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Shrink Wrapper Packaging

二次包装工业的革新技术：提高品质、包装效益、市场营销和环境保护
Innovative technology in secondary packaging industry: improve quantity, packaging efficiency, marketing and environment protection.

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机型种类 Range		包装速度（包/分钟） Speed(packs/min)		设备尺寸 Dimensions mm
LMB Series				
LMB25	仅膜包 Film only	25PPM		8090x1650x2650
LMB25P	膜包+纸垫 Film +Pad	25PPM		8090x1650x2650
LMB25T	膜包+半托 Film +Tray	25PPM		9385x1650x2650
LMB35	仅膜包 Film only	35PPM		11275x1650x2650
LMB35P	膜包+纸垫 Film +Pad	35PPM		11275x1650x2650
LMB35T	膜包+半托 Film +Tray	35PPM		12555x1650x2650
LMB45	仅膜包 Film only	45PPM		11275x1650x2650
LMB45P	膜包+纸垫 Film +Pad	45PPM		11275x1650x2650
LMB45T	膜包+半托 Film +Tray	45PPM		12555x1650x2650
LMB60	仅膜包 Film only	60PPM		8090x1850x2650
LMB60P	膜包+纸垫 Film +Pad	60PPM		8090x1850x2650
LMB80	仅膜包 Film only	80PPM		11770x1850x2650
LMB80P	膜包+纸垫 Film +Pad	80PPM		11770x1850x2650
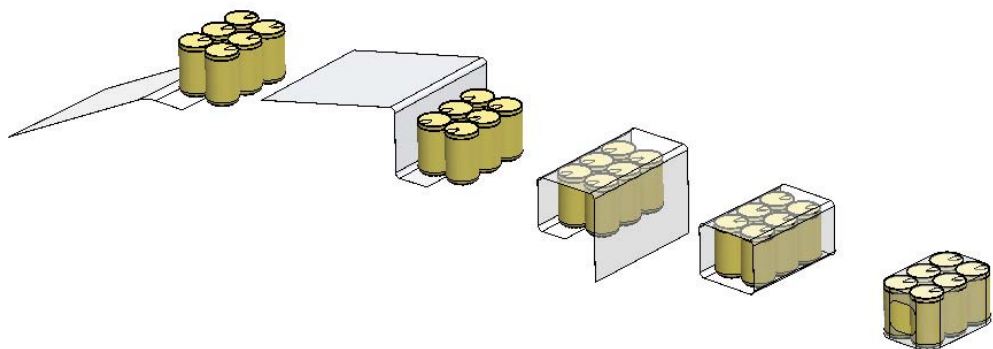
机型种类 Range		包装速度(包/分钟) Speed(packs/min)		设备尺寸 Dimensions mm
MMB Series				
MMB35	仅膜包 Film only	35PPM		12850x1650x2650
MMB35P	膜包+纸垫 Film +Pad	35PPM		12850x1650x2650
MMB35T	膜包+半托 Film +Tray	35PPM		14900x1650x2650
MMB45	仅膜包 Film only	45PPM		12850x1650x2650
MMB45P	膜包+纸垫 Film +Pad	45PPM		12850x1650x2650
MMB45T	膜包+半托 Film +Tray	45PPM		14900x1650x2650
MMB60	仅膜包 Film only	60PPM		12850x1650x2650
MMB60P	膜包+纸垫 Film +Pad	60PPM		12850x1650x2650
MMB60T	膜包+半托 Film +Tray	60PPM		14900x1650x2650
LMB120	仅膜包 Film only	120PPM		12850x1850x2650

Film Only 仅膜包

Bottle
3X2X2 4X3
0.5L

Bottle
2X2X2
3X2X2 4X2
1.5L

Bottle
2X2X2
3X2 4X2
2L

Film Only 仅膜包

Cans
3X2 4X3
2X2
Φ50/70mm

Cans
3X2X2 2X2X2
Φ50/70mm

Cans
4X3X2
Φ50/70mm

Film +Pad 膜包+纸垫

Bottles and Cans
4X3
Φ50/70mm

Bottles and Cans
5X4
Φ50/70mm

Bottles and Bottles
4X3
Φ50/70mm

Film +Tray 膜包+半托

Bottles
3X2
Φ90mm

Bottles
4X3
Φ90mm

Bottles and Cans
6X4
Φ50/70mm

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LMB Series 中低速热收缩膜包装机
LMB Series Low-medium Speed Shrink Wrapper

The LMB series is composed of automatic machines to pack plastic, metal or glass containers. Depending on the model chosen, they can make packs in film only, cardboard pad + film, cardboard tray, cardboard tray + film.

