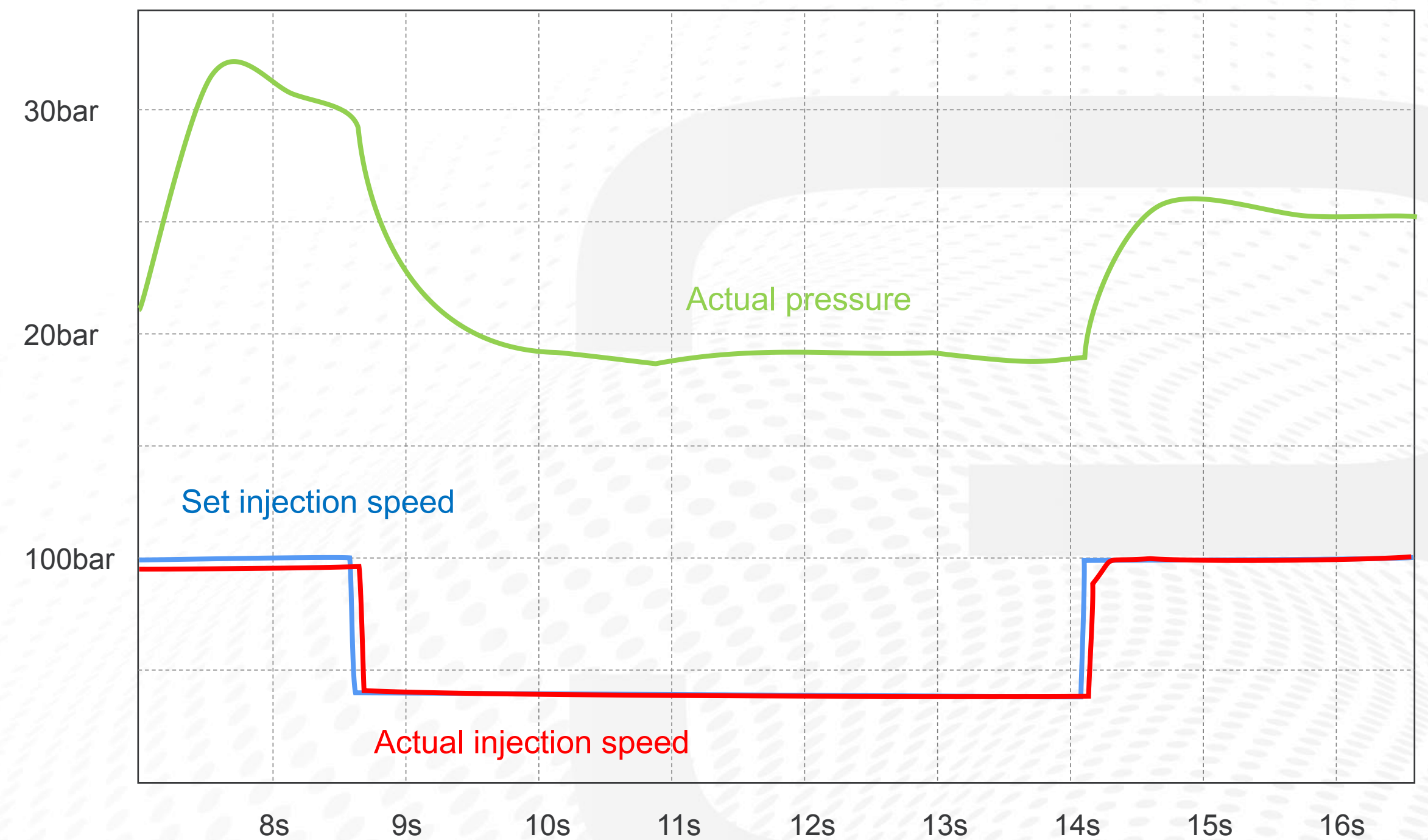


Diagram under full closed-loop mode



New servo-drive system

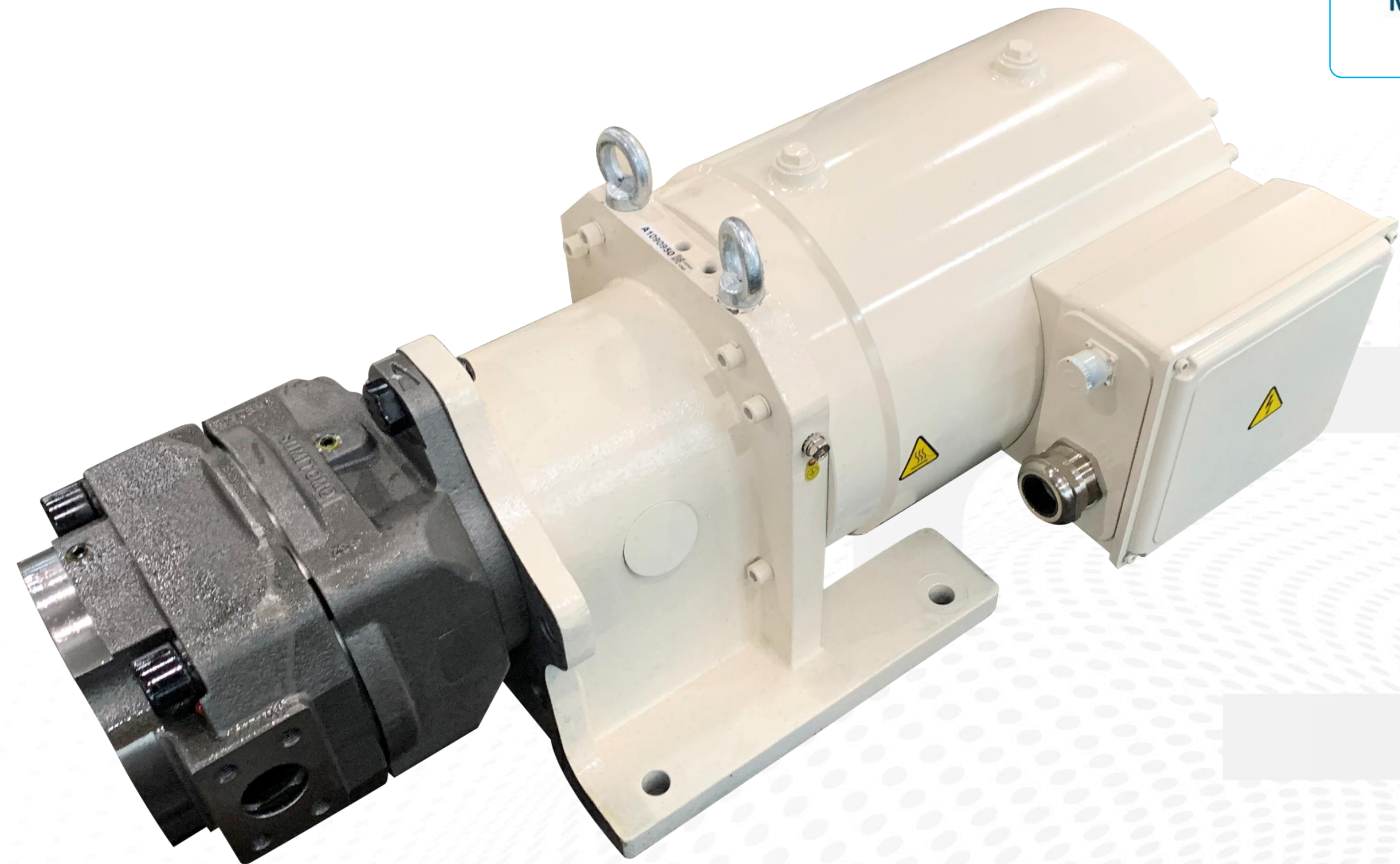
- New high-performance system
- Self-development by Haitian
- Low noise and high efficiency
- Faster injection acceleration response
- III: 100ms, IIS: 200ms and doubled response!



