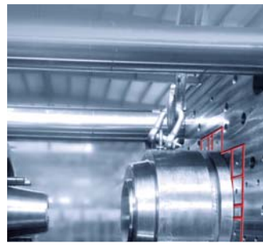
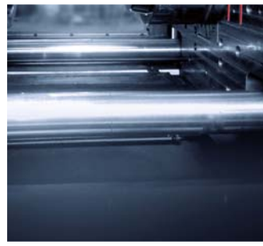
QUICK MOLD CHANGE

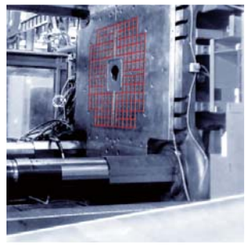
电控永磁快速换模系统

高效 安全 柔性 质量

Simple、Fast、Safe and Efficient







上海塔池机械有限公司

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企业简介 / About us

上海塔池专注于电控永磁快速换模系统的生产和应用。我司团队的前身为意大利泰磁中国团队，也就是业界俗称的“磁力模板”在中国的第一批探路人，历经中国市场十多年的成长，为成千上百套磁力模板提供安装，维护保养和维修服务。2012年，团队人员自主成立上海塔池机械有限公司，秉承原有卓越的设计理念，深厚的技术服务底蕴和精致的加工能力，向中国市场销售以“AMAG”为品牌的磁力模板，投放市场至今，无一起质量投诉，深得客户信赖和好评。

Tai Chi Magforce (Shanghai) Machinery Co., Ltd has always devoted itself to manufacturing and applying the permanent-electro magnetic QMC system. Our company grew out of Italian Tecnomagnete’s Chinese work team which was also the first explorers in China, the so-called “Magnetic Platen” in this field. Over the ten years of development in the Chinese market, we have provided installation, maintenance and repair services for hundreds of thousands of magnetic platens. Since it was founded by the team in 2012, Tai Chi Magforce (Shanghai) Machinery Co., Ltd has always adhered to the original excellent design philosophy and inherited the ability in exquisite processing and the profound deposit in technical services, to sell the “AMAG” magnetic platens to the Chinese market. Since launched into the market, it has caused no complaints where quality is concerned, thus being deeply trusted and well received by customers.

Thanks to the successful accomplishments of projects, we have earned reputation and customer’s confidence, and we will serve our customers with our “Work of Art” products as always.

合作伙伴 / Partner

磁力模板应用案例 / Magnetic Platen Application Cases

极具有竞争力的优势 / Competitive Advantages

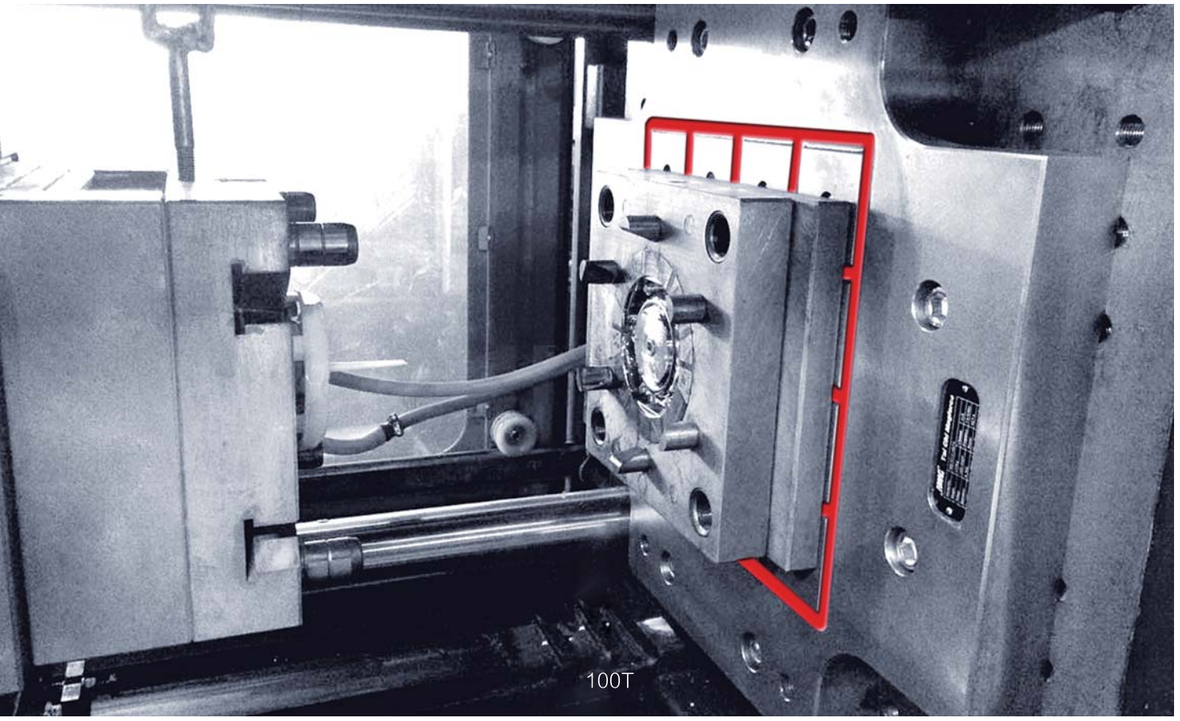
300T圆柱形深腔模
300T Cylindrical Deep-cavity Mold

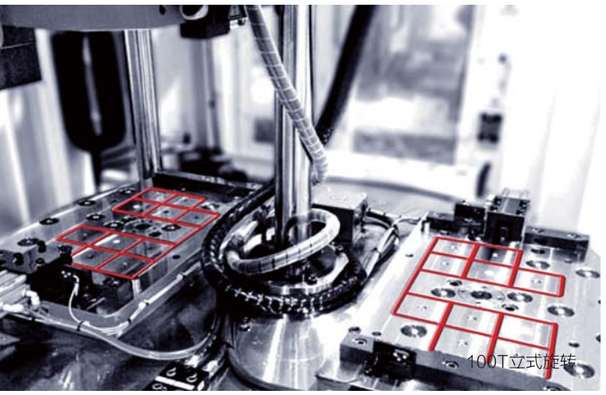
快速的收回投资

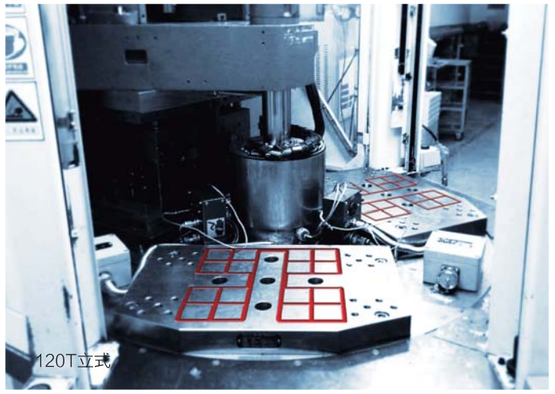
QMC快速换模系统，能够显著提升生产力，几个月的使用就可以产生高价值的投资回报

Fast Returnon Investment

QMC (quick mold change) system can remarkably raise the productivity. The use of it for several months can produce a high return on investment


