

TECHMATION



TECHMATION



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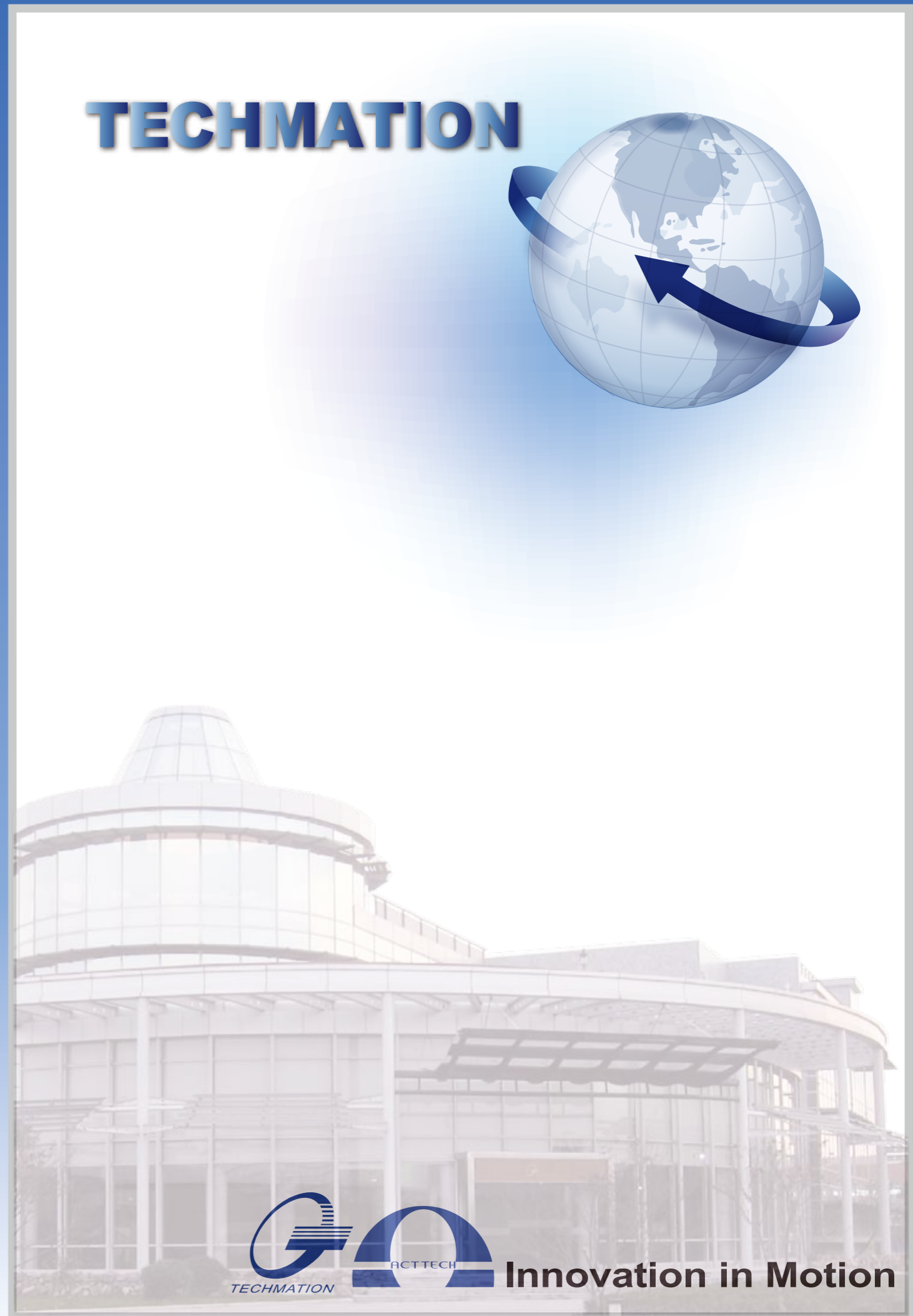
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Innovation in Motion

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Company Profile

Since 1985, Techmation has been established; it always focuses on the field of automatic control of plastic machine, devotes to be the top supplier of automatic system assembly, and provides excellent automatic system solutions to the middle and high end manufacturers of plastic machine. At the present time, the principal products have three major kinds: plastic control system, servo energy-saving system, and plastic machine network management system.



Plastic machine control system

It has been developed until now, **techmation** has become the one of the biggest suppliers of plastic machinery automation control system in China, in the past many years, the sales volume of injection molding machine control system has been the number one in this industry of China steadily. In the base of this technology, it has developed other plastic machine control system accordingly, likes extruder, bottle blowing machine, ring rolls, die casting machine, etc. At the same time, it has developed the control modules of peripheral equipment assembly of plastic machine actively, includes hot runner control system, power meter, robot picker, etc.

Servo energy-saving system

It is the pioneer product guides plastic machine industry to develop toward energy-saving, lower consumption, and environmental protection. At the present time, the function of oil-electric hybrid servo energy-saving of independent research is good and energy-saving is very effective, it can save energy from 40% to 70% than traditional hydraulic system, at the same time, it develops high end plastic machine system assembly of multi-axis control and all electric-motor endlessly.

Plastic network management system iNet

To face the management system of plastic machine end users; it dues to the software of plastic machine control system, connects many plastic machine equipments throw the network, realizes instant monitoring and production management of plenty machines. In the beginning of 2009, it appended the application of 3G technologies, realized the functions of frequency and view help maintain, and provided map-based position, instant online guidance diagnosis. It has been the necessary tools of plastic production of workshop automation management, realized the complete upgrading of manufacturing production.

At the present time, Techmation global service points spread America, Brazil, Iran, India, etc. It supplies instant, effectual terminal services to the global plastic machine customers.

Techmation always develops innovation toward high end technologies, guides the development of plastic processing automation industry. It wishes automation control will become popular and apply to the ecological environment of human in the earth, makes better living environment to human in the earth.