GREEN VANTAGE

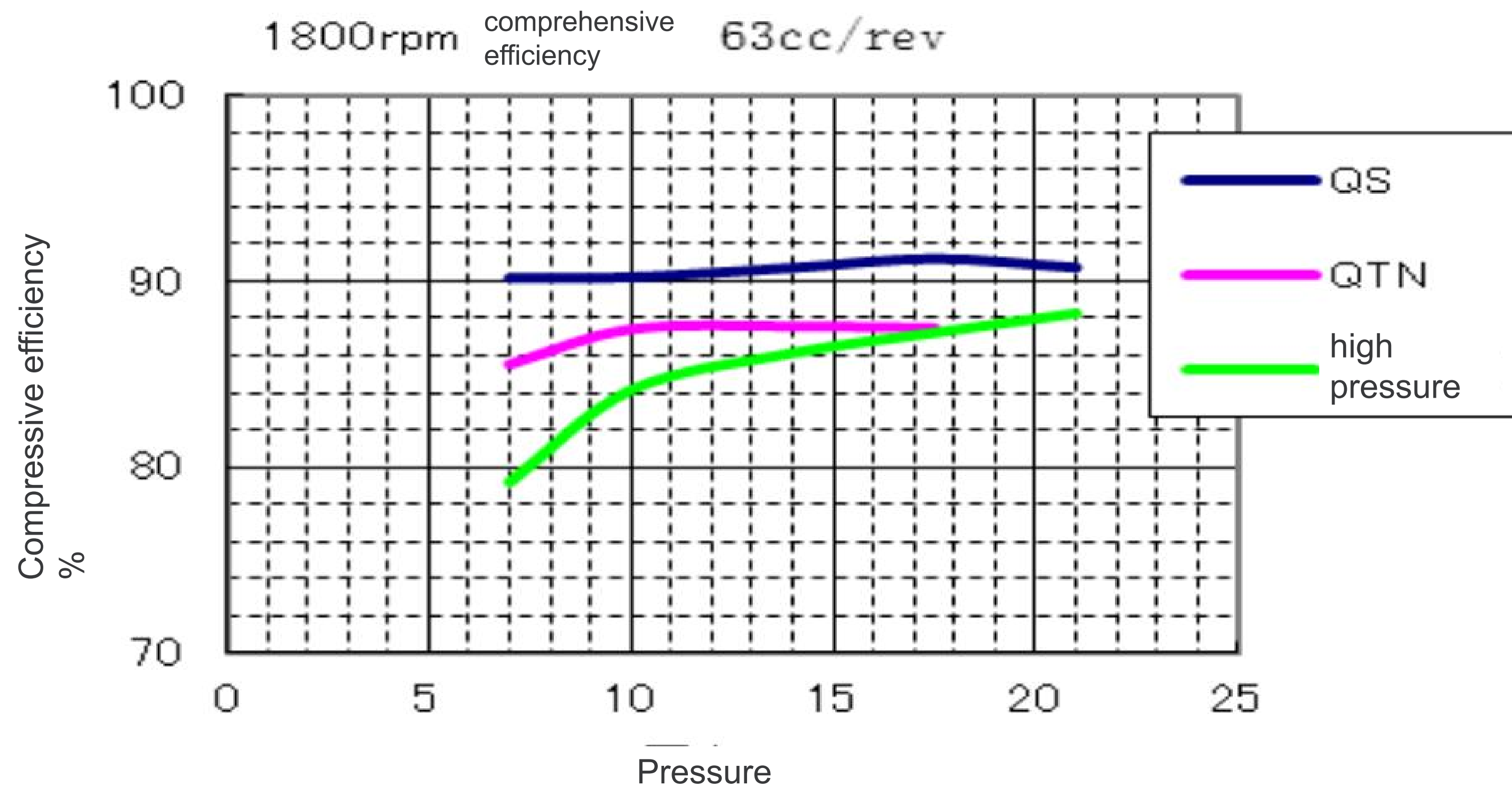


SPEED VANTAGE



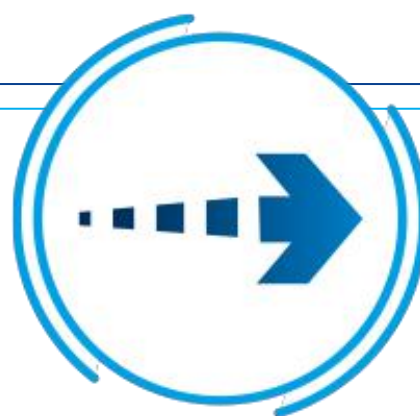
Stability and Efficiency Improvement

Oil Pump Efficiency



The comprehensive efficiency of the new pump system is improved as compared to the old one

Multi-Stage Dynamics Control



- Multi-PID control for more accurate movement of each executive components and movements.
- Apart from standard mode, we also offer various tailor-made modes to cope with particular applications such as thick-wall parts, deep cavity parts or thin-wall parts



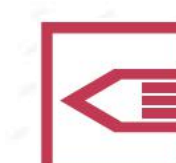
Standard



Low speed high pressure



