

**CHEN HSONG**

**Chen Hsong**

Unit 2001, 20th Floor, Citicorp Centre, 18 Whitfield Road, Hong Kong

marketing@chenhsong.com

+ 852-2665-3222

www.chenhsong.com

202303

**CHEN HSONG**

# MIKG PRO

88-668 ton



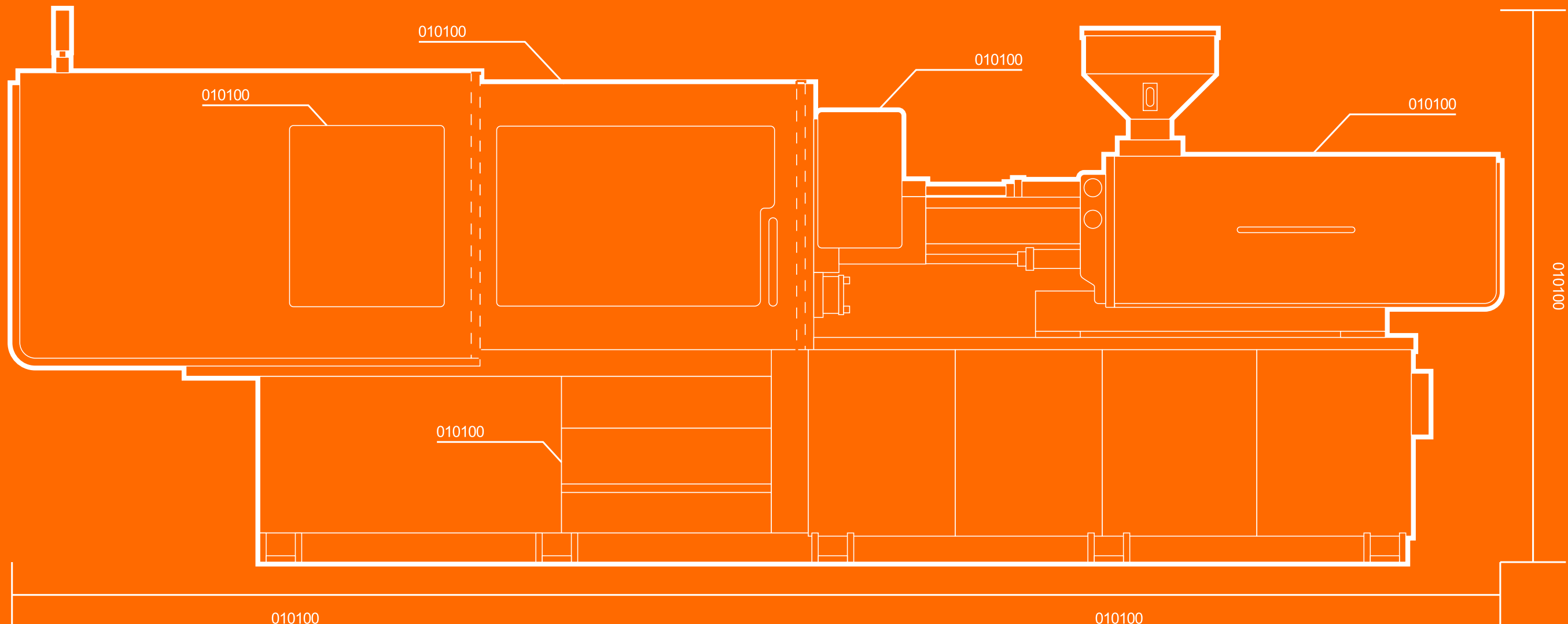
www.chenhsong.com

# In pursuit of 100% complete satisfaction

## Redefining professionalism, performance and value for the plastics industry

The MK6 PRO is the new “professional” member of the world-renowned MK6 series, which was originally created by Chen Hsong and Japanese engineers through combining half a century of applications experience with top-of-the-line advanced technology and controls expertise. It seeks simply to be the best of its kind, in every aspect.

The MK6 PRO inherits its high reliability and non-compromising performance from the MK6 legacy, but also adds a brand-new, next-generation, high-end computing control platform, meticulously fine-tuned mechanics and hydraulics, and state-of-the-art control algorithms. It seeks to be even better, again, in every way.



## Chen Hsong Core Competences



### Experience (65 years since 1958)

Over half a century of applications experience and technical expertise.

### Global reach (100+ countries worldwide)

The customer is king, almost literally.

For us, your needs are paramount. We exist to provide value.

### Mitsubishi worldwide strategic partner (since 2011)

Adopted world-leading Japanese lean manufacturing practices and the M-System (Mitsubishi quality system) to give you 100% perfect products, 100% of the time.

## Half a century of applications expertise, working for you

65 years of focusing on nothing but injection moulding technology – professionalism and technical capabilities you can trust.

## In pursuit of 100% complete satisfaction

Your Need is our Command



## Partnership of the titans

In 2011, Chen Hsong joined forces with Mitsubishi (Japan) to form a worldwide strategic partnership covering the full range of technical and manufacturing cooperation.