Techmation



1.1-1 Product Characteristics



Characteristic Software

1. Techmation has launched Linux panel.
2. HMI built-in more than 26 languages.
3. Software, including monitoring data, Molding data storage, Alarm records, 10 historical injection curves, Log parameters modified etc.
4. The TOOL in the screen can be selected to display by icon or by characters.
5. SPC monitor.
6. Every action displays its curve, to understand the condition of this machine more detail: Injection curve, charge curve, melted resin temperature curve, quality curve, temperature curve of the driver, heater ON time setting, keeping warm function (available in 386 CPU).
7. Customized design and a variety of graphics library, exclusive picture and the customer choose the mode of operation.
8. Multi levels security and manage function setting in customer side.
9. Stop function: By payment schedule, or by time interval.
10. With network connectivity, iNet software system to realize the machine network, and through the Internet to know the machine dynamics.
11. The expansion function of iNet for single machine's version:
 - PPH function: display any specified one hour production quantity, save 31 days' records continuously.
 - Even record follow up: motor and heater ON/OFF status, the time of switching to semi-automatic, switching to fully automatic, switching to manual mode. (course or fine mold height adjustment), system switch ON/OFF status · setting parameter change · customer's operation performance.



Hardware

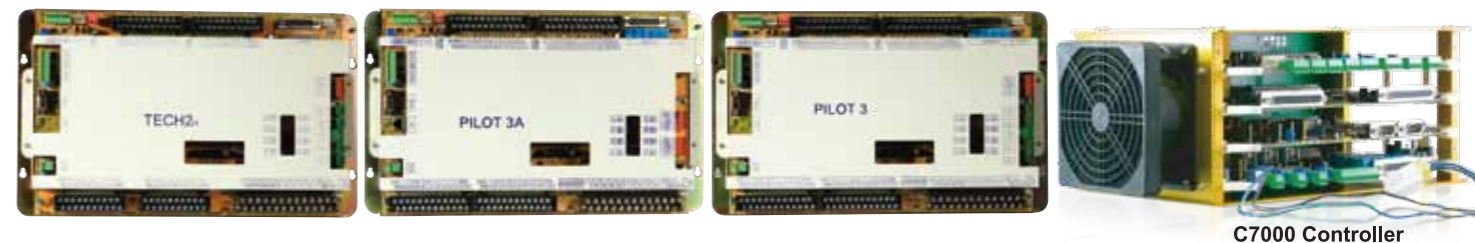
1. Modular design makes HMI more fully diversified.
2. With high-speed, high precision and high stability DSP Control program structure can easy customized and online modifications without re-compiler.
3. Output short circuit protection.
4. Rapid temperature control to meet with the requirements of high speed hot runner control.
5. Via SD / USB interface to achieve data storage, the screen screenshots, print parameters, and update the software.
6. Use of industrial grade TFT LCD display, 7-inch, 8 inch, 8.5 inch, 10-inch, 12 inch, 15-inch, variety of specifications for selection. Beautiful screen with 3D effect, broad perspective and 65535 colorful.
7. High speed CPU, large-capacity memory for programming.

Others

1. Hybrid combination control system HYB: fully closed loop, every action calculated with different PID.
2. Widely used in various types of presses: vertical machine, rubber machine, compressed molding machine, extrusion machine, shoe making machine, blow molding machine, lathe, die-casting machine.....



1.1-2 Controller



	AK628	TECH 1	TECH HYB
size(mm) (H)x(W)x(D)	227*424*56.5	227*424*56.5	227*424*56.5
PB	24	24	24
PC	24	28	28
Relay	11 { 5 (heating)+3 (motor) +3 (other) }	12 { 6 (heating)+3 (motor) +3 (other) }	12 { 6 (heating)+3 (motor) +3 (other) }
TEMP	5 zone(barrel)+1 zone (Hyd.Temperature)	6 zone(barrel)+1 zone (Hyd.Temperature)	6 zone(barrel)+1 zone (Hyd.Temperature)
AD	4	4	4
DA	3(A)//2(V)	3(A)//2(V)	1(A)+2(V)
IO	8in+8o	8in+8o	8in+8o
Communication	RS232	RS232 NET	RS232 NET
Switch power	24V, Dependant Spec		

	TECH 2	PILOT3A	PILOT3 ^{CE}	C7000
size(mm) (H)x(W)x(D)	255*424*56.5	255*424*56.5	255*424*56.5	230*337*207
PB	32	40	40	32points or 48 points
PC	32	40	40	32points or 48 points
Relay	16 { 9 (heating)+3 (motor) +4 (other) }	16 { 9 (heating)+3 (motor) +4 (other) }	16 { 9 (heating)+3 (motor) +4 (other) }	9 (heating)
TEMP	9 zone(barrel)+1 zone (Hyd.Temperature)	9 zone(barrel)+1 zone (Hyd.Temperature)	9 zone(barrel)+1 zone (Hyd.Temperature)	9 zone(barrel)+1 zone (Hyd.Temperature)
AD	8	8	8	8
DA	4(A)// 4(V)	8(V)	4(A)//4(V)	3
IO	8in+8o	8in+8o	8in+8o	Max 96 points
Communication	RS232 NET	RS232 NET	RS232 NET	RS232 NET
Switch power	24V, Dependant Spec			

Product characteristics:
Customized Networked Intelligent



C8000 Controller

	C8000
PB	32 points +48 points for panel
PC	32 points +48 points for panel
Relay	9 (heating)
TEMP	9 zone(barrel)+1 zone
AD	6ch +2ch (+-10v)
DA	8
communication	NET

1.1~3 HMI panel



size(mm)	470(L) x 260(W)	470(L) x 260(W)
Central Processor	Intel®XScale PXA255 32bit @ 400MHz(ARM core)	Intel®XScale PXA270 32bit @ 520MHz(ARM core)
LCD Type	7" Color TFT	8" Color TFT
Baud Rate	38400 bps 9Pin panel & controller cable connector	38400 bps 9Pin panel & controller cable connector
Operation Temperature	-10~50° C	-10~50° C
Storage Temperature / RH	-20~85° C / 85%	-20~85° C / 85%
Network	1 Port	2 Port
Menory Card	SD Card	Universal Serial Bus (USB) 1 Port

size(mm)	470(L) x 260(W)	600(L) x 335(W)	600(L) x 335(W)
Central Processor	Intel®XScale PXA270 32bit @ 520MHz(ARM core)	Intel®XScale PXA270 32bit @ 520MHz(ARM core)	Intel®XScale PXA270 32bit @ 520MHz(ARM core)
LCD Type	8.5" Color TFT	10.4" Color TFT	12.1" Color TFT
Baud Rate	38400 bps 9Pin panel & controller cable connector	38400 bps 9Pin panel & controller cable connector	38400 bps 9Pin panel & controller cable connector
Operation Temperature	-10~50° C	-10~50° C	-10~50° C
Storage Temperature / RH	-20~85° C / 85%	-20~85° C / 85%	-20~85° C / 85%
Network	2 Port	2 Port	2 Port
Menory Card	Universal Serial Bus (USB) 1 Port	Universal Serial Bus (USB) 1 Port	Universal Serial Bus (USB) 1 Port