High system dynamic



Super high speed *



* Currently only available for domestic market

MOTION PLUS ADVANTAGE

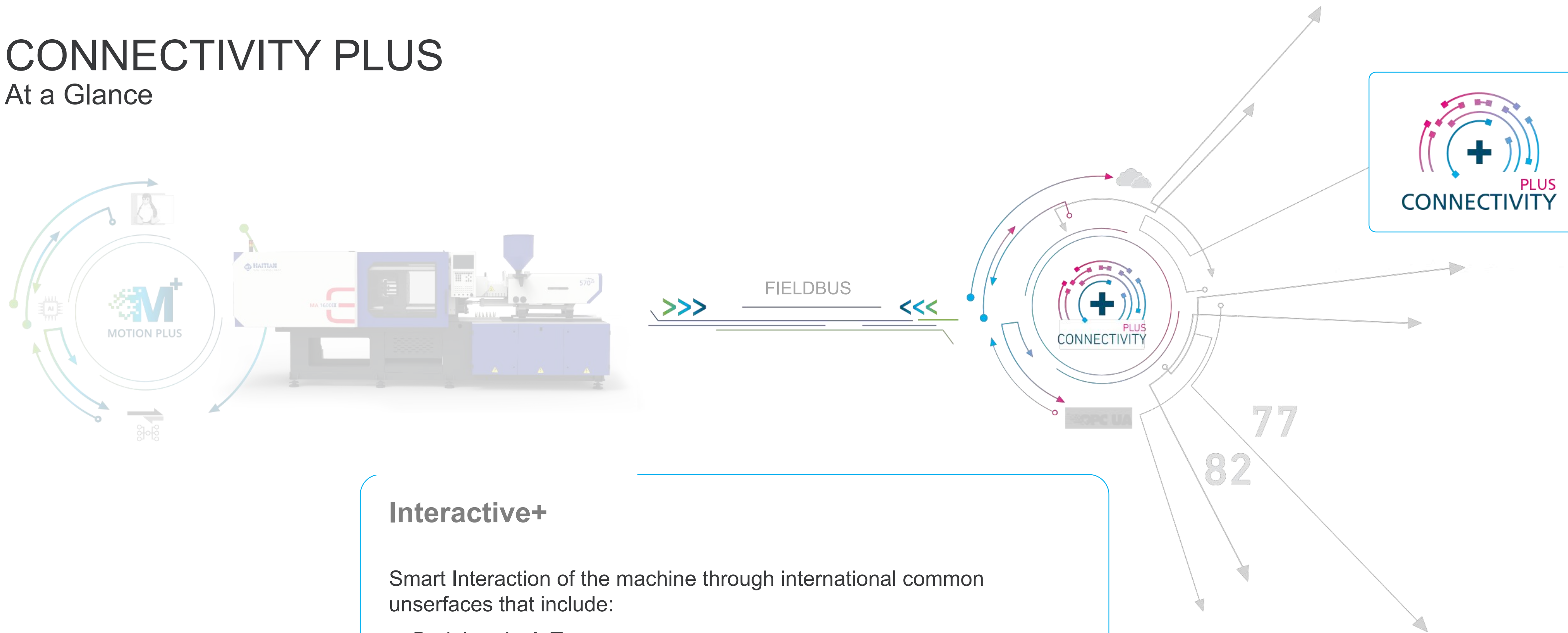
- Intelligent algorithm for mold open/close for more accurate positioning of mold open/close, thus easier for robots integration
- More smooth and stable mold open/close;
- More user-friendly and easy to operate, thus reduced requirement for operators;
- Better performance for thick wall parts with improved stability
- Better performance for thin wall parts with higher system response
- More accurate control of each executive parts
- Higher efficiency of oil pump and less energy consumption