LMB packers achieve an output rate up to 80 packs per minute, according to the machine model and the type of product to be handled.

The pack collations can vary according to the containers shape, capacity and size; the most requested collations are: 2x2, 3x2, 4x3 and 6x4.

All LMB machines are equipped with a mechanical product grouping system and are supplied with an infeed conveyour, depending on the customer's exigencies. The change-over is manual.

根据不同的机器型号，包装形式有：单裹薄膜、薄膜加纸垫、薄膜加纸托；
根据机器型号和待包装产品的类型，LMB系列包装机可达到25/35/45/60/80包/分钟的输出速度；
包装格式可根据容器的形状、容量和尺寸而定；
最常见的包装格式有：2*2、3*2、4*3和6*4；
所有LMB机器都配备有机械式分组器、进口输送带，视客户要求而定。格式转换操作通过手动完成。

机器型号 Models up to 80 PPM

|		
LMB25	LMB25P	LMB25T
LMB35	LMB35P	LMB35T
LMB45	LMB45P	LMB45T
LMB60	LMB60P	
LMB80	LMB80P	

包装过程
The packaging process

1、在机器进口区域，一个振荡式理瓶器准确地把松散的瓶子直线排列，运送瓶子的输送带采用低摩擦链制成的热塑性材料。

In the machine infeed zone, an oscillating unscrambler accurately lines up the loose containers carried by a conveyour belt featuring low-friction chains made of thermoplastic material.

2、在包装分组区 ，通过气动装置的往复运动，瓶子按所需的格式排列好。

In the pack formation zone, the containers are clustered in the required format through a pneumatic device operating in alternate motion.
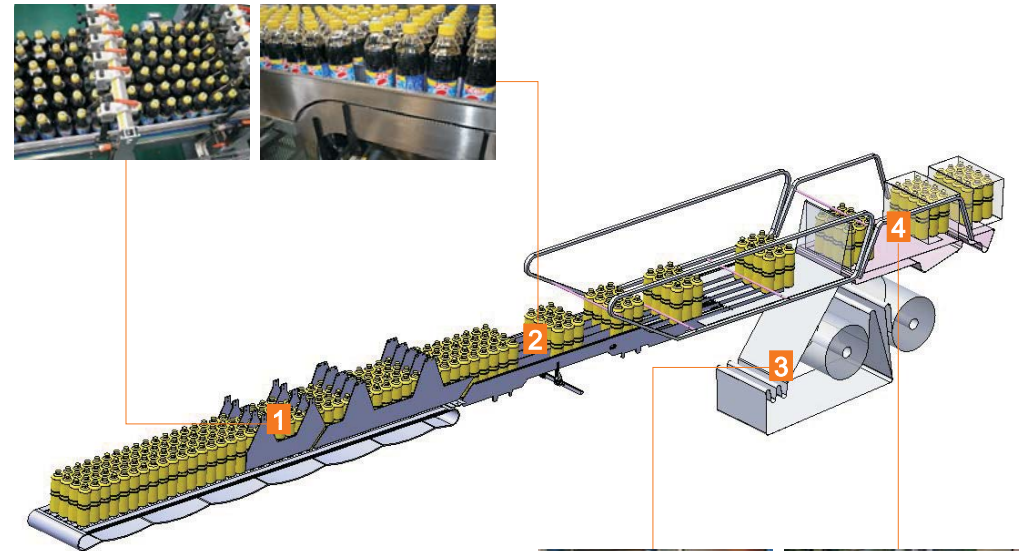
3、薄膜卷放置在机器的下方，它由渐进式制动控制，确保薄膜有恒定的张力。

The unwinding of the film reel, placed in the lower part of the machine, is controlled by a progressive brake, which ensures the film constant tension.

4、在包装进入加热隧道前，薄膜把一组瓶子整体包住，薄膜重合处在瓶子底部。

Before the pack enters the shrinking tunnel, the film is wrapped around the container batch and overlapped at the base of the pack.

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这是一个特别精巧的系统。热收缩膜被送到产品组底部的前端，缠绕棒带着热收缩膜在容器组进入收缩炉之前完成对产品的包裹。

This is a particularly delicate stage in which the film enters the upper section, threading its way between the containers as the film winding bar captures the free end of the film and completes the wrapping process before the pack enters the shrink oven.