Product characteristics:
Customized Networked Intelligent

1.2 Integrated control module peripherals



HOT RUNNER

48 zones

More and more plastic injection product need quality and make use of difficult production resin and complicated molds, the production should rely on the help of peripheral equipments. They cover: product pick-up robot, hot runner controller, sequence gate valve controller, in-mold-decoration system, mold surface quick heating system, etc.. These peripheral equipment together with plastic injection molding machine and mold will become a production unit (production cell). It deeply concerned with the production efficiency of this organization.

Techmation Co. was insisted in research and develop the automatic controller system. We develop the hot runner heater control system, in mold labeling unit control system, and mold surface quick heating control system since 2011. In coupling with Intelligent Network of iNet system, we can integrate more operation information and reaserch more production data., It makes the production equipments efficiency raise up the very high level .

So,Techmation controller system will be the best choice of the industry.

12 zones



The specification of hot runner controller:

- 8" TFT LCD display, big size and beautiful.
- With temperature curve display, it is very good for the user to understand the temperature control situation.
- Our network monitoring function can storage the temperature monitoring curve, temperature abnormal important information , so that convenience for production management.
- It is very convenience for setup production after mold change. All the functions are suitable for application of electrical voltage 110 – 240VAC and power frequency of 60/50 Hz.
- Micro computer PID auto control with computer auto-tuning function, it confirms the temperature control accuracy.
- Refer to the different heat up speed requirement application, there are 3 selectable modes of fast / normal / slow heating.
- Push button can change to be manual setting mode of power output by percentage (%).
- Selectable thermocouple mode: J TYPE or K TYPE, Display mode: Celsius (°C) or Fahrenheit (°F)
- Output current / Watt (15A / 3600W - 240V) (15A / 1800W – 120V)
- There are thermocouple detecting function(open circuit / shortage circuit / reverse polarity connection)and heating open circuit detecting function.
- Switch ON pre-heating function – first slowly heat up to preset temperature then fast heating to target temperature.
- Time setting, automatic switch ON to pre-heating function.
- Schedule of one week for automatic heater on function.

24 zones



More...

Power Meter

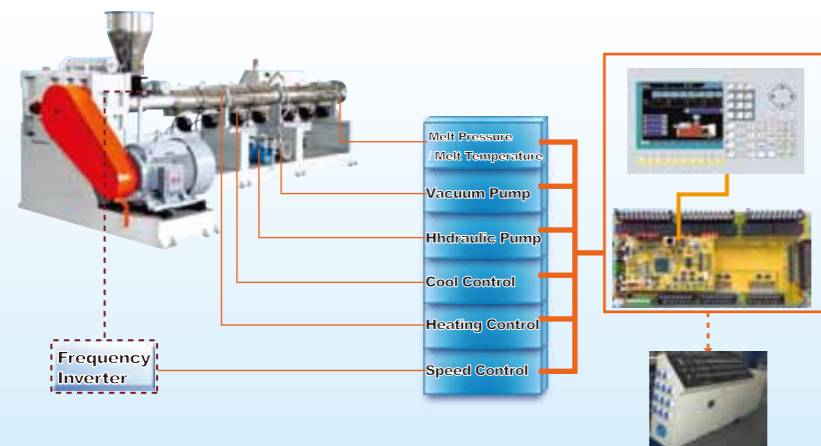


Robot Picker



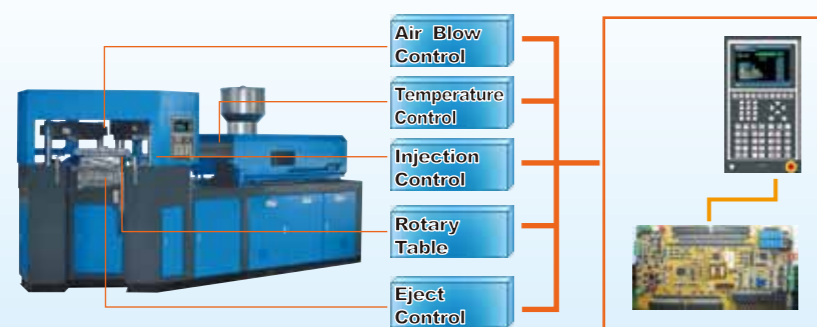
1.3 The New Area of Customization

Exturder Control System



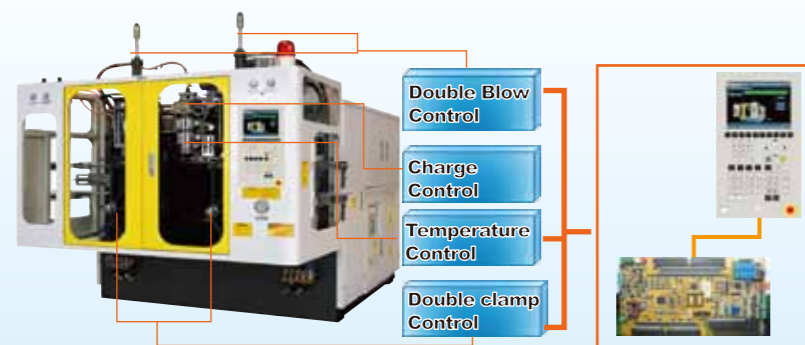
- Technical Characteristic :**
- ◆ Temperature monitoring, Accurate PID control.
 - ◆ Synchronous closed-loop control.
 - ◆ Melt pressure control.
 - ◆ More communication interface.
 - ◆ Man-machine panel, easy operation.
 - ◆ Alarm information showing.
 - ◆ High performance-price ratio.