Shioda-sensei, ex-Chief Engineer of Mitsubishi, joined as technical consultant, up-lifting a complete overhaul of Chen Hsong's technical capabilities, including advanced hydraulics, mechanical design and motion control.







# Redefining the professional injection moulding machine

- 01 Redefining ergonomics
- 02 Redefining precision controls
- 03 Redefining perfect quality
- 04 Redefining high performance

# Redefining ergonomics

Beauty is both internal and external

-  **Masterpiece of industrial design**  
Modern and pleasing
-  **Professional ergonomics**  
User-friendly and easy to operate
-  **Optimised structural design**  
High-strength construction with rock-solid stability
-  **Glowing logo**  
Light up the future of the plastics processing



Lights up!



# Redefining precision control

## Next-gen intelligent computer controller

High-speed advanced CPU provides ample computing power for closed-loop calculations, leading to lightning-speed responses, ultra-high precision and exceptional repeatability.

- 01 12"/15" large-sized touch-screen LCD panel
- 02 Wicked-fast CPU for lightning responses
- 03 Ultimate user-friendly HMI
- 04 Intelligent controls and easy smart tuning
- 05 Over-drive performance
- 06 Comprehensive features set



## The fastest compute platform

**25%** higher HMI CPU clock speed  
**60%** faster PLC CPU clock speed and I/O scan time



CPU clock speed	MK6 PRO	Competition
HMI	1.0MHz	0.8MHz
PLC	0.48MHz	0.3MHz

Advanced high-speed CPU enables lightning-fast closed-loop calculations for faster responses and higher precision.

Mainstream Linux-based O/S with modern GUI.

## The best panel



MK6 PRO	Competition
Touch-screen:Fast and precise	Physical buttons
Snappy and smooth	Slow operation
Easy and simple	Low resolution (800x600)
One-touch access	

## The largest features set

All the professional features you'd ever need for demanding applications.

- |  |                           |                                     |                                   |
|--|---------------------------|-------------------------------------|-----------------------------------|
| 01 USB socket  | 02 Ethernet socket        | 03 Smart clamp motion control       | 04 Closed-loop injection/ejection |
| 05 Stored mould recipes  | 06 Production log         | 07 Upgrade system via USB           | 08 Settings change audit log      |
| 09 Standardised data interchange format                          | 10 Rapid-setting page     | 11 Comprehensive quality monitoring |                                   |
| 12 Built-in digital oscilloscope to monitor any data point value | 13 SPC data logs          | 14 One-touch access to pages        |                                   |
| 15 Remap I/O   | 16 Screenshot at any time | 17 Interface with auxiliaries       | 18 Freely programmable movements  |
| 19 MES interface   | 20 User control           |                                     |                                   |

## The highest over-drive

Increase injection speed by up to 20% for more flexible application scenarios.



## The most intelligent

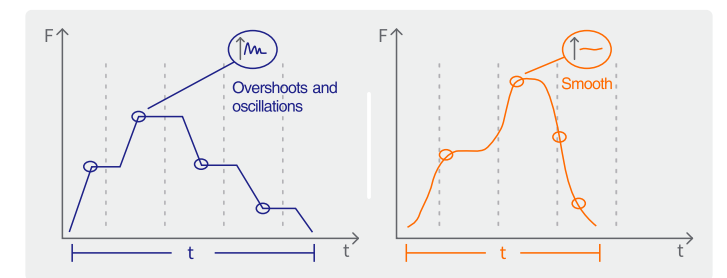
With Chen Hsong's proprietary advanced Japanese motion-control algorithms, running on a top-speed CPU, the highly-intelligent automatic clamping force adjustment mechanism achieves precision within ±5% of your set-point value without any human interaction.

There is no longer any need to rely on expensive high-precision transducers, experienced technicians or "black arts" for fine-tuned clamping adjustments. In the end, much fewer errors are made.

Shorter cycle time and smoother clamp motion.



MK6 PRO intelligent auto clamp adjustment  
 Dedicated page for one-touch operation  
 Simple and easy-to-use interface



## The most connected

Easy and effective Industry 4.0 smart manufacturing, now at your fingertips, with Chen Hsong's MegaCloud online data platform.

True IOT connectivity, remote control and diagnostics, and fully networked productivity.