P型和T型机
P and T models

在P型和T型机，由一组真空吸盘组成的拾取器不断把瓦楞纸垫或纸板从纸板库拾起。纸垫或纸板沿着纸板斜坡攀升，然后轻轻地放置于被输送来的瓶子下面。
In P and T models, a corrugated cardboard pad or blank is picked from the blanks magazine by an alternate motion picker composed of a group of vacuum suckers. The pad or the blank moves along the blank climb and gently places itself underneath the group of products in transit with the long side leading.

机器具有多功能且价格有竞争力
Reduced size and competitive prices

LMB系列包装机中还包括13种机型,可包装利乐包、方形和矩形瓶子和其他大型或小型产品。LMB包装机的一个特点是,它减少了机器尺寸，因此，特别适合那些没有多少可用空间的客户使用。
Thanks to their reduced size, the LMB machines are the ideal solution for the customers who do not have large plants. Moreover, the price of the LMB models is very competitive, despite the high-tech solutions and the use of top- quality components. All LMB models can be customized, in order to increase their basic functions.

在纸托包装机，特殊的机械装置把纸板的前后边折好。侧边盖被喷上热熔胶，然后折叠，从而形成了托盘。
In the trayformer, special mechanical devices fold the blank's front and rear flaps. The side flaps are sprayed with hot melt glue and then folded, thus forming the tray.

MMB Series 中高速热收缩膜包装机
MMB Series Medium-high Speed Shrink Wrapper

The MMB series is composed of automatic machines for packing plastic, metal or glass containers.

Depending on the model chosen, they can make packs in film only, cardboard pad + film, cardboard tray + film.

The MMB series can achieve an output up to 120 packs per minute, depending on the machine model and on the product to be packaged.

The pack collations can vary according to the container shape and size. In general, the most frequently requested collations are: 2x2, 3x2, 4x3 and 6x4.

All MMB models are equipped with an electronic grouping device and are available with single or double lane, according to the customer's exigencies. The changeover is automatic.

MMB系列由多个全自动机型组成，可以包装以塑料、金属或玻璃为材质的容器。

根据不同的机器型号，可以实现单裹薄膜、纸垫加薄膜、纸托加薄膜或纸托不加薄膜的多种包装形式。

根据所选机型和待包装产品尺寸，最大输出速度达到120包/分钟

包装格式可以根据容器的形状、容量和大小而定。

最常见的包装格式有：2*2、3*2、4*3和6*4.

所有MMB型号都配有电子产品分组系统，并可根据客户的需要，将产品分成一到两列（可选项）。

格式转换操作可以自动完成。

机器型号   Models up to 120 PPM

|		
MMB35	MMB35P	MMB35T
MMB45	MMB45P	MMB45T
MMB60	MMB60P	MMB60T
MMB120		

包装过程
The packaging process

1、机器进口区域，一组导轨准确地把松散的瓶子直线排列，运送瓶子的输送带采用低摩擦链制成的热塑性材料。在包装分组区，通过电子同步分瓶手指和分瓶杆的连续运动，瓶子按所需的格式排列好。

In the machine infeed zone, a group of guides accurately lines up the loose containers carried by a conveyour belt featuring low-friction chains made of thermoplastic material. In the pack formation zone, the containers are clustered in the required format through electronically synchronized fingers and dividing bars, operating in continuous motion.