100T


100T立式旋转


120T立式

高效

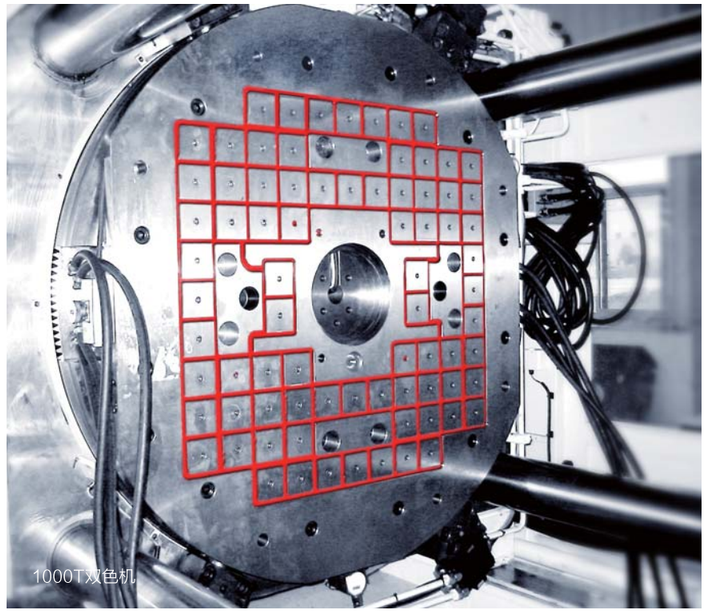
颠覆传统换模方式，节约90%安装、拆卸模具时间

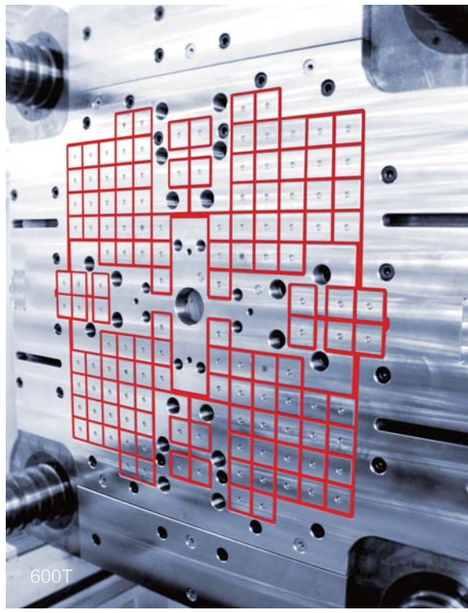
适应小批量、多批次的生产，大幅提高生产效率，提升企业竞争力

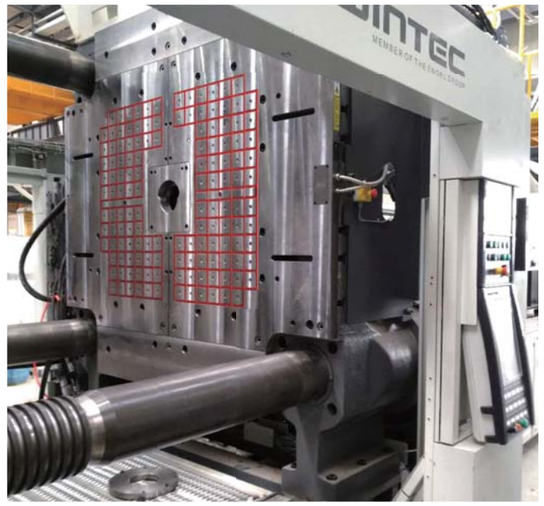
Efficient

Comparing with the traditional way of mold change, it can save the time in mold installation and disassembly by 90%.

Suitable for the small-lot and multiple-batch production, it can greatly enhance the production efficiency and promote the enterprise competitiveness.