\* iPad visualization interface



# Redefining perfect quality

## Advanced toggle design

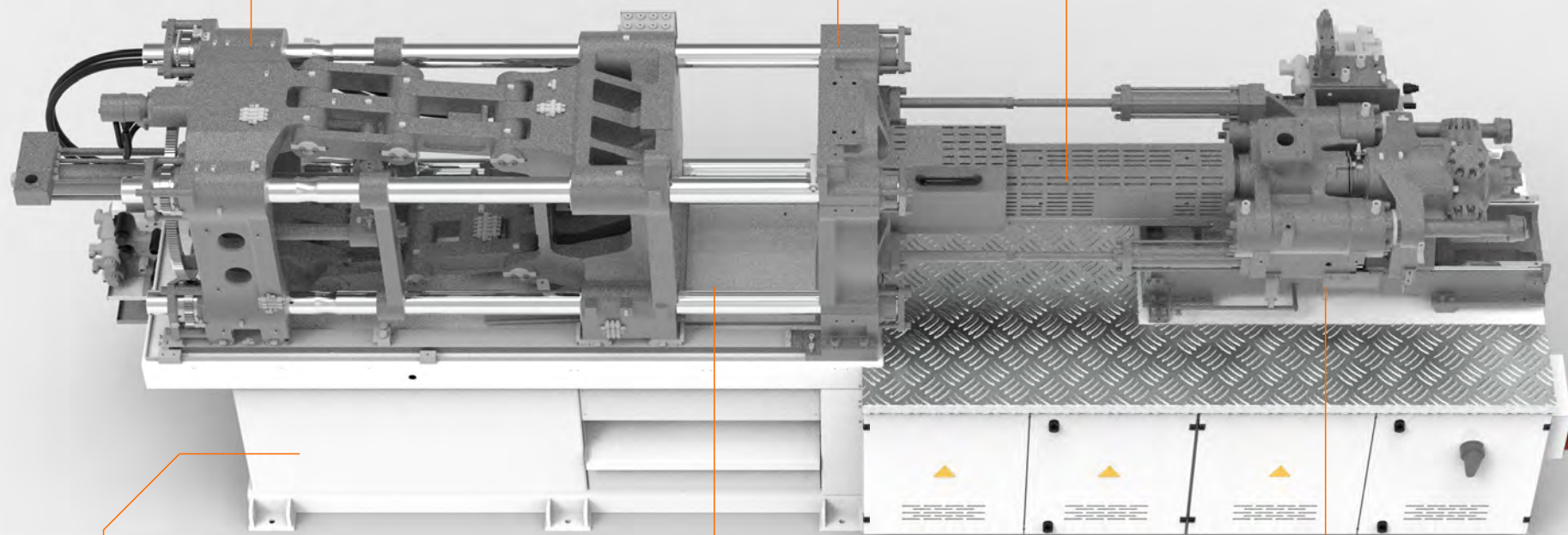
Proprietary Japanese mechanical design with highly-optimised motion profile; core components toggle produced on high-end machining centres to 0.01mm precision.

## Patented Circular Platen design

Proprietary Circular Platen design (patented) is a technological marvel perfected from years of detailed structural analysis, ensuring smooth stress distribution throughout the platen for maximum part quality and mould protection.

## Professional screw designs

Leveraging over 60 years of application expertise and field experience, professional screw designs are available for an amazingly wide range of applications demands and resins. There is always an optimised screw ready for your particular, unique processing needs.



## High-strength machine base

Improved structural stability, reduced deformation and enhanced torsion resistance from thicker and stronger I-beams that make up the machine base, plus an optimised design created through high-end computer stress simulations of various loading conditions.

## Wide applicability

Highly precise control over speed, pressure and temperature leads to easy processing of a wide range of resins, from PP, ABS to PC, PET, PMMA, PA and more exotic engineering plastics, where the MK6 PRO shows its professional colours.

## High precision linear guide rails

**Silky-smooth** – low friction

**Reliable** – longer usage life

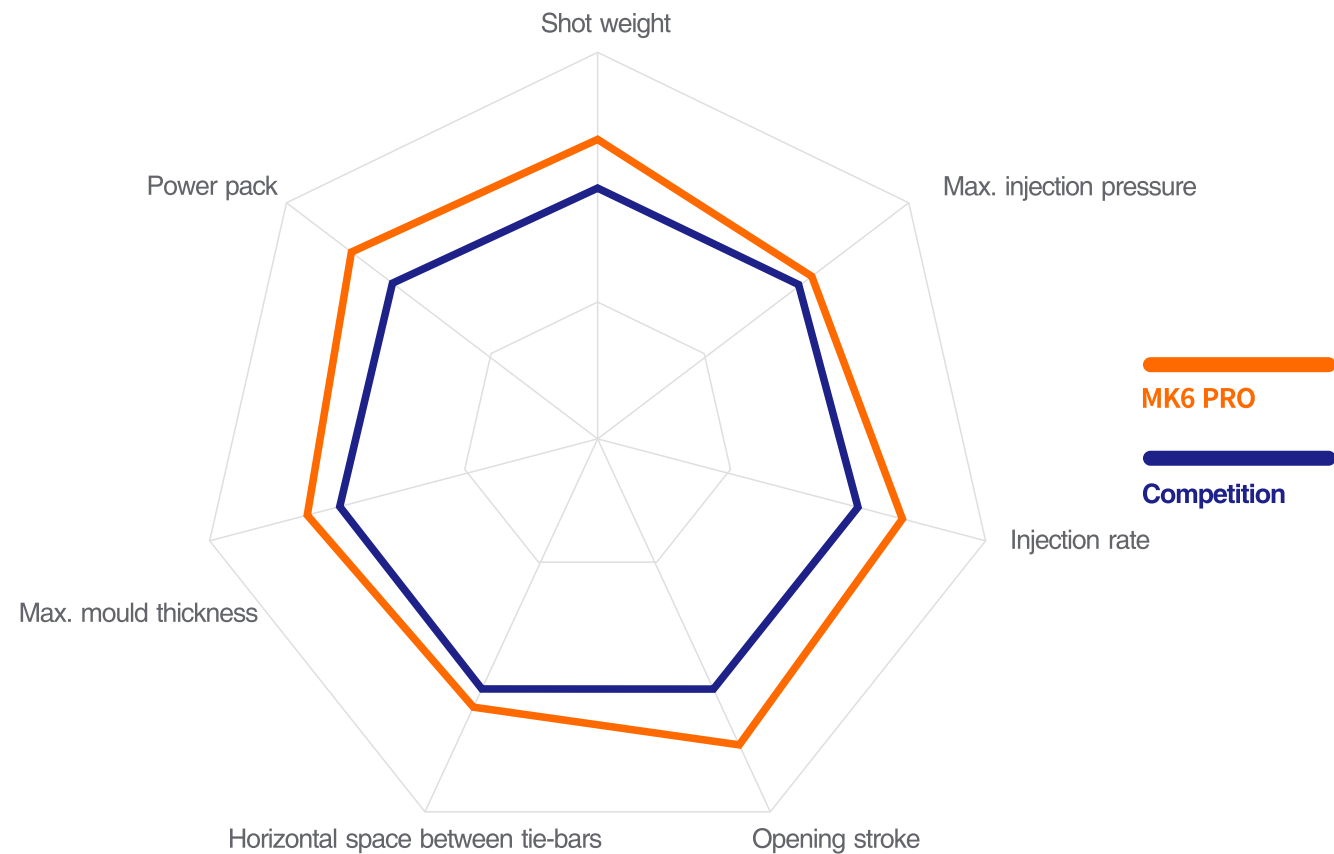
**Stable** – higher positional accuracy for higher yields