2、在P型和T型机，由一组真空吸盘组成的拾取器不断把瓦楞纸垫或纸板从纸板库拾起。纸垫或纸板沿着纸板斜坡攀升，然后轻轻地放置于被输送来的瓶子下面。

In P and T models, a corrugated cardboard pad or blank is picked from the blanks magazine by an alternate motion picker composed of a group of vacuum suckers. The pad or the blank moves along the blank climb and gently places itself underneath the group of products in transit with the long side leading.
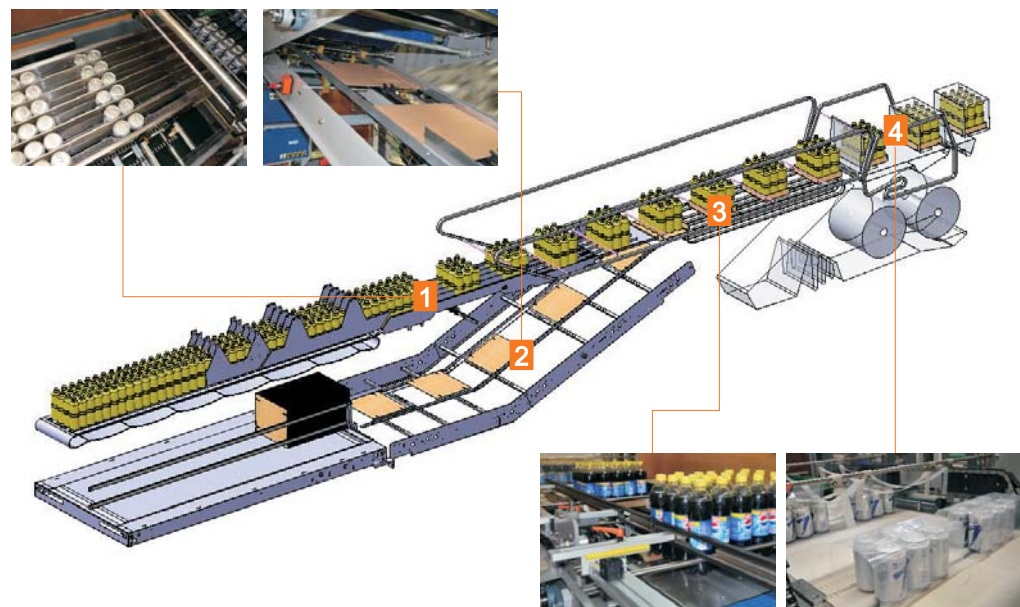
3、在纸托包装机，特殊的机械装置把纸板的前后边折好。侧边盖被喷上热熔胶，然后折叠，从而形成了托盘。

In the trayformer, special mechanical devices fold the blank's front and rear flaps. The side flaps are sprayed with hot melt glue and then folded, thus forming the tray.

4、薄膜卷放置在机器的下方，它由无刷电机控制，确保薄膜有恒定的张力。膜被一个装有电动刀片的切刀切断，然后包裹在一组容器外，并在产品包的底部重叠。

The unwinding of the film reels, placed in the lower part of the machine, is controlled by a brushless motor, which ensures the film constant tension. Before the pack enters the shrinking tunnel, the film is wrapped around the container batch and overlapped at the base of the pack.
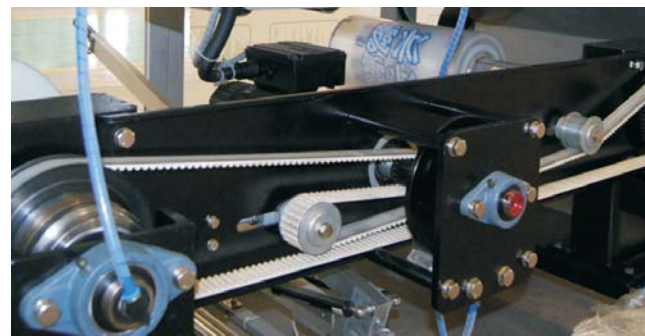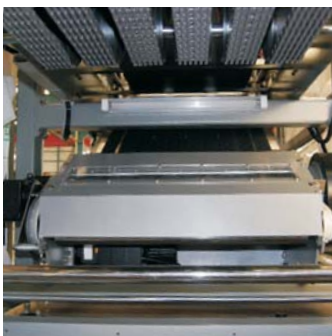
气涨轴由伺服电机驱动，可根据切膜长度的要求，主动释放膜卷，膜拉伸时能真正保持恒定压力，不同于被动放膜，难于控制膜涨紧力，影响切膜效果。

The pneumatic shaft is driven by servo motor, it can take the initiative to release film according to the length requirement, and tensile film can be kept in constant pressure, different from the passive film release, which is difficult to control film tensioning, and influence the effect of cut film.


预切膜和连续上膜系统
Pre-cut film and continuous film supply system

切膜和连续送膜系统是膜包机的两个主要组成部分。

Film cutting and continuous film supply system are two of the key components on the shrink wrapper.