1000T双色机


600T



没有额外的成本

您的初次投入就是唯一的投资

不需要对QMC快速换模系统进行传统保养

工作中不消耗电能

没有生产损失

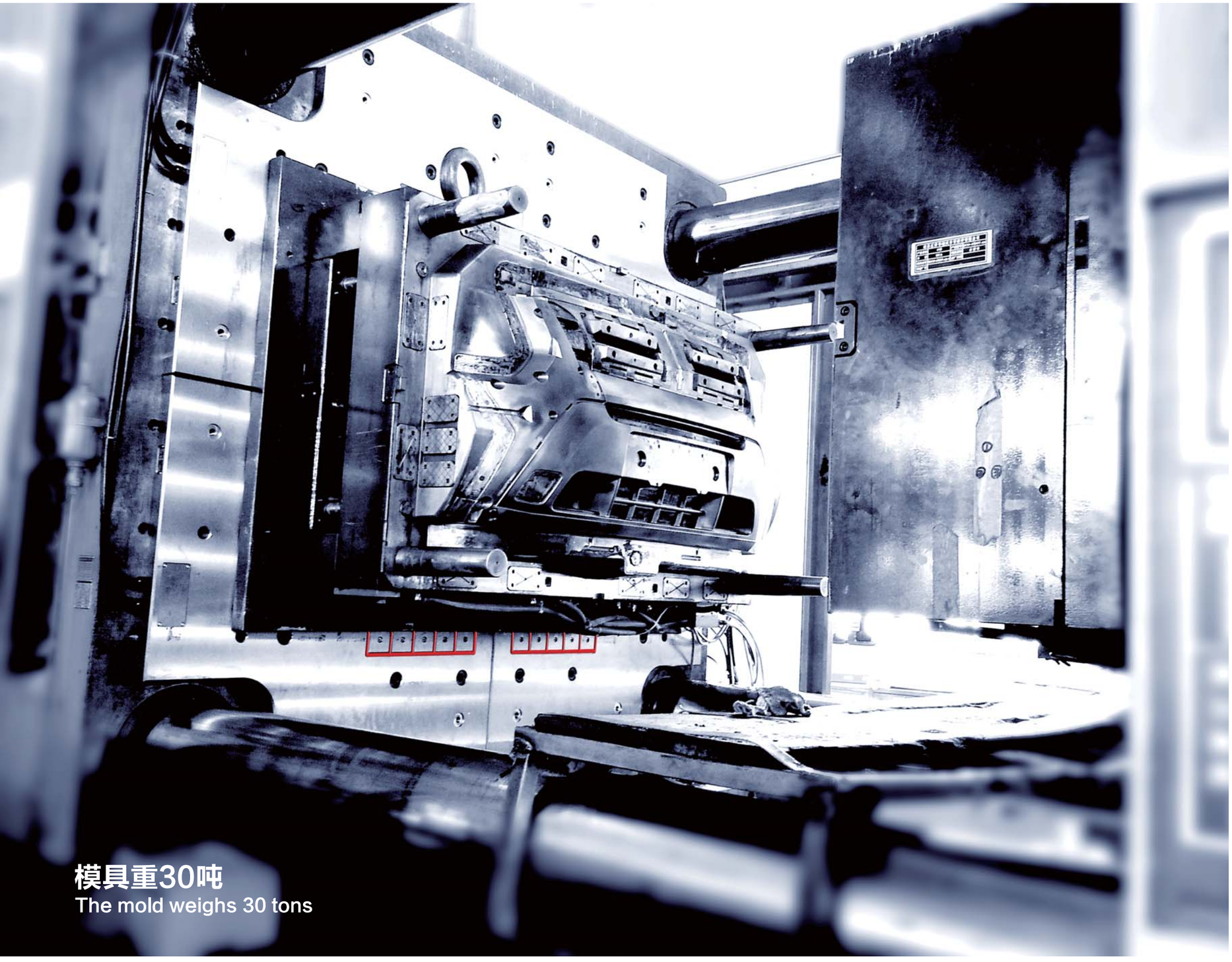
No additional cost is needed

Your initial investment is the only investment needed.

The traditional maintenance for the QMC system is not needed.

No electric energy is consumed during its operation.

No production loss is caused.



模具重30吨
The mold weighs 30 tons

2800T

安全

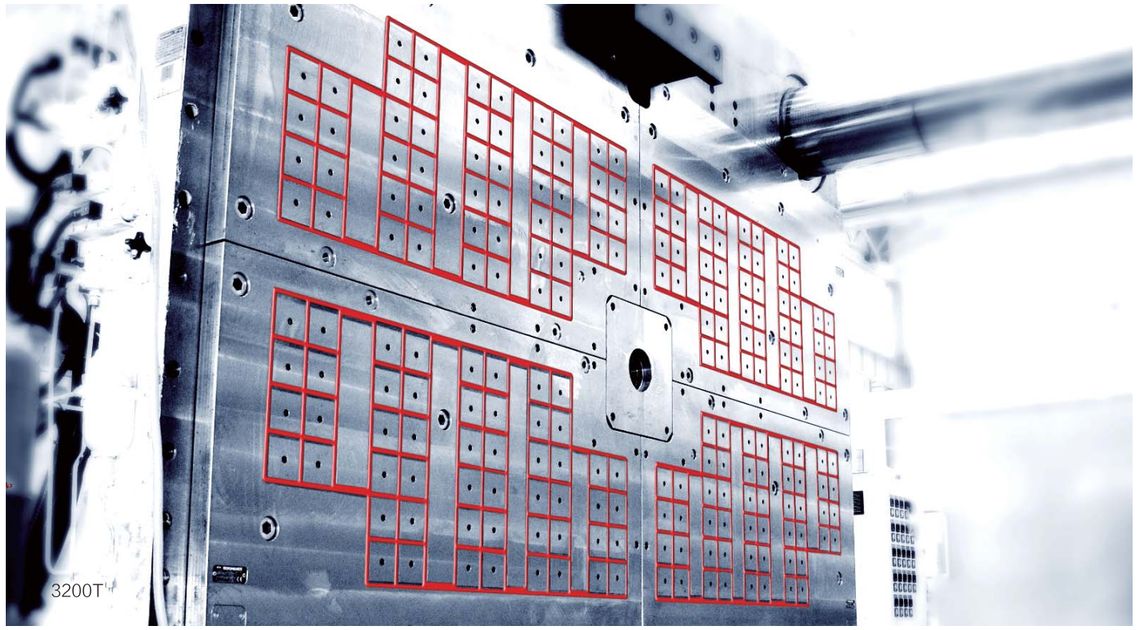
只有通过QMC快速换模系统全部的安全检测后，注塑机才能工作

磁板在充磁状态下发生停电或断线的情况也不会脱磁，使用安全

Safe

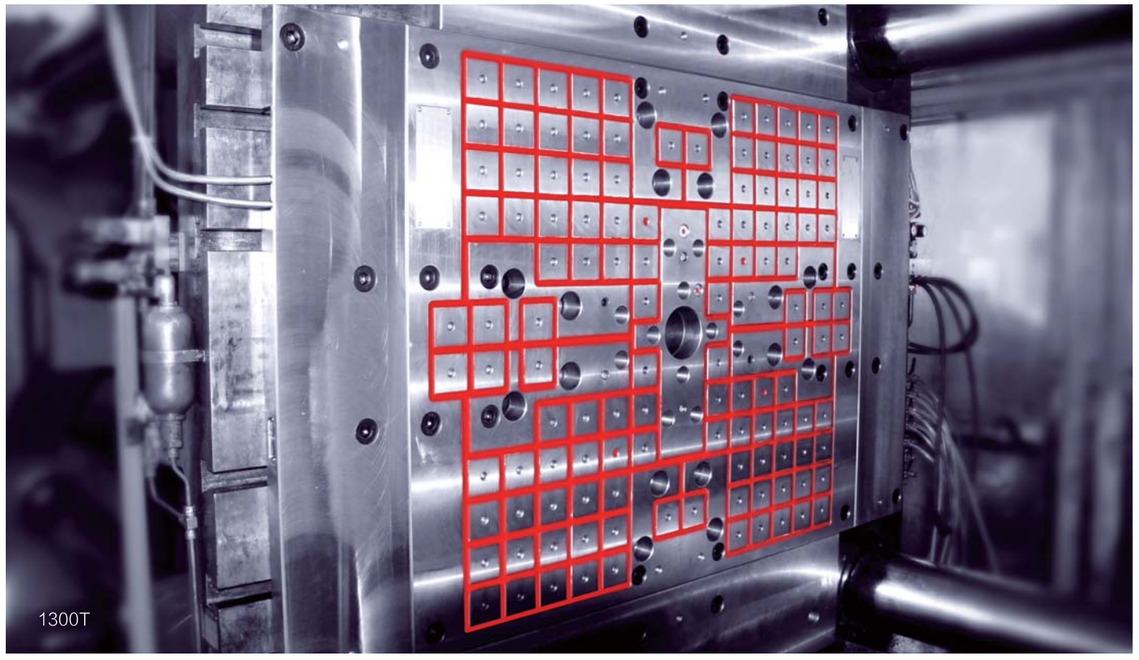
The injection molding machine will not work until it has passed the all safety check by the QMC system.