**Fast** – low friction enables higher speeds and better control

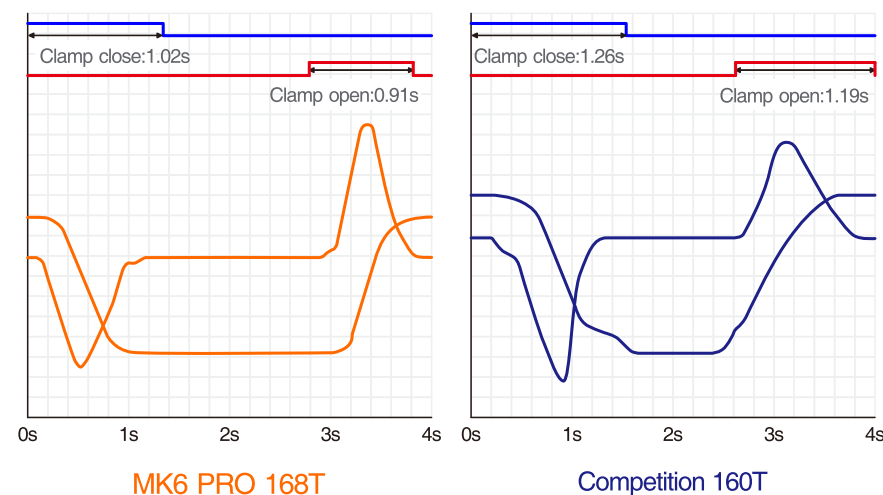
**Precision** – better control and accuracy leads to higher precision



# Redefining high performance



## Fastest cycle time for 100% satisfaction

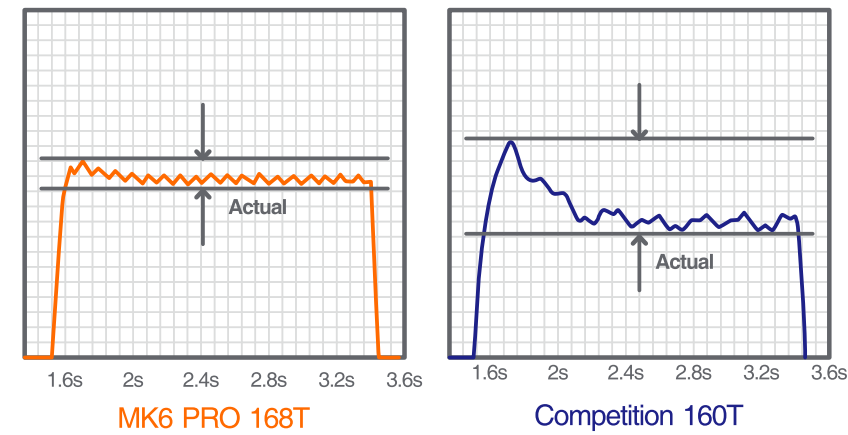


Model	MK6 PRO 168T	Competition 160T
Clamp close (s)	1.02	1.26
Clamp open (s)	0.91	1.19
Cycle time (s)	1.93	2.45
Opening stroke (mm)	300	300

**21% faster dry cycle than competition**

Shorter cycle time brings immediate financial return.