MMB系列所有机型均的上膜机构均采用预切膜装置，上膜机构采用预切膜装置，此装置放于主机底部，薄膜按照预定长度要求切割好，由皮带真空吸付薄膜，传送至每组瓶的底部搭接。可提高切膜速度，同时能切0.04~0.05mm薄膜，降低膜成本。

All of MMB series models film supply mechanisms are employed with film pre-cut device, film supply mechanism uses film pre-cut device, so this device locates on bottom of the main machine, the film is cut according to required schedule length, and adsorbed by the belt vacuum, then sent to the bottom of each group bottle for overlap joint. It can increase the speed of cutting film, at the same time can cut 0.04 ~ 0.05 mm thin films, so to reduce the film cost.
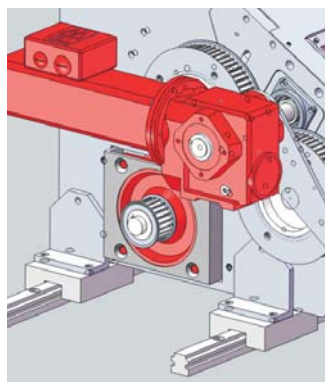
可移出上膜机构
Film supply mechanism is movable

上膜机构为便于设备维修，底部设计了双导轨，可把整个上膜机构移出主机框架，即时查看胶辊运行状态，增加切膜关键部位可视性，保持稳定运行。

In order to facilitate equipment maintenance, the bottle of film supply mechanism is designed with double guide rail, the whole film supply mechanism can be moved from the main machine framework, so the running state of the rubber roller can be instantly checked, thus increase the visibility of film cut key parts, make sure stable running.

采用伺服电机切膜，能提高切膜精度，特别适合彩膜，同时提高切膜稳定性和切膜速度，减少切膜故障率，离合器切膜因其由弹簧控制棘轮，弹簧容易失效，故障率相对叫较高。

Adopt servo motor to cut film, can improve the precision of film cutting, especially suitable for color film, at the same time improve the stability and film cutting speed, reduce the failure rate, if use clutch to cut film, because it is controlled by ratchet spring, and spring is easy to fail, relatively the failure is high.

膜张紧装置
Film tension device

该装置是为了保持展开膜的张紧度，并使展开的膜经过几个回路，以使未展开的膜不受生产运转过程中速度突变的影响。操作员能轻松地将新膜安装到回路上。当一卷膜快使用完时，通过气缸调节膜张紧的压力；而满膜卷运转时通过配重系统调节压力。该气缸同时能在更换膜卷时协助膜卷的提升。

The device is designed to keep the film tension degree, and make the expanded film runs after several circuits, so that the unexpanded film is not affected by velocity mutation in the process of production operation. The operator can easily install new film to the circuit. The cylinder can regulate the film tension pressure when a roll of film is going to run out; and it can regulate pressure by counterweight system when the full roll film running. The cylinder can help lifting the film roll when changing film roll.

热收缩炉
更紧凑，更节能
Heat shrink tunnel
More compact, more energy saving

影响膜包质量四个因素是：
• 膜包产品在收缩炉中的时间；
• 温度；
• 空气流；
• 塑膜的自身质量和其收缩率。

为满足市场对膜包质量的更高要求，VANTA革新发展了膜包机的心脏部分：节能型热收缩炉。

Four factors affect the quality of film pack:
• time for the film pack products stay in the shrink tunnel;
• temperature;
• air flow;
• film quality and its shrinkage rate.

最新一代的MMB热收缩炉强调了节能和高质。

在早期的设备中，烤箱加热装置在隧道两侧，离风轮距离较远（约700mm左右），风轮出来的风力作用到加热管时的速度已经降低，在相同时间内，风与加热管之间的热交换效率也较底，引起总的热效能利用降低。

而筒壁式烤箱的加热管集中安装在加热室里，风轮离加热管距离只有200mm左右，在相同时间内，极大的提高了风与加热管之间的热交换效率，同时就提高了总的热效能利用。另外加热室周围用隔热材料隔开，热风通过风管运输，让热风达到所需要的地方，两风盒的间距可以随着瓶型排列方式来调整，能一直保持热风口近距离靠近每组瓶，距离可保持在50~80mm之间，从而让热风一出出风口，就直接作用于膜包上，这样大大提高了热风在隧道内的散失，也就达到了减少热风损耗的目的，此点改进，可节约10~15%左右的总功率损耗。

In early equipment, oven heating devices are located in both sides of the tunnel, quite far away from the wind turbines (about 700 mm), the wind speed has been reduced a lot when arrives the heating tube, at the same time, the heat exchange rate will be reduced between the wind and heating tube, also caused the overall thermal low efficiency.