The magnetic platen will not demagnetize under the magnetizing state when there is a power failure or disconnection, thus achieving a safe use.



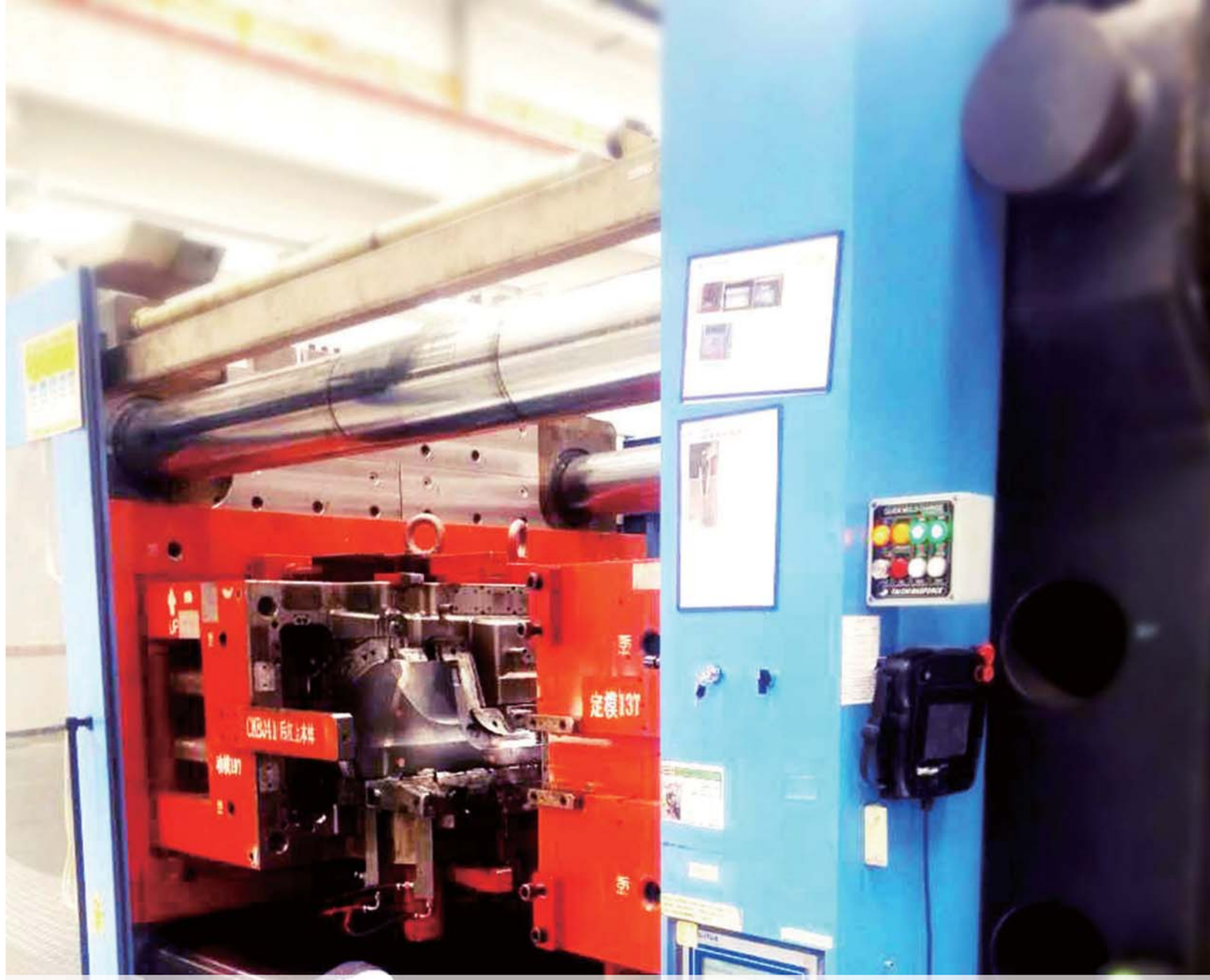
产品质量

模具背板与磁力模板是整个面的接触，模具不会受到任何重压而变形，从而提高产品的质量和重复精度



Product Quality

The face-to-face contact between the mold backboard and the magnetic platen will not make the mold deform due to heavy load, thus improving the product quality and the repeated accuracy.



2200T

便捷

一个普通的模具安装工，不需要特殊技能，就可以站在注塑机外面轻松的更换模具

模具更换和安装的时间降到原来的1/10

Convenient and Fast

The mold can be replaced easily by a common mold installer standing outside the injection molding machine, during which no special skills are needed.

The time for mold replacement and installation has been reduce to 1/10 of the original time needed.

免维护

磁力模板无运动部件，意味着无磨损，只需擦拭清洁磁板表面即可

在吸住或放开模具时需要用电1–4秒钟，平时工作中无需用电，对电气部件损耗小，属于免维护产品

Maintenance–free

There are no moving parts in the magnetic platen, which means that no wear or abrasion will be caused. It is only necessary to wipe the surface of the magnetic platen.

It will take one to four seconds to hold or release the mold. Due to the reason that no electricity is needed in the operation, the damage to the electrical parts is small. Thus it is the maintenance–free product.

柔性、提高能力

注塑机模板上没有了传统夹具的约束，从而提高了注塑机的容模量，可以安装更大、更复杂的模具

Flexibility and Improvement of Capability

The absence of traditional clamp on the platen of the injection molding machine has improved the mold width and length, which means that it can install larger and more complex molds.