More stable in movement, higher efficiency, less energy consumption and shorter dry cycle

CONNECTIVITY PLUS

At a Glance



Interactive+

Smart Interaction of the machine through international common unersfaces that include:

- Peripherals, IoT
- Software
- MES Systems
- Humans

CONNECTIVITY PLUS

At a glance



Data+ Exchange

Independent interoperability standard ensures the secure and reliable exchange data



Flexible+ integration

Easy device integration capabilities for efficient coordination of IMM and periphery



Open+ integration

Full integration of automation cells – free choice for the customer



Business+ to Machine

Incorporate into the customer's vertical management system



Broad+ Data compatibility

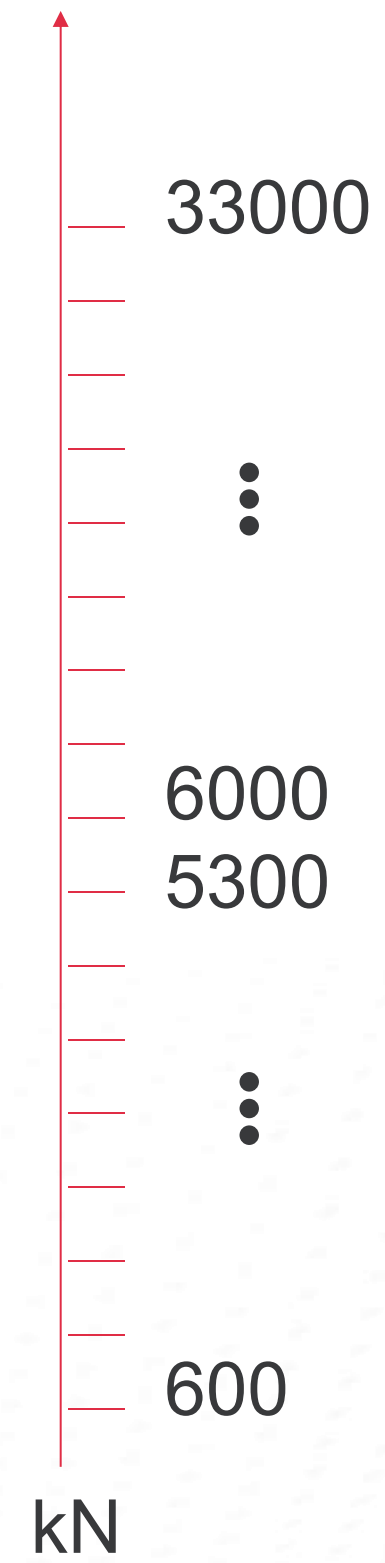
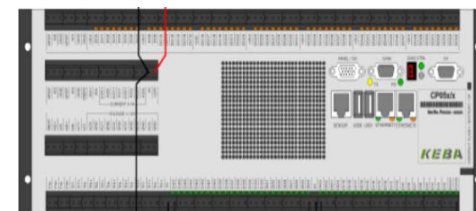
Ability to transform heterogeneous data from edge computers