Injection Blow System



- Technical Characteristic :**
- ◆ Temperature module adopt PID control, and the precision is higher.
 - ◆ High control precision, excellent product performance.
 - ◆ Motion Transition is smooth, quick, and accurate positioning.
 - ◆ Strong expanding ability.
 - ◆ Man-machine panel, easy to operate.
 - ◆ Alarm information showing.
 - ◆ Low-cost input.

Blow Molding System



- Technical Characteristic :**
- ◆ Temperature adopt intelligent PID control, the error $\leq \pm 1^\circ\text{C}$.
 - ◆ Position, Time and Precision control. the minimum error of time is 0.01S.
 - ◆ Blanking time of racks automatic balance.
 - ◆ Strong expanding ability.
 - ◆ Man-machine panel, easy operation.
 - ◆ Alarm information showing.
 - ◆ High performance-price ratio.

Parison control system

Techmation's Parison control system adapts high performance DSP IC chip to be the central control unit. Attached with a 8" high resolution LCD with touch panel to be the Human-Machine interface. It can be easily achieved the edition of preform thickness curve. This curve control the extruding thickness of the preform and motively follows up the real response condition. Offers the real time operation condition clearly to the operator.

The system of higher cost-performance value is more saving with material and higher yield than the traditional controller.



Specification of Parison control

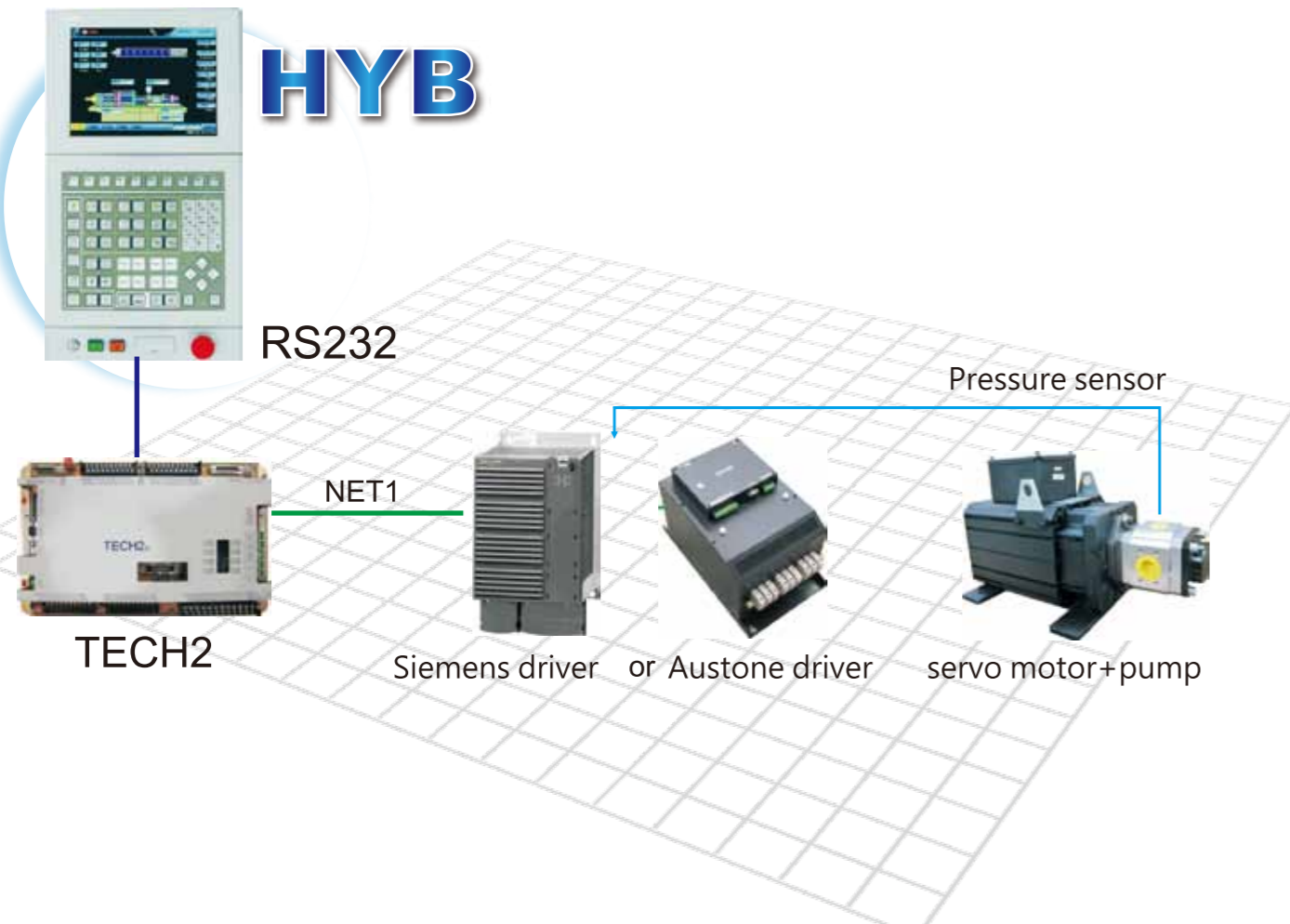
Description	Specification	Remark
Dimension	288*240	Unit:mm
LCD Resolution	800*600	65535 Color
LCD Size	8"	
Screen	Touch panel	
KEY	4	
USB interface	1	
Ethernet interface	1	
Adjustment and setting	Rotation wheel	10XSoftware of 10 times selection
Curve points	100	
Digital input	12	
Digital output	20	12 transistor output + 8 relay output
A/D(Channel)	4	16bit, 0~10V
D/A(Channel)	4	16bit, 0~10V/-10~10V interchangeable

2.1 Hybrid machine controller

**High performance,
High accuracy, Energy-Saving**

Techmation hydraulic servo system is Tech.mation pilot controller and high-powered all-digital control exercise card to go with gerotor of famous European brand, high-powered drive, magneto servo motor, integrate with a complete PID closed-loop control system.