The heating tubes of wall type shrink tunnel are installed in the heating room, the distance between wind wheel and heating tube only about 200 mm, the wind comes from the wind wheel can affect the heating tube quickly, at the same time period, it can greatly improve the exchange efficiency between the wind and heating tube, and improves the overall thermal efficiency. Around the heating tunnel is separated by insulating

material, hot air will be carried by air pipe to where it is needed, the two wind boxes distance can be adjusted according to bottle format, make sure the hot wind mouth keep close to each bottle group, the distance can be kept about 50-80mm, so the hot air can directly effect on the film pack when it goes out from hot air outlet, thus greatly improving the hot air lost in tunnel, also to reach the purpose of reducing heat loss, improve this point, can save about 10-15% of the total power loss.

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节能对比
Energy saving comparison:

	早期烤箱 Early shrink tunnel	筒壁式烤箱 Wall type shrink tunnel	其他厂家烤箱 Other supplier shrink tunnel
包装所需温度（°C) Packing the required temperature (°C)	210~230	180~200	230~250
升温到的时间（min) Time to required temperature (min)	40~60	20~30	40~60
装机功率(以双道MMB80为例) Installed power (double way MMB80 for example)	78KW	72KW	120KW
实际消耗功率(以单道MB80为例) Actual consumption power (single channel MB80 for example)	45~50KW	35~40KW	60~70KW
包装效果 Packaging effect	单台固定单一瓶型效果较好 多瓶型效果较差 Fixed single bottle type with good effect, multi bottle type with bad effect	单台所有瓶型包装效果良好 All bottle types with good effect	单台固定单一瓶型效果较好 多瓶型效果较差 Fixed single bottle type with good effect, multi bottle type with bad effect
烤箱外表温度（°C) Oven temperature appearance (°C)	40~70	30~50	40~60

在早期的设备中，烤箱的风道是固定式，针对普通啤酒瓶，啤酒排列宽度固定，其效果不错，但随着社会进步，出现越来越多的瓶型及排列方式，为了达到更好的包装效果，就需要根据不同的瓶型及包装方式调整宽度。

In early equipment, the air channel is fixed, the effect is good for ordinary beer bottle, since beer bottle width is fixed, but along with the social progress, more and more bottle size and format appeared, in order to achieve better effect, we need to adjust width according to different bottle size and packing way.

简壁式烤箱因为发热管集中安装在加热室里，加热室周围用隔热层隔开，减少了热辐射的损失，同时用风盒把热风尽量送到膜包所处的位置，不需要把热风充满整个通道，热风减少也可满足膜包效果要求，并且包装温度由原来的230度，降低至180~200度，温度的降低，引起烤箱实际维持温度所需发热功率也就降低，温度降低，可节约10~15%左右的总功率消耗。

Since wall type shrink tunnels intensively install the hair heat pipe in the heating room, with heat insulation layer around the heating tunnel, reduced the thermal loss, meanwhile use wind box to send hot air to the film pack position, don't need the hot air to fill the channel, with less hot air also can meet the film package requirements, moreover, packaging temperature from 230 degrees, down to 180 ~ 200 degrees, the temperature decreases, causing the shrink tunnel actual heating power which are necessary to sustain the temperature is reduced, the temperature is reduced, can save about 10-15% of the total power consumption.
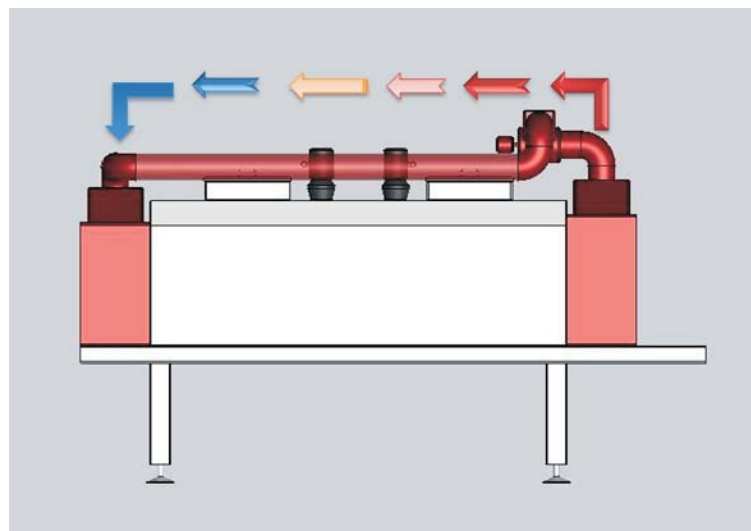