磁板结构 / Structure of Magnetic Platen

每套QMC快速换模系统都是“艺术品”/ Each set of QMC system is “work of art”.

定位环

用于快速定位模具

Locating Ring

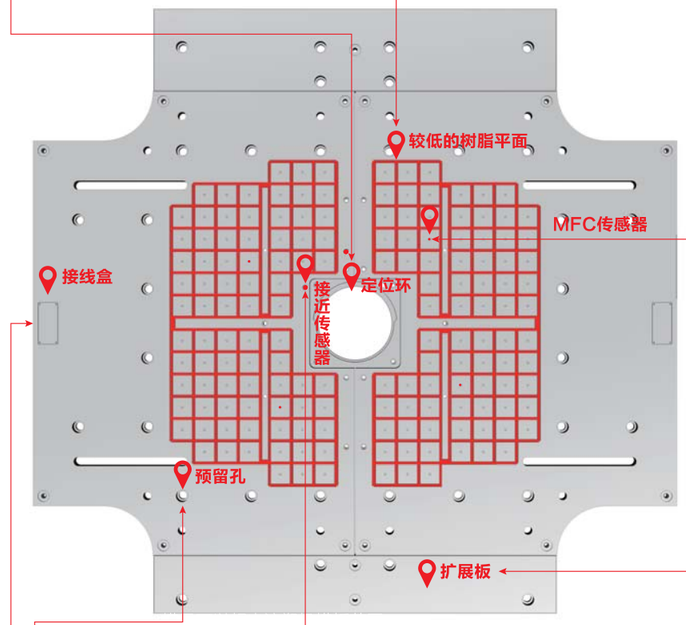
It is used to rapidly locate the mold.

较低的树脂平面

具有耐高温和高阻抗性能的环氧树脂密封，高度比磁极略低一些，有利于散热。

Lower Resin Plane

It has a heat–resisting and high–impedance epoxy seal which is slightly lower than the magnetic pole, thus facilitating the heat dissipation.



MFC传感器

通过部分特殊设计的磁极来检测充磁后的磁饱和强度。

MFC Sensor

It is used to detect the magnetic flux intensity after the magnetizing with the specially designed magnetic pole.

扩展板

矩形的钢板增加磁板和模具的接触面积，可预留滚轮加工孔

Expansion Board

The rectangular steel platen has increased the contact area between the magnetic platen and the mold, and the holes for roller processing can be reserved.

预留孔

用于安装磁力模板的固定孔和动模侧的模具顶出孔

Reserved Holes

It is the fixing hole for installing the magnetic platen, and also the ejection hole at the movable mold.

接近传感器

用于检测模具背板与磁力模板之间的间隙，当模具位移超过0.2mm时立即停机报警，确保人员、设备、模具的安全。

Proximity Sensor

It is used to detect the gap between the backboard of the mold and the magnetic platen. The machine will shut shown to make an alarm when the displacement distance of the mold has exceeds 0.2mm, to ensure the safety of workers, equipment and molds.

接线盒

加工到磁力模板的内部，具有防水和高阻抗的特性

Junction Box

Featuring the water tightness and high impedance, it is built within the magnetic platen.

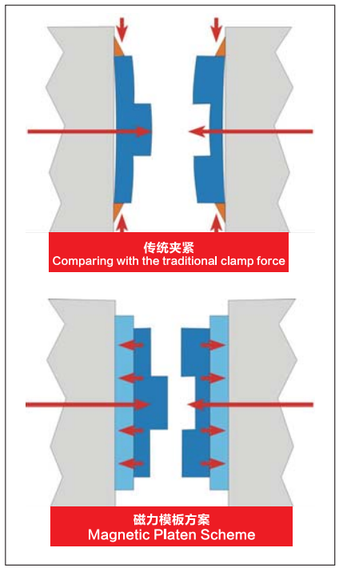
对比传统夹紧力 / Comparing with the traditional clamp force

对比传统夹紧力

传统的机械或液压夹具只是作用在模具背板周边几个点的接触，不可避免产生受力偏差，尤其是在大模具上。

Comparing with the traditional clamp force

The traditional machine or hydraulic clamp only acts on the several points of the back platen of the mold, inevitably causing stress deviation, especially in large molds.



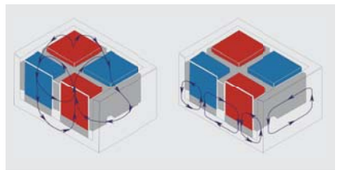
磁力模板方案

上海塔池的电控永磁QMC快速换模系统，由于夹紧力均匀的分布在模具的接触表面，模具不会受到任何重压而变形。模具—磁力模板—注塑机模板完美的结合，从而提高产品的质量和重复精度。

Magnetic Platen Application

The QMC system of Tai Chi Magforce (Shanghai) Machinery Co., Ltd has enabled the clamp force to evenly distribute on the contact surface of the mold, thus the mold will not deform due to heavy load. The perfect combination between the mold, magnetic platen and injection molding machine’s platen has improved the product quality and the repeatable accuracy.

工作原理 / Working Principle



内部结构

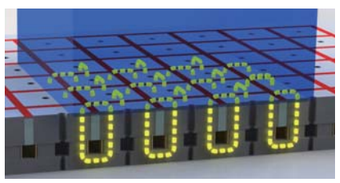
磁板由“田”字型布局的南极（S）、北极（N）交互的磁极构成，只需极短时间的脉冲电流就可以改变磁体的磁力方向，从而转换磁力模板充磁或退磁的状态。

Interior Structure

The magnetic platen is made up the South Pole (S) and North Pole (N) which cross in the shape of “田”. It takes the pulse current a very short time to change the direction of the magnetic material’s polarity, thus changing the magnetizing or demagnetizing state of the magnetic platen.

充磁状态

使磁力模板发出20mm穿透深度的外循环磁力线，将模具安全的固定，同时不影响模具内的部件。工作中不需要持续的电能，也不产生热量。

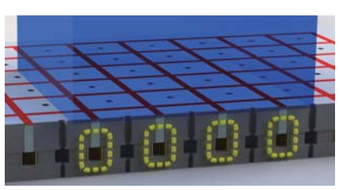


Magnetizing State

Under the magnetizing state, the magnetic platen can send forth the externally circulated magnetic flux which has just 20mm of depth of penetration to fix the mold and not affect the parts within the mold. During the working phase, the system neither needs continuous power supply, nor generates heat.