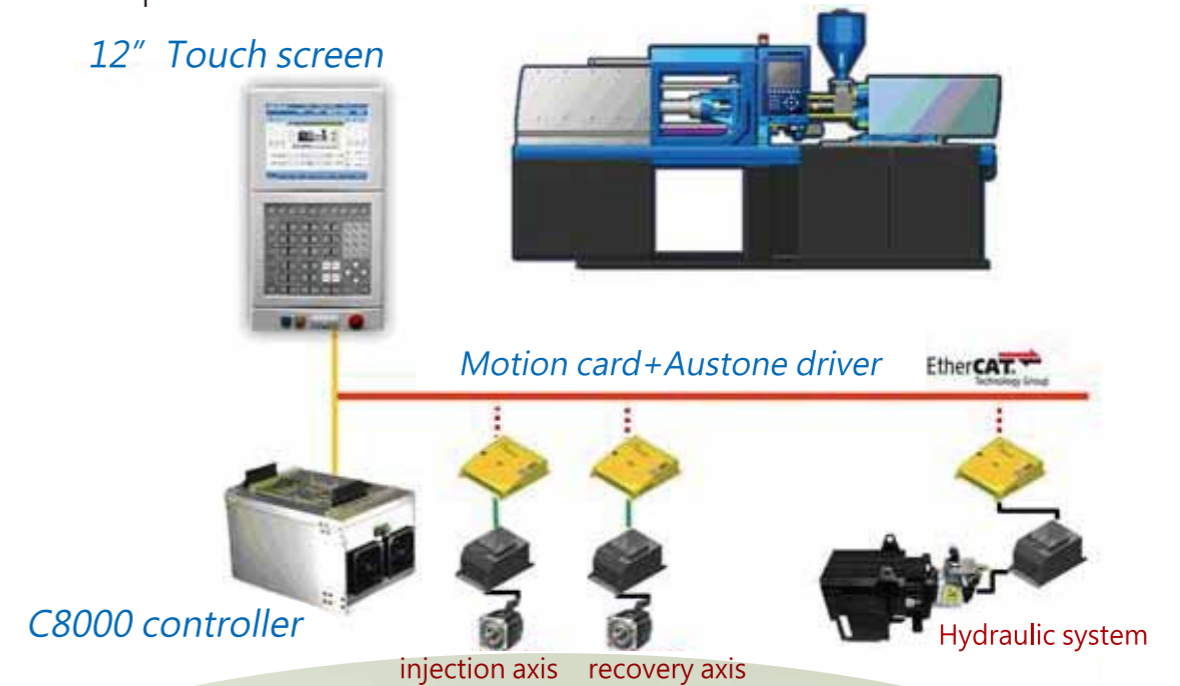
Servo system has an advantage in high performance, high accuracy, and energy-saving. The perfect combination of servo system and Techmation controller products can practice the different control plan of multi-axis linkage or multi-axis coordinated motion, realizes the different requires of plastic machine better, increases operational efficiency of machine equipment, decreases power dissipation, raises precision and stability of machine operation, it is advantage to revise and maintain the function according to customer requirements, it also has best advantage in market applications.



Oil-electric hybrid HYB3 system

Oil-electric hybrid servo energy-saving system use compound operation of all closed-loop control no matter pressure, speed and position, really realize all closed-loop control of high precision and high repetitiveness, it is the first creation in the domestic market. This system combines hydraulic and electro-dynamic type, it is faster, more precision than traditional hydraulic drive machine and lower cost than all power-driven.

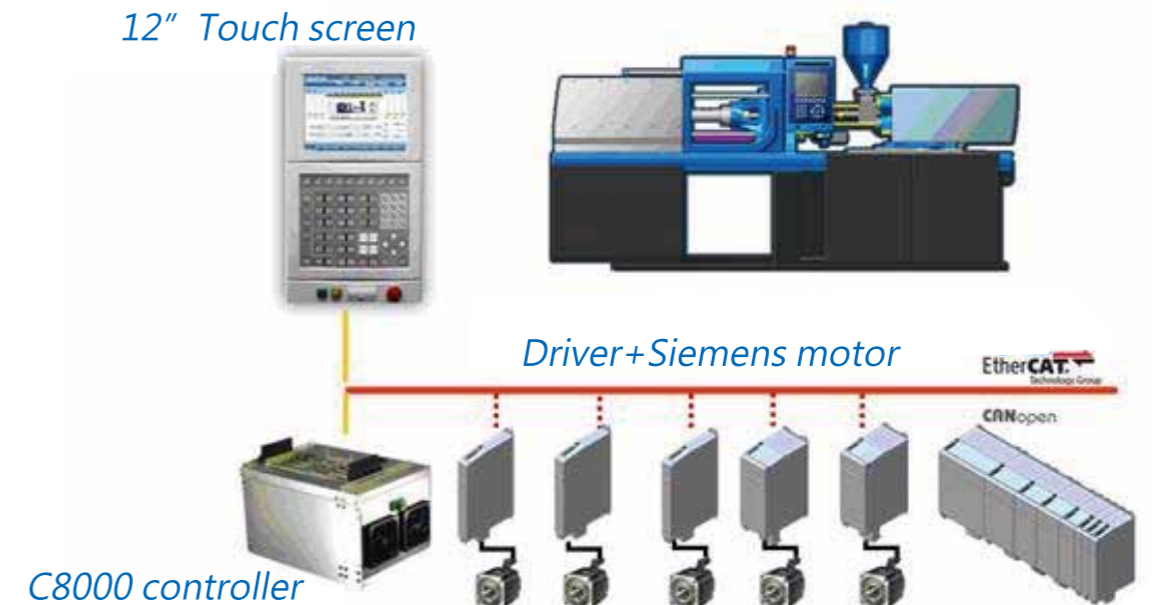
12" Touch screen



All-electrodynamic HYB5 system

All-electrodynamic system consists of drives, electric motors and motion modules primarily. The whole all- electrodynamic control system assembly is consisted of the best power system of European drive and electric motor, plus Techmation's best motion control module and flexible PLC system. This system is the best and most competitive full programme for high end plastic machine.

12" Touch screen



2.3-2 All-Electric Injection Molding Machine Controller

Fast, Steady, Accurate, Eco-friendly

Techmation and Siemens collaboration is the best choice for American, European, and Japanese all electric machine.