Convenient human-computer interaction

User-friendly panel with large screen and new human interface



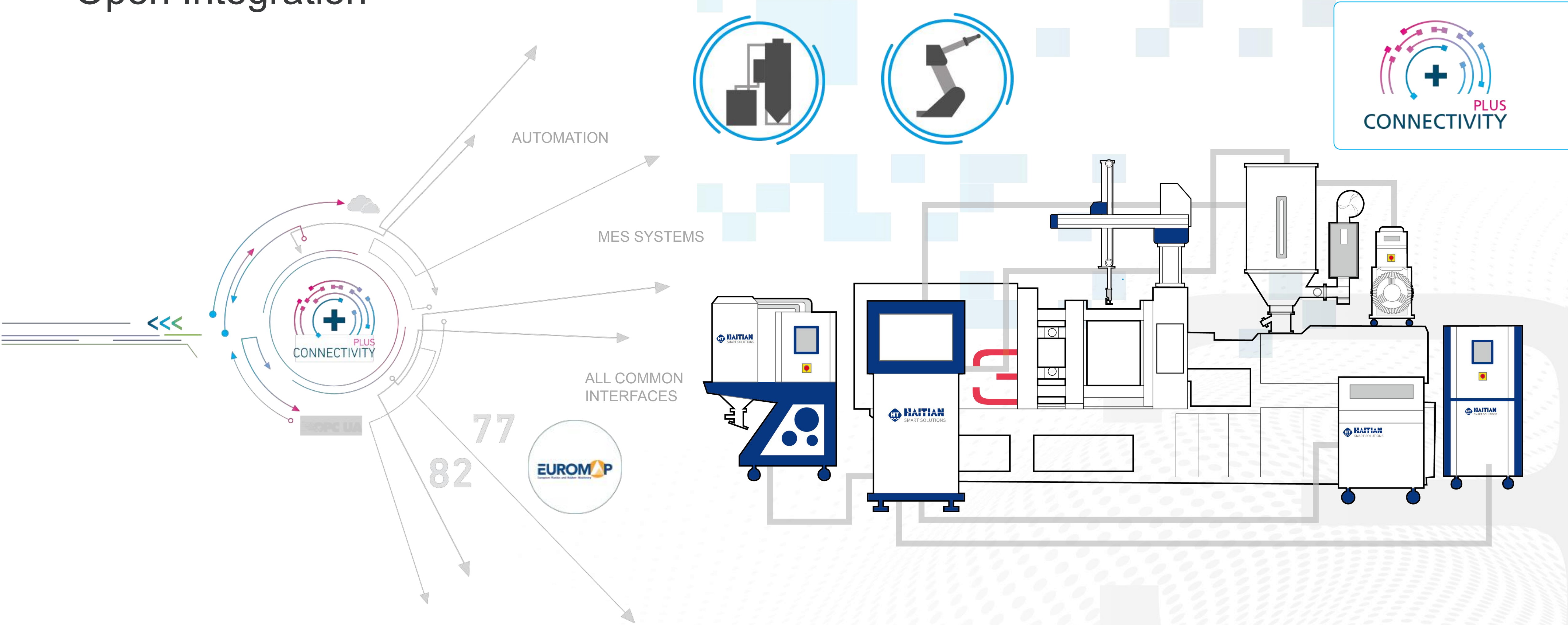
Standard KEBA i2985
with 15 inch touch screen