退磁状态

通过电流脉冲将磁力线从外循环状态的转换为内循环状态，轻松的将模具松开。



Demagnetizing State

Under this state, the magnetic flux is switched from the external circulation state to the internal circulation state by the current pulse, thus the magnetic platen release the mold to be load off.

快速换模系统演示/Demonstration of Quick Mold Change System

磁力模板快速换模步骤

简单 快速 安全 高效

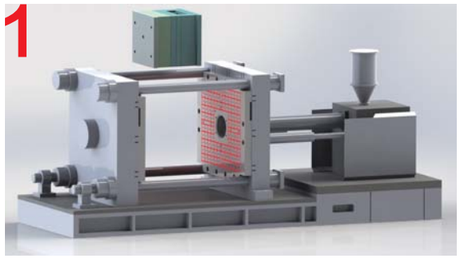
模具更换和安装的时间降到原来的1/10

Steps of Quick Mold Change by Magnetic Platen

Simple, Fast, Safe and Efficient

The time for mold replacement and installation has been reduced to 1/10 of the original time needed.

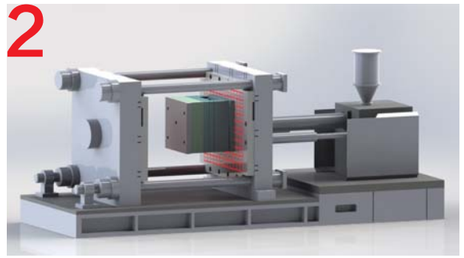
1



注塑机开模，吊入模具

The injection molding machine opens the clamp platen, and lifts the mold into the machine.

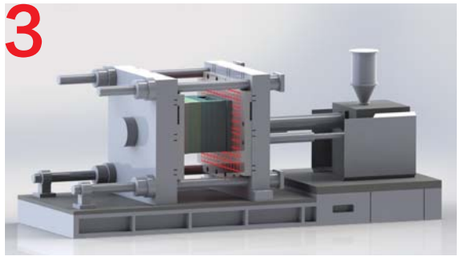
2



在定模侧通过定位环将模具定位

Locate the mold with the locating ring at the fixed mold.

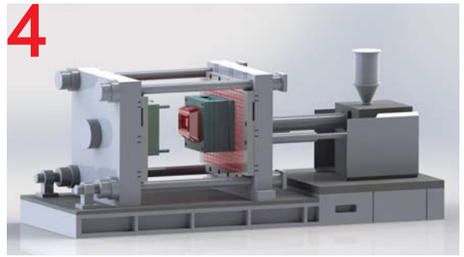
3



注塑机合模，并高压锁模,转动安全钥匙的同时按定模、动模充磁按钮

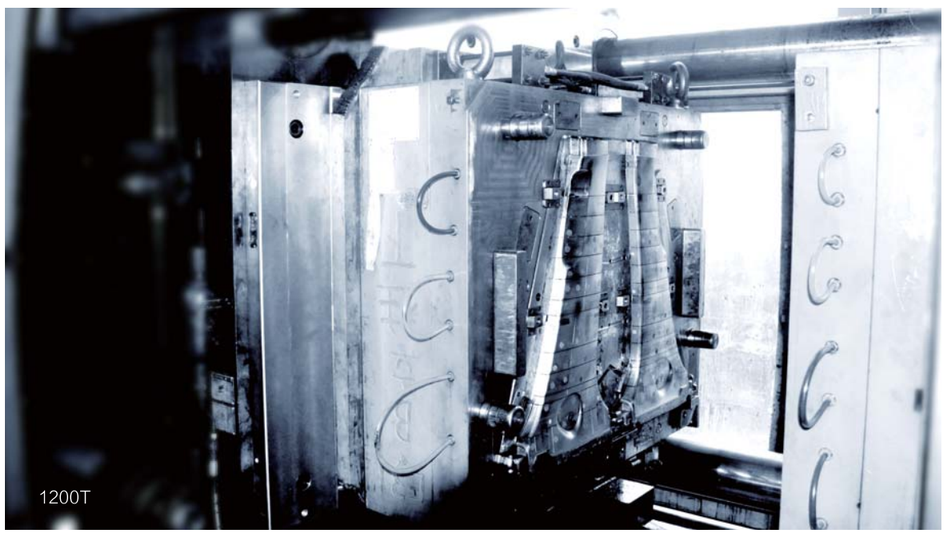
The interjection molding machine closes the mold, and clamps the mold with high pressure, and presses the fixed mold magnetizing button and movable mold magnetizing button while turning the security key.

4

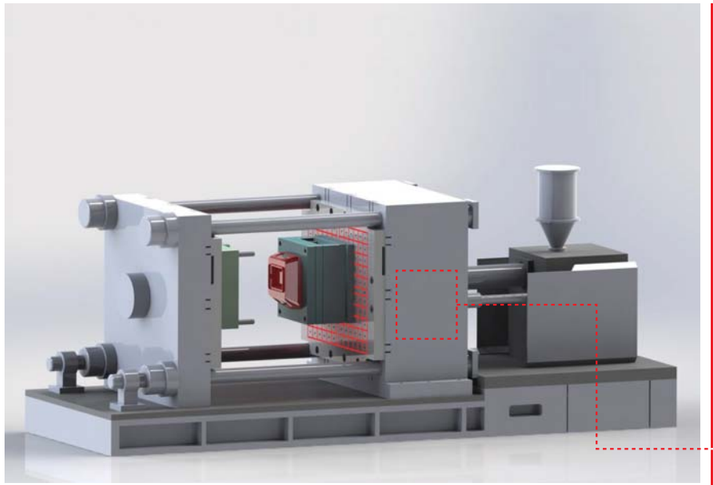


注塑机开模，准备开始生产

The injection molding machine opens the mold, and is ready for production.



控制器 / Controller



别具匠心的操作界面、便捷 安全

The originally-designed operation interface makes the operation convenient and safe.

12键远程控制器

界面友好，操作简便，带钥匙使能开关及双重确认机制，最大限度防止人员误操作。

全板面磁力实时监测系统

全板面磁力实时监测系统可以自动检测实际作用在模具上的吸力，而不需要输入模具的尺寸。通过给每套模具编号，其初始锁模力被记录下来。今后使用时，当读取出的锁模力与初始锁模力有任何差异，系统会给出提示，提前发现潜在的隐患，使您能够对模具进行预防性维修。

12-key Remote Controller

It has a friendly interface which is easy to operate. The enable switch with a key as well as the double-check mechanism can furthest prevent the maloperation.