System Structure



Ethernet Cable



Techmation

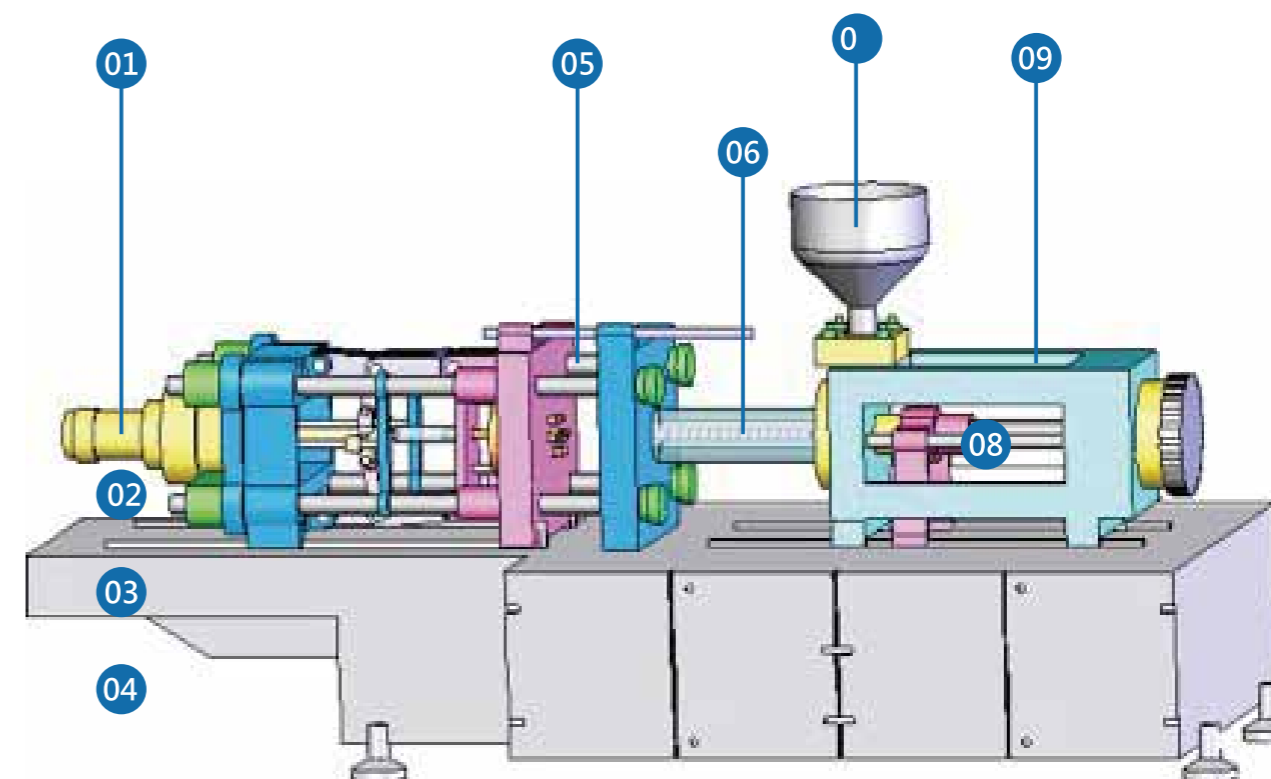
- Over 28 years of experience in control system development.
- Abundant application experiences.
- High market occupancy.
- Convenient and flexible control system.

Siemens

- Servo electric machinery technology inventor.
- Accurate motor controller technology.
- 100% European criteria safety check standard.
- 100% German quality standard.

System Characteristics

- Superior servo drives in the world: high speed, high torque, high efficiency and high dynamics.
- Axis position, velocity, pressure and force monitoring. Production record monitoring.
- Multi-axis simultaneously composite movements.
- Also applicable to hybrid, half-hydraulic and half-electric machines.
- 10 zones PID temperature controller.
- Simultaneously 5 axis Siemens servo motor movement.
- The most advanced Siemens Dynamic Servo Control for Injection Molding Machine in Asia.
- Every speed and pressure curve axis monitor.
- Page printing.
- USB storage of parameters.
- European CE standard for safety power control.
- Position accuracy < 0.01mm inaccuracy.
- Mold and ejection protection < 1% torque.
- Injection rotation to hold pressure, back pressure control < 1% inaccuracy.
- Speed accuracy < 0.1 % inaccuracy.
- Product weight accuracy < 0.08 % inaccuracy.
- Delicate device, simple wiring.