Standard TECHMATION
5530 controller
with 12 inch screen



Open Integration



Smart Control

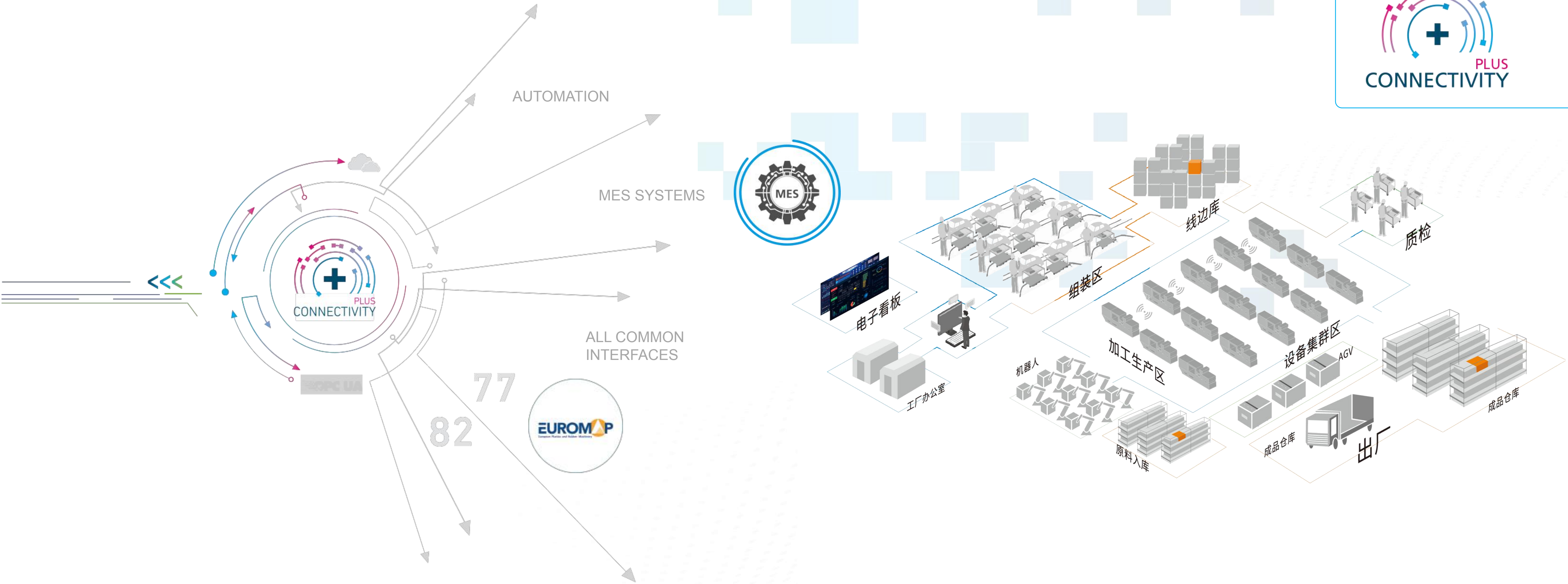
Standard “GO Factory” wireless communication interface

Easy access to the “GO Factory” cloud platform

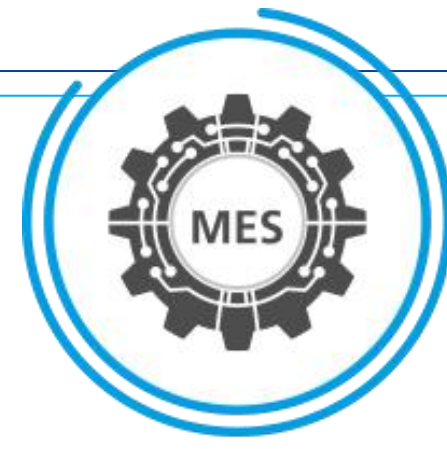


 GoFactory Cloud. 2.0

Intelligent Connectivity



MES System



Keqiang MES+ System

Automatic Storage
+
KQ-WMS System
=
Intelligent Storage System

AGV Transportation
+
KQ-PUS C
=
Intelligent Logistics System

Flexible Robots
+
KQ-APS System
=
Unmanned Smart Factory System

Visualized Monitoring
+
KQ-QS System
=
Visualized Quality Control System

Visual System
+
KQ-APP
=
Real-time Feedback System



HAITIAN
PLASTICS MACHINERY



Thank You!



TECHNOLOGY TO THE POINT