Clamping Force Automatic Reading System

The clamping force automatic reading system can automatically detect the hold that acts on the mold without inputting size of the mold. Number each set of molds, and their initial clamping forces will be recorded. When the clamping force read by the system is different from the initial clamping force, the system will remind you to discover the potential danger in advance and enable you to make preventive maintenance on the mold.

常见问题解答/Frequently asked questions

01 停电会掉模吗？磁力能保持多久？

磁力模板为电控永磁技术原理设计，其最大的优点就是断电永久不失磁性。电能只在磁力模板励磁与消磁的瞬间转换磁路时使用（仅1-4秒钟），其他时间仅系统运转使用电。磁铁磁性能的衰减是一个非常漫长的过程，所以磁力模板的使用年限能超过三十年，甚至更长。

01 Will power off lead to mold creep down? Howlongcouldthemagneticforcekeep?

No.The design principle of magnetic platen is electro-permanent control technology,its greatest advantage is to keep the magnet permanently even there is emergency power off.Electric energy is only used for magnetizing or demagnetizing process which is just 1-4seconds.The magnet force could keep more than 30years.

02 模具背板面积过小，不能有效覆盖到足够多的磁极，会影响吸附力吗？

当模具背板面积过小，不能有效覆盖到足够多的磁极，此时磁力模板所能提供的吸附力也是随接触面积的缩小而下降的。注塑机开模和模腔阻力较大的情况下，容易导致拉脱。建议增大模具背板，获将过小模具改换到合适的注塑机上。

02 If we reduce the mold's back platen size, will if affect the clamp force?

The magnetic clamping force could only be generated during surface covered by mold back platen, if magnetic poles exposure, the clamping force of the chuck will reduce, which could make the mold detach from chuck surface during mold opening process. We strongly suggest our customer to enlarge back platen size to cover all poles.

03 大型的模具能吸住吗？

磁力模板内部使用了高磁能积的稀土永磁材料——钕铁硼，作为稀土永磁材料发展的最新结果，由于其优异的磁性能而被称为“磁王”。钕铁硼磁性材料是钕、氧化铁等的合金，又称磁钢。钕铁硼具有极高的磁能和矫顽力。磁力模板的设计是单片模板可以承受整套模具的重量。即使是重量为30-45吨的大型汽车保险杠模具，也能轻松装夹在磁力模板上使用。

03 Could the large-sized mold be clamped?

The material used in magnetic platen is NdFeB,which is called Kingofmagnet due to its excellent performance.Every single magnetic platen is designed to hold the whole weight of the mold.Even a big bumper mold which is about30-45tons could be clamped easily.

04 磁力模板耐水、耐油、耐腐蚀吗？

完全可以，磁力模板内部磁材采用特殊防水、防腐蚀涂层。所有内部线圈采用独立预封装工艺。磁力模板板体背面为全封闭结构，板体正面按照防IPX4防水标准多层填胶灌封。确保磁力模板板体绝缘终身正常。

04 Does the magnetic chuck water/oil/corrosion-proof?

Yes, we use the special painting to treat the inside of chuck, the solenoid coil is fully covered by our selected resin, meanwhile the back side of chuck was full metallic cover surface, these above solutions, which give our magnetic chuck higher IPX4 water-proof level, the isolation of the chuck could guarantee last chuck's life time. (more than decade).

05注塑机温度太高会不会造成吸力衰减？

组成磁力模板的磁性材料均经过严格的耐温筛选检测，可以适用于塑料制品的生产使用。当模具背板温度过高超过120摄氏度以上会导致磁力模板对模具的吸附力下降，我方磁力模板上安装有温度高温报警值，当出现温度报警时，需要对模具背板进行隔热处理避免吸附力下降。特殊定制可以达到200度工作温度.

05 Will high-temperature decrease the magnetic force?

The magnetic material used for magnetic platen has passed strict heat-resistant test，could be used for plastic products production.When the temperature of mold back platen higher than 120degrees，the magnetic clamping force will inevitable drop, so we equip a sensor on the our chuck to monitor the temperature.For special customized products,the working temperature could reach 200degrees.

06 加装了隔热扳的模具能使用吗?

安装电永磁快速换模磁力模板后，大部分模具可以直接使用，但对于异形的非对称模具需要咨询厂家，进行评估后方可使用。另外，加装了隔热板的模具不可以直接使用磁力模板系统。一般制作模具隔热板的材料为热传导性差的非铁磁性材料，所以是不能直接使用的，如果将隔热板安装在磁力模板和注塑机墙板之间的位置是完全可以的。

06 Could the mold be workable with an insulation board?

For electro-permanent platen of QMCsystem,most of the mold could be used directly.For the non-symnnetric molds,please enquire for estimation.Besides,for the mold with insulation board can not install the magnetic platen.However,if the insulation plate is placed between IMM back plate and magnetic platen,it is workable.Non-ferric material is not workable.

07 实时监控和停机系统可靠吗?

电永磁快速换模系统采用的欧规EuroMap70.0或70.1接口，其逻辑关系严密可靠，被广泛应用在快速换模设备上。

07 Is the real time monitoring and E-stop system reliable?

Yes.The Electro-permanent QMC system adopts Euromap70.0or70.1,which logical relationship is very strict and have been widely used on injection molding machine.

08 磁力对人体有危害吗?

磁力模板励磁后，工作面会有磁场存在，其为永磁场而非电磁场，对正常人体危害微乎其微。磁力线的辐射空间也是有限范围的几十毫米内。若体内植入医疗器械的人员，须咨询医生。另外，磁力模板对于铁磁性材料均会产生吸力，如榔头、扳手、手表等，并且严禁信用卡、身份证等靠近，以免造成消磁失效。

08 Is the magnet force harmful?

No.After magnetized,the magnet field is a permanent magnet field,it won't hazard to our body.The radiation of the magnetic force lines are limited,just within the scope of a few millimeters.However,for the personnel who implant medical devices in the body,should consult the pliysician.In addition,the magnetic platen has suction for ferro magnetic material,such as hammer,wrench,watches,etc.The credit card and ID card are forbidden to close up,in case to cause demagnetization.

09 后期维护和使用成本高吗?