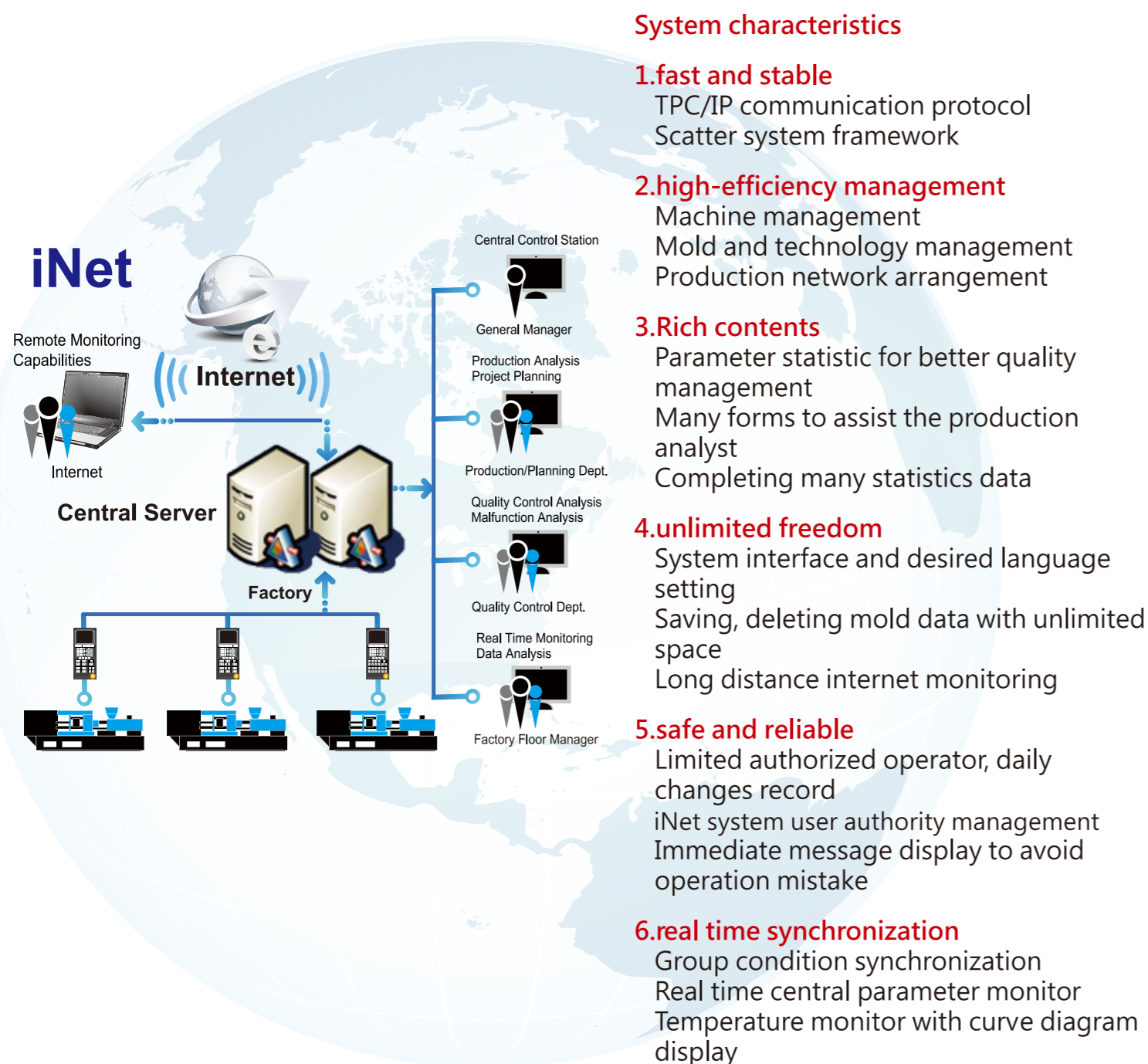
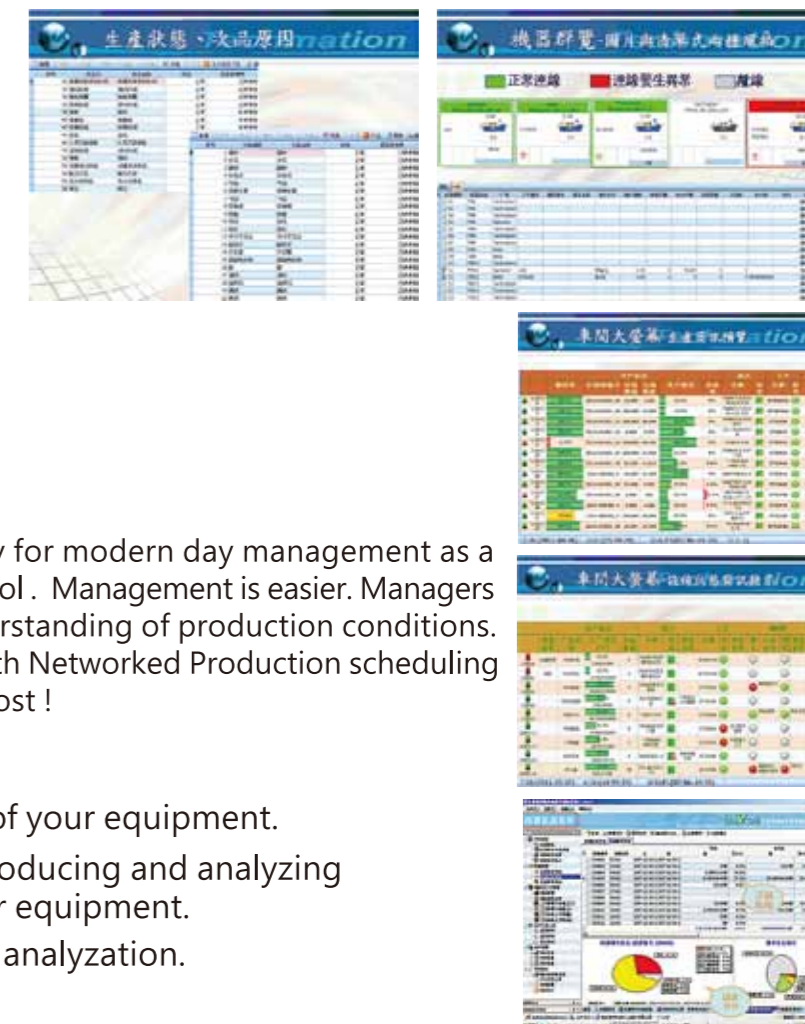


<p>01 Mold height Full-automatic mold height adjustment</p>	<p>03 Build up clamping force Feed forward control Closed loop control</p>	<p>05 Ejector Forward(single, multi or shake) Belt breaking monitoring Protection under 1% torque</p>	<p>07 Recovery Back pressure control with pressure sensor or without pressure sensor Recovery work calculation</p>	<p>Injection >250mm/s Forward backward V(s) profile Pressure limiting P(s) profile Switching from V(s) to P(t) by position and/or pressure or time Hole pressure: closed loop P(t) profile Injection work calculation P(s) V(s) curve recording Cushion monitoring</p>
<p>02 Close mold >500mm/s Mold protection under 1% torque Belt breaking monitoring</p>	<p>04 Open mold >500mm/s With core-pulling</p>	<p>06 Temperature 10zones PID control</p>	<p>09 Injection unit Accurate touching position & force Fast to slow speed protection</p>	
		<p>08 Decompression</p>		

3.1 iNet Injection molding machine Network Computer Integrated Manufacturing system

iNet is a set of complete factory managing solution through network for plastic injection factory. It helps the production and factory management for plastic injection factory. Through network connection, it becomes the bridge connection between managing layer and the production side. This allow the administrator to carry out global operation control. It provides new approach to managing for customers,handling world's styling, and becoming the must equipped weapons to lead enterprise to success.

- Increasing the production efficiency by at least 30%
- Reducing the operation manpower by 30-40%
- Saving 40% of fry-shot material ◦



System characteristics

- 1.fast and stable**
TPC/IP communication protocol
Scatter system framework
- 2.high-efficiency management**
Machine management
Mold and technology management
Production network arrangement
- 3.Rich contents**
Parameter statistic for better quality management
Many forms to assist the production analyst
Completing many statistics data
- 4.unlimited freedom**
System interface and desired language setting
Saving, deleting mold data with unlimited space
Long distance internet monitoring
- 5.safe and reliable**
Limited authorized operator, daily changes record
iNet system user authority management
Immediate message display to avoid operation mistake
- 6.real time synchronization**
Group condition synchronization
Real time central parameter monitor
Temperature monitor with curve diagram display

iNet – Customized specifically for modern day management as a “Production Process” manage tool . Management is easier. Managers have real-time and accurate understanding of production conditions. Overall planning is streamlined with Networked Production scheduling to achieve significantly reduced cost !