## Closed-loop pressure control for 100% satisfaction

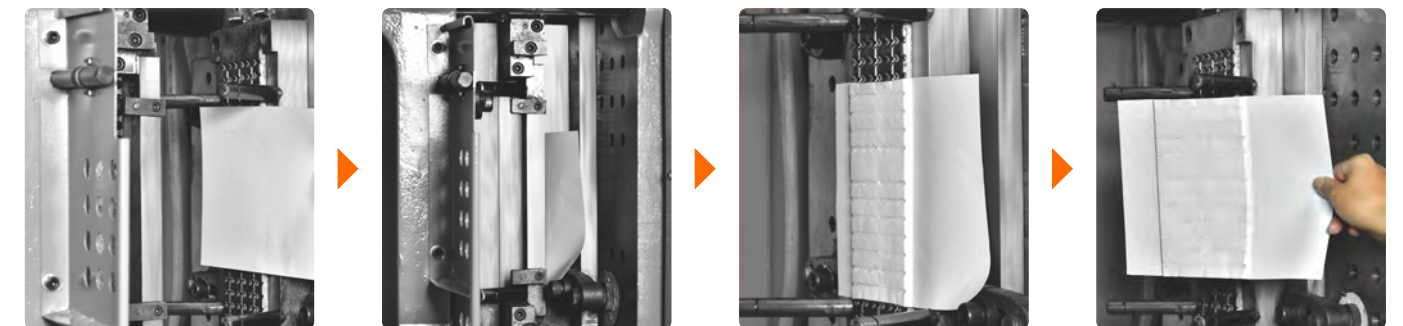


Precision pressure control is critical for good part quality and high yields, especially for demanding applications with strict dimensional stability and surface finish requirements (such as optical parts). Smooth pressure transitions also reduce mechanical shocks and prolong machine usage life.

**Closed-loop precision pressure control within  $\pm 0.5\%$**

## A new industry benchmark for low-pressure mould protection

High precision linear potentiometers are used for the clamping, injection and ejector axes which, when combined with high-optimised algorithms, enables superior low-pressure mould protection-effective even with obstacles thinner than 0.1mm (or the thickness of a sheet of paper)



Before clamp close, put in a sheet of standard A4 paper

Almost closing, detecting paper

Low-pressure mould protection causes clamp to open

A4 paper is not even punctured through!

## Mega Cloud online data platform for 100% satisfaction

Online monitoring and control at your fingertips. Effectively prevents errors and reduces idle time. Improves utility and delivery accuracy.



### Mega Cloud platform

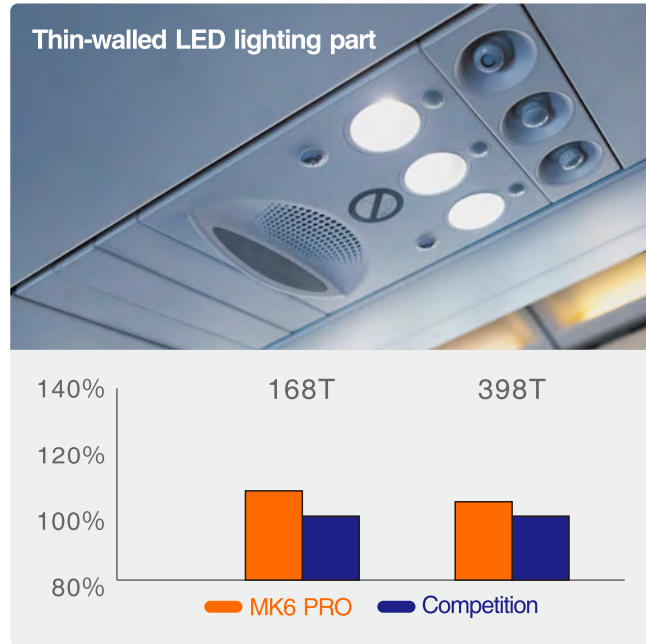
IOT + APS + MES

- Remote monitoring
- Process control
- Production monitoring
- Mould management
- Maintenance
- Analytics
- Automatic scheduling
- Part management
- Quality control

\* iPad visualization interface

The Mega Cloud is an optional independent service offering. Contact Chen Hsong personnel for more details.

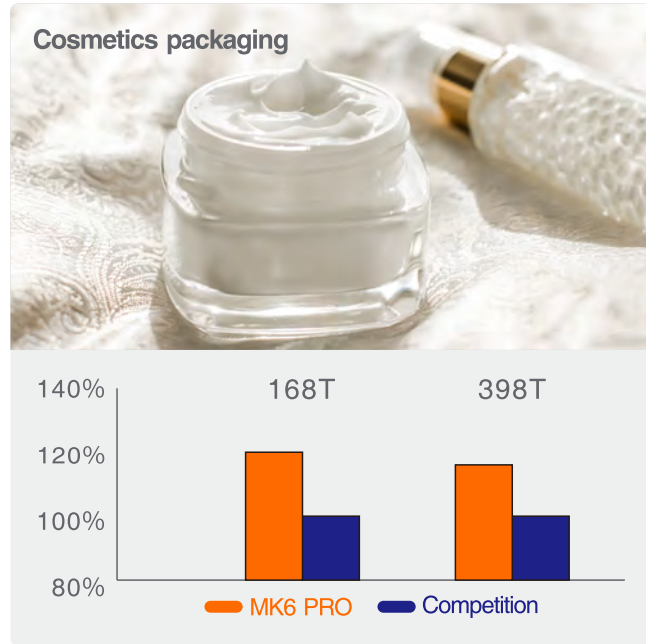
### Injection speed for 100% satisfaction