塑料网链
plastic chain

烤箱网链采用耐高温的塑料网链，保证瓶组膜包后底部平整，可把瓶组的条形码放于瓶组底部，同时每个瓶组底部不粘膜，使用不锈钢网链的底部一般粘膜且不平整。

Shrink tunnel adopts high temperature resistant plastic chain, make sure the smooth bottle bottom after film formation, can put the barcode on the bottom of bottle group, meanwhile each group at the bottom does not stick, generally speaking use stainless steel chain, the bottom will stick film and uneven.

通过抽风泵，把烤箱出口热风转移到烤箱进口，循环利用热风，约能减少10%热量损失。
Transferring the exit hot air of shrink tunnel to the entry of shrink tunnel by ventilation pump, recycling the hot air, about 10% of the heat loss can be reduced.

赶瓶、绕膜、绕膜输送带伺服电机
Bottle pushing, film wrapping, film wrapping belt using servo motor

赶瓶，绕膜，绕膜输送带采用了三台伺服电机分开控制，保证膜包成型时，薄膜能柔性缠绕瓶组，减少瓶震动，确保膜包成型质量。国内同行的膜包机都采用一台伺服带动链条控制三者，无法调整三者相对运动！不利于瓶型输送稳定性及瓶型变换。

Adopting three servo motors to separately control bottle pushing, film wrapping, film wrapping belt, while guaranteeing the pack forming, the film can wrap the bottle group flexibly and reduce bottles vibration and ensure forming quality. Others in domestic are using one servo motor to control the three parts, unable to adjust the relative motion of the three. So it's not good for bottles transferring stability and bottle types change.

塑料分瓶指 Plastic fingers

步进电机调整
Stepping motor adjust

采用步进电机调整膜包机上的调整点，减少人力成本，同时在操作屏幕上控制膜包机的瓶型变换，极大方便客户使。

A stepping motor to adjust the adjustment point of the shrink wrapper, reducing labor cost, while bottle type changing by control the touch panel, greatly facilitate the customers.

自动集中润滑装置
Automatic central lubrication device

使用集中自动润滑装置，减少人力操作成本。

By using automatic central lubrication device, labor cost reduced.

分瓶方式采用塑料分瓶指，国内同行纸膜包机一般采用的是钢之类的金属分瓶指，塑料指比金属指更耐用，同时降低了机器的噪音，能保护易损的容器（如玻璃容器）和避免商标磨损。

Bottle grouping system using plastic fingers, others in domestic are using metal fingers, plastic fingers are more durable than metal ones, reducing the machine noise at the same time, to protect fragile containers(such as glass containers) and avoid trademark damage.
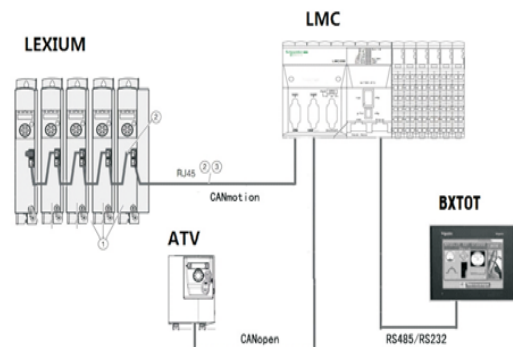
VANTA

控制系统 Control system

1、机器控制硬件包含下列由MotionControl系统装置：BXTOT（人机界面）、LMC（运动控制器）、LEXIUM（同步伺服驱动器）、VTV（总线控制变频器）。