因为系统仅在励磁和退磁的瞬间使用电能，所以各种器件的老化速度非常慢，而且产品内部无运动部件，所以磁力模板不需要频繁而繁琐的维护和检修，使用成本几乎为零。

09 Is the usage and maintenance cost high?

Electricity only needed for magnetizing and demagnetizing process,which is just 1-3seconds.The device aging is very slow.There is no wearing parts inside the product,so the magnetic platen does not need frequent or complicated maintenance &repair,which makes the cost negligible.

10 成本能节省多少?

以2800吨注塑机成型机为例：
人工节省：传统机械式锁紧模具，需要3个人，耗时2.5-3小时左右；QMC系统仅需1个人，耗时约0.5小时即可。
人力节省：2人*2.5小时*PM(人力小时成本）
机器节省：2.5小时*M(注塑机小时成本）

10 How much cost can the electro-permanent magnetic platen save?

Take 2800Tons of IMM for instance:
Labor will save：Traditional clamping method:3workers and 2.5-3hours；QMCsystem:1worker and 0.5hours
Man power will save:2(workers)x2.5(hours)xPM(labor cost per hour)
Machine power will save:2.5(hours)xM(machine cost per hour)

磁力模板售前客户调查表 PRE-SALES INFORMATION SHEET

请认真填写以下列表，*为必填项，谢谢!
Please fill the form carefully, and the columns marked withare necessary ! Thank you!

客户基本信息 Customer Information			
*公司名称 Company name		地址 Address	
电话 Tel		*联系人 Contact	
邮箱 E-mail		*手机 Mobile	
*生产类型 Production Type	□塑料制品生产 Plastic products	□模具生产及试模 Mold production or die trial	□其他 Others
注塑机信息 Injection Molding Machine Information			
*单色/多色注塑机 Mono/Multi-color of IMM	□单色 Mono color □多色 Multi-color	*注塑机生产厂家/型号 Machine manufacturer/model	
*立式/卧式注塑机 Vertical or Horizontal machine	□立式 Vertical □卧式 Horizontal	新机/旧机 New/Retrofit	□新机New □旧机Retrofit
*电动机/油压机 Electric/Hydraulic	□电动机Electric □油压机 Hydraulic	锁模力 Clamping force [kN]	
开模力 Opening force [kN]		*顶杆数量 Lift-rod Quantity	
炮筒射嘴顶出力 Nozzle force [kN]		常用顶杆顶出力 Ejector force [kN]	
*模具横向放置/竖向放置 Vertical or Horizontal mold loading	□横向 Horizontal □竖向 Vertical □综合Both	*模具与机器中间有无隔热板（有/无） Insulating plate installed between mold and machine(Y/N)	□有 Yes □无 No
*附注塑机动定墙板图纸 Please attach wallboard drawings		*请在动墙板图纸上标出预留的顶出孔位 Please mark the reserved knock-out holes on the M-wallboard drawings	

模具信息 Mold Information	（仅提供适用于本吨位注塑机的模具数据） (Only suitable for the mentioned IMM mold information is needed .)		
两板模具/三板模具 2-Plates or 3-Plates tooling	□两板模2-plates □三板模3-plates	*水平/竖直模具 Vertical/Horizontal mold (V/H)	□水平 Horizontal □竖直 Vertical
定模定位环直径[mm] F-mold centring ring diameter		*模具背板材质 Mold back-plate materials	
动模定位环直径 [mm](若有） M-mold centring ring diameter(if any)		模具背板温度范围 Temperature range of the mold	□60-80℃ □80-100℃ □100-120℃ □120-150℃
*有无偏心模具 Availability of eccentric mould	□有Yes □无No	*模具是否有脱螺纹机构 If the mold has thread taking-off structure	□有Yes □无No
*最大模具尺寸 Maximum mold		*最小模具尺寸 Minimum mold	
控制系统 The Controller			
*系统供电电源 Supply voltage 默认 Default：AV380V ±10%/50Hz 如有不同请指出 Please specify if different		*注塑机有无欧标70.0或70.1接口？（如有请注明） Machine interface EUROMAP 70.0 or 70.1? （Y/N）（if any, please note）	□有Yes □无No
磁力模板选配件 Optional Accessories			
是否需要额外的压板孔？（是/否）请提供简图 If additional holes required? （Y/N）Please attach a sketch			□需要 Need □不需要 Unwanted
是否需要动模安全防顶落系统? Do you need mold anti-drop system on movable mold side to prevent over-eject.			□需要 Need □不需要 Unwanted
是否需要全板面磁力实测显示系统? Do you need clamping force automatic reading system?			□需要 Need □不需要 Unwanted
其他 Notes			
填表人签名 Signature		填表日期 Date	

技术参数 / Technical Parameter

技术参数 / Technical Parameter

规格/Specification	PQ80	PQ50
每个磁极的吸力/Clamping force of Each Magnetic Pole	1ton 2200lb	0.4ton 880lb
每个磁极的尺寸/Size of Each Magnetic Pole	80mm 3.14”	50mm 1.96”
磁力模板厚度/Thickness of Magnetic Platen	54mm 2.1”	54mm 2.1”
磁力线穿透深度 Depth of Penetration of Magnetic Flux	20mm 0.78”	10mm 0.39”
最大工作温度（模具接触表面） Maximum Operating temperature (contact surface of mold)	120℃ 248℉	
接近传感器感应距离 Proximity Sensor’s Sensing Distance	0.2mm 0.0078”	
电源输入/Power Input	220/380 VAC,50/60 Hz	
功率/Power	15kVA（220）/ 25kVA（380V）	
固定孔和定位环/Fixing Hole and Locating Ring	EUROMAP/SPI/JIS	

※本公司电控永磁快速换模系统产品由太平洋保险承保产品责任险。

可以根据客户的特殊要求提供专门的解决方案

- 与模具接触的表面最高温度180℃/356℉
- 与标准产品不同的磁极配置
- 额外的加工孔、滚轴
- 双色机、立式注塑机
- 温度检测传感器

We can provide special solutions according to customers’ special demands.

- The highest temperature at the surface that contacts the mold is 180℃/356℉.
- The allocation of magnetic poles are different from that of the standard products.
- The additional processing holes and rollers
- Double-coloured machine and vertical injection molding machine
- Temperature-detection sensor


UDEM

CERTIFICATE

ATTESTATION CERTIFICATE OF MACHINERY AND ELECTROMAGNETIC COMPATIBILITY AND LOW VOLTAGE DIRECTIVES