**5.5% higher injection speed**

Higher injection speed enables more stable production of thin-walled parts with higher yields

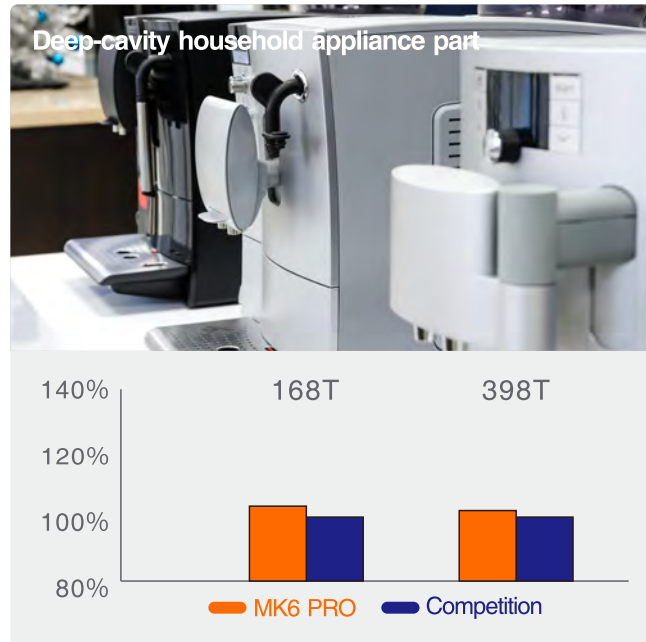
### Shot weight for 100% satisfaction



**18% larger shot weight**

Produce a wider range of parts on the same machine, especially thick-walled ones

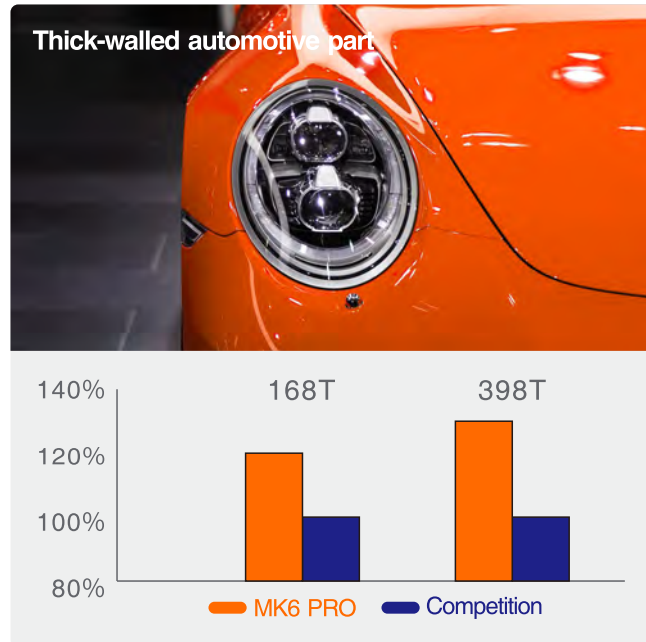
### Opening stroke for 100% satisfaction



**4% longer opening stroke**

Longer opening stroke to produce deeper-cavity parts

### Power pack for 100% satisfaction



**26% larger power pack**

Large power pack allows for much longer holding time, ideal for thick-walled parts made with tough engineering resins

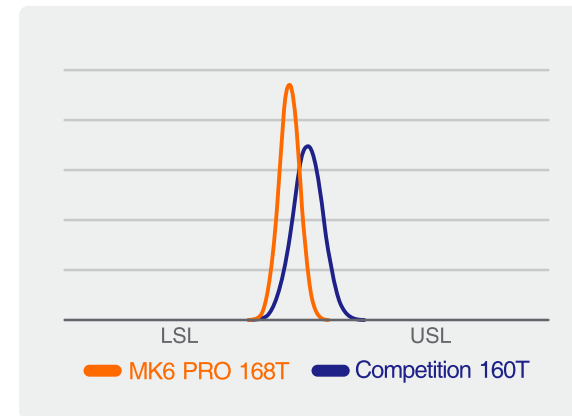
## Closed-loop high-precision injection for 100% satisfaction

#### Part Specifications

Large thin flat testing plate  
 Shot-weight: 122g  
 Cavities: 1  
 Resin: PE  
 Cycle time: 16.5s