Equipment Management

- Real-time monitor for all of your equipment.
- Connecting, operating, producing and analyzing data records for all of your equipment.
- Alarm data recording and analyzation.

Mold Management

- Maintain Mold specification information
- Mold and it’ s associated product management.
- The mold service condition records and total production counts of the individual molds.

Parameter Management

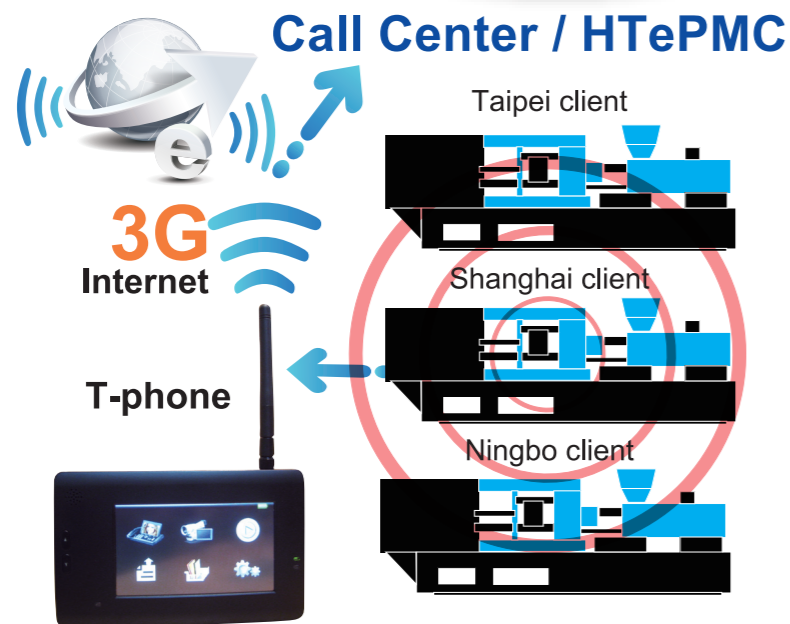
- Administration of standard parameter information
- Setting of the parameter limited range
- Checking and reviewing the modified parameters
- Preset access levels / limited by management

Production Process Management

- Material Temperature during operations .
- Monitor data during operations .
- Ejection data during operations .
- Mold temperature data during operations.

3.2 3G Cloud multimedia network communication

Techmation 3G Call Center is the injection machine maintenance system of high efficiency and low cost, Techmation has begun to plan and develop since 2009. 3G Call Center primarily has three functions: location, T Phone, and remote help.



Save Time&Money ! 3G CallCenter TPhone !
Save Money ! 3G CallCenter Remote Assistant !

Machine Positioning

3G CallCenter provides machine positioning function by F100, 3G sim card, good 3G signal, and telecom positioning service. Machine positioning has two ways, list and map, for customer use.



TPhone

TPhone is a hand-held audio/video maintenance tool, designed by Techmation. TPhone can be movable around a machine. With this feature, users can check hardware, circuit on the injection molding machines and send the realtime images to 3G CallCenter, and get assistant.

Remote Assistant

Remote Assistant is designed for sending the machine settings to 3G CallCenter, for recovering an injection molding machine.

Simply saying, with Machine positioning, we can locate the machine quickly. With TPhone, we can fix the faults remotely. With Remote Assistant, we can fix the software settings remotely. With 3G CallCenter, we can quickly recover the machines to work.



History



1985 Remarkable Establishment. Techmation developed the thumb switch injection molding machine controller.

1987 Techmation developed the single board, temperature control, pressure, double potentiometer, color draft, and more functions in the small control system.

1990 Techmation completed APC-5000 system development and developed the DCS-220 numeral controller; Techmation started to use the single board and double CPU controller product and also entered the PC-BASE software development era, pursuing the flexibility and user friendly. Moreover the close loop controller surface technology and the program controller were developed.

1995 PC-BASE design and the improved DOUBLE CPU controller that allowed the multi combination on control system made the customers and market became more convenient.

1999 Conform the e-world's trend, Techmation started developing the integrated network system (iNet). Using the network card, the injection molding machine obtained the data and transmitted to the central server for a better data management. It would allow the user to improve proficiency and efficiency in the quality control.

2000 The combination of iNet system and Techmation's controller had passed the test on the 64 machines. Techmation continued the development of digital network system software, and hardware project that would make Techmation the leader of plastic industry in the 21st century.

2003 Developed iNet system with Linux as the operational system to reduce the cost. Using MIPS technology with 6.5" and 256 color surface. Completed the DSP54X control system technology with fast and accurate control.

2004 Import ISO management system and AK580 controller passed CE certification.

2005 iNet has been on the market officially. Techmation has supplied the first electric-network management system in this industry, started Hydraulic servo system for Injection molding machine(HYB).

2007 All electric Injection molding machine HYB5 has been on the market. Techmation has launched Linux panel, crossed the DOS age.

2008 Techmation has launched i-TECH Techmation new view technology, included single machine interface pilot system, modern plastic machine network management. This technology guided plastic industries into new century network management, developed the global service network actively.

2009 Techmation has started HYB3 Hybrid power system for Injection molding machine, started to supply injection molding machine 3G application function, located the machine's real address.

2010 Techmation has completed the Call Center of first edition; it developed tubular, map-based position function, provided the machine information. The Call Center also had frequency and video function.

2011 Techmation has integrated 3G function, VOIP, injection molding machine further. It has supplied instant online remote help, guidance diagnosis, developed control modules of injection machine peripheral equipment assembly, hot runner, and wattmeter to go on the market.

2012 Servo energy-saving system is more mature, cost-performance index is higher, and its application is more diversified. iNet supplies more perfect function, combines more new technologies to integrate currently existing system and products. Techmation makes a Cloud multimedia network communication service platform of injection molding machine.

Techmation