### Part weight distribution



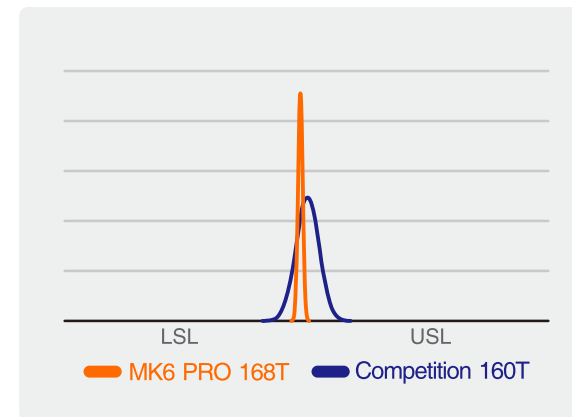
Part weight CPK comparison



**31% better CPK**

CPK (Process Capability Index) – Higher is better, indicating higher stability and quality. Closed-loop injection can achieve high precision of  $\pm 0.15\%$

### Clamp open position distribution



Clamp open position CMK comparison



**45% more accurate clamp-open precision**

Highly accurate clamp-open position simplifies robot take-out, allowing it to run faster for even shorter cycle time.



# In pursuit of 100% complete satisfaction

## Rock-solid stability for 100% satisfaction



Only the best machining equipment (e.g. Japanese FMS's and CNC's) are good enough to produce core components for the MK6 PRO, which all but guarantees reliability and stability for long years of operation.

## Superior yields for 100% satisfaction



Through precision control of injection speed and pressure, the MK6 PRO is ideal for producing parts with demanding tolerances.

## Higher productivity for 100% satisfaction



Productivity is the ultimate goal of the MK6 PRO, which leverages field experiences gained from wild popularity (98%+ repeat order rate) and seeks to exceed them in all aspects.

## Standard Features

Clamping Unit			
1 Automatic toggle lubrication	2 Automatic mould thickness and clamping force adjustment	3 High-tensile chrome-plated tie-bars	
4 Safety door with mechanical and electrical safety interlock protection		5 Hydraulic core pulls	
6 EUROMAP ejector	7 Differential boost for high-speed clamping		
Injection Unit			
1 Nitrided screw and Barrel	2 Automatic PID temperature control (including nozzle)	3 Digital back pressure control	
4 Nozzle guard	5 Cold start prevention	6 Screw RPM display	7 Broken thermocouple detection alarm
8 Ceramic heater	9 Barrel safety cover	10 Movable hopper	11 Blocked nozzle and overflow detection
Hydraulics			
1 Low-noise internal gear pump	2 High efficiency oil cooler	3 Detachable oil tank	
4 Suction and return line filter	5 Hydraulic safety interlock	6 Oil temperature control	
Controller			
1 12" touch-screen panel (88-468T) / 15" touch-screen panel (568-668T)			

## Optional Features

Clamping Unit			
1 Additional core pulls	2 EUROMAP 12 or EUROMAP 67 robot interface with connectors	3 T-slots	
4 SPI mould platen	5 Multi-function air blow device	6 Mould hanger	7 Ejection-on-fly/ core-pull-on-fly
8 Large ejector stroke	9 Larger max. mould thickness	10 Insulation board for mould	
Injection Unit			
1 Barrel thermal insulation cover	2 Reduced/ enlarged injection unit	3 Cooling ring with temperature control	
4 Bimetallic barrel	5 Stainless-steel hopper	6 Extended nozzle	7 Shut-off nozzle
8 Chrome plated nozzle	9 Bimetallic screw	10 Cooling Fans on barrel	11 eDrive (electric plasticising)
12 Infrared barrel heating system	13 Mixing screw head	14 Rigid PVC specialised injection units	
Controller			
1 B&R controller	2 Beckhoff controller	3 Hot runner temperature control	4 Feed-throat temperature control
5 Valve gates	6 Mega Cloud IOT router		
Hydraulics			
1 Oil level alarm	2 Unscrewing device	3 3R by-pass filter	4 External return line filter
5 External suction filter	6 Larger screw motor	7 Larger oil cooler	8 Enlarge power pack
9 Hydraulic oil preheat	10 High stability hydraulic control	11 Injection closed-loop control	12 Proportional valve for clamping

# MK6 PRO Specifications

Injection Unit	UNITS	JM88-MK6 PRO			JM128-MK6 PRO			JM168-MK6 PRO			JM208-MK6 PRO			JM258-MK6 PRO			JM328-MK6 PRO			JM398-MK6 PRO			JM468-MK6 PRO			JM568-MK6 PRO			JM668-MK6 PRO		
Screw Diameter	mm	31	36	41	36	41	46	41	46	52	46	52	60	46	52	60	60	67	75	67	75	83	75	83	90	75	83	90	83	90	98
Screw L/D	L/D	24.4	21.0	18.4	23.9	21.0	18.7	23.6	21.0	18.6	23.7	21.0	18.2	23.7	21.0	18.2	23.5	21.0	18.8	23.5	21.0	19.0	23.2	21.0	19.4	23.2	21.0	19.4	23.9	22.0	20.2
Screw Stroke	mm	180	180	180	205	205	205	230	230	230	260	260	260	260	260	260	335	335	335	375	375	375	415	415	415	415	415	415	425	425	425
Calculated Injection Capacity	cm <sup>3</sup>	136	183	238	209	271	341	304	382	488	432	552	735	432	552	735	947	1181	1480	1322	1657	2029	1833	2245	2640	1833	2245	2640	2300	2704	3206
Practical Injection Shot Weight (PS)	g	124	167	216	190	246	310	276	348	444	393	502	669	393	502	669	862	1075	1347	1203	1508	1846	1668	2043	2403	1668	2043	2403	2093	2460	2917
	oz	4.4	5.9	7.6	6.7	8.7	10.9	9.7	12.3	15.7	13.9	17.7	23.6	13.9	17.7	23.6	30.4	37.9	47.5	42.4	53.2	65.1	58.9	72.1	84.7	58.9	72.1	84.7	73.7	86.6	102.7
Injection Pressure (Max.)	kgf/cm <sup>2</sup>	2549	1890	1457	2451	1890	1501	2368	1881	1472	2419	1893	1422	2419	1893	1422	2355	1889	1507	2333	1862	1520	2253	1840	1564	2253	1840	1564	2163	1840	1552
Injection Rate	cm <sup>3</sup> /s	80	108	140	104	135	170	138	174	222	169	216	287	169	216	287	302	376	472	351	440	539	442	541	636	442	541	636	540	635	753
Screw Speed	rpm	245			245			224			200			200			200			190			180			180			170		
Nozzle Contact Force	t	4.2			4.2			6.2			6.2			6.2			9.1			11.1			11.1			12.0			12.0		
Nozzle Stroke	mm	275			290			330			380			380			440			470			540			420			450		

## Clamping Unit

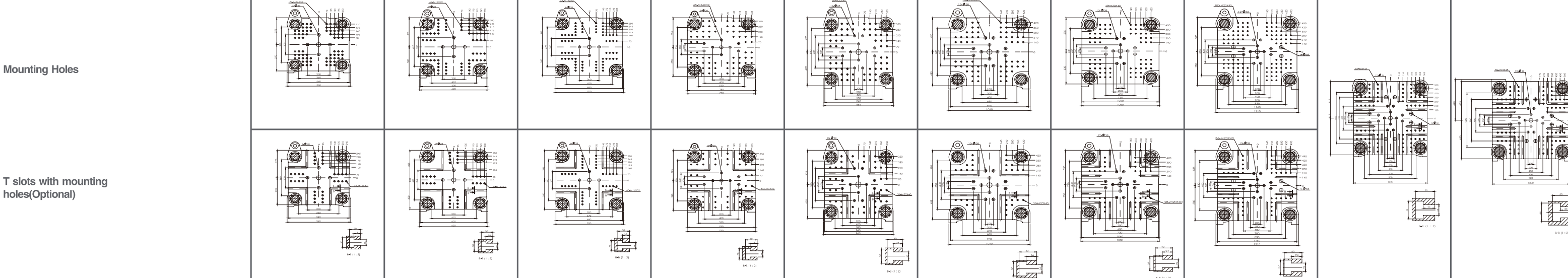
Clamping Force (Max.)	t	88			128			168			208			258			328			398			468			568			668		
Opening Stroke	mm	340			380			450			510			560			660			720			820			870			920		
Space Between Tie Bar (HxV)	mm	360x360			410x410			470x470			530x530			580x580			680x680			730x730			830x830			860x860			920x920		
Mould Thickness (Min.)	mm	125			150			170			180			190			225			250			300			350			380		
Mould Thickness (Max.)	mm	380			450			520			550			580			680			730			850			880			920		
Max. Daylight Between Platens	mm	720			830			970			1060			1140			1340			1450			1670			1750			1840		
Ejector Force (Max.)	t	3.4			4.2			4.2			6.7			8.5			11.1			11.1			16.6			16.6			18.2		
Ejector Stroke	mm	120			120			140			150			150			180			215			220			250			265		
Centre Bore	mm	100			100			125			125			125			125			160			160			160			200		

## Power Pack

System Pressure	kgf	175			175			175			175			175			175			175			175			175			175		
Pump Power	kW	14			17			21			30			30			48			60			72			72			96		
Barrel Heating	kW	8			10.3			12.9			16.6			16.6			26			31.1			35.5			35.5			35.5		
Temperature Control Zones		3+1			3+1			3+1			3+1			3+1			4+1			5+1			5+1			5+1			5+1		

## Others

Machine Dimensions (L*W*H)	m	4.48x1.17x1.88			4.95x1.25x1.94			5.43x1.28x2.02			6.10x1.48x2.15			6.30x1.56x2.24			7.45x1.73x2.21			8.01x1.94x2.21			8.78x2.04x2.26			9.18x1.94x2.33			9.82x2.02x2.24		
Oil Tank Capacity	L	160			200			250			330			330			580			760			850			850			950		
Machine Weight	t	3.3			4.0			4.9			6.8			7.8			13.2			16.7			19.8			21.0			23.0		



The company keeps upgrading the products and reserves the right to change the product specifications and parameters without prior notice. The final interpretation to the above specifications and parameters belongs to the company.