Machine control hardware consists of the following MotionControl system device: BXTOT(HMI), LMC(Motion controller), LEXIUM(Synchronous servo drive), VTV(Bus control inverter).
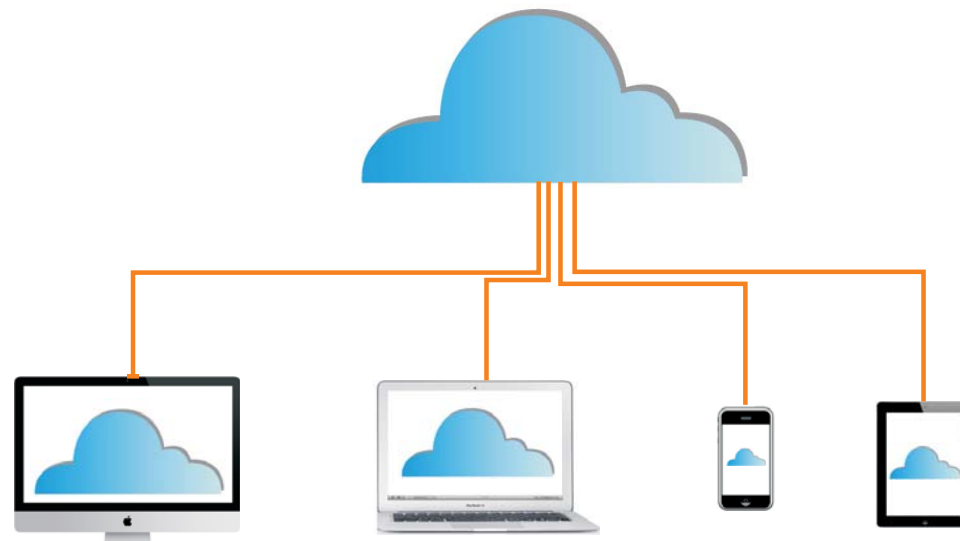
2、LMC是一个可编程运动控制器，它可以IEC61131-3语言编程标准。LEXIUM伺服驱动器集成快速输入输出数字模块通过CANmotion连接到LMC。ATV变频是通过现场总线控制，达到无级变速。

LMC is a programmable motion controller, which programming language standard IEC61131-3. LEXIUM servo drive integrates with fast digital input and output module, connects with LMC via CANmotion. ATV inverter is controlled by a fieldbus, to achieve CVT.

MotionControl System

PLCOPEN编程标准 PLCOPEN programming standard

1、硬件和软件是公开的、模块化的，符合最重要国际标准，工业自动化设备标准：PROFIBUS、EtherNet/IP、CANopen、IEC61131-3。

Hardware and software is open, modular, comply with the most important international standards, industrial automation equipment standards: PROFIBUS, EtherNet/IP, CANopen, IEC61131-3.

2、PLCopen编程标准，通过工具、库、模块化编程方法进行了标准，针对不同系统方案，具有统一的编程操作标准。

PLCopen programming standard, through the tools, libraries, modular programming methods standardlized, for different system solution, with a unified programming operation standards.

全新的在线支持服务
Brandnew online support services

更多的在线服务 More online services

从今天开始，VANTA可以向客户提供更多的在线服务。

VANTA Reader:客户可以通过扫描设备以及备件上的二维码,可以查询设备最新技术数据,以及备件价格,并相成表格通过互联网发到VANTA的备件部。

VANTA Cloud:客户可以在任何时间进入多媒体数据库，互动查询运行和维护手册，备件手册和操作指导，并且可以下载最新的文件。

VANTA Call:客户可以在任何时间通过400电话获得相应地区的工程支持报务，富有经验的工程师将即时电话为您提供在线支持。

远程控制是VANTA提供售后服务、设备维护以及升级的系统。

通过远程实时视频，VANTA可以查看客户生产现场的情况，并通过互联网将客户机器的操作面板和VANTA工程师的电脑实时连接起来，进行远程协助操作以及系统升级。

作为设备制造商(OEM)，Somachine有非常强大的远程连接功能，能为客户提供远程控制和维护。

基于DDNS的远程解决方案，实时监控客户现场生产情况。提高效率，降低维护成本。

From now on, VANTA can provide customers with more online services.

VANTA Reader: Customers can check the latest equipment technical data and spare parts price by scanning a two-dimensional code of the machine and spare parts, the generated form will be sent to VANTA spare parts department by internet.

VANTA Cloud: The customers can access to multimedia databases at any time, interactive checking operation and maintenance manuals, spare parts manuals and operating instructions, and you can download the latest files.

VANTA Call: The customers can call 400 at any time to obtain the corresponding regions engineering support, experienced engineer will provide you with online instant phone support.

Remote control is a system that VANTA provides after sales service, equipment maintenance and upgrading.

VANTA can view the customer's production site situation by remote real-time video, Connecting customer's touch panel with VANTA engineer's computer lively by internet, to achieve remote assistance operation and system upgrading.

As an equipment manufacturer (OEM), Somachine has a very powerful remote connection capabilities, can provide customers with remote control and maintenance.

DDNS based on remote solutions, real-time monitoring customer site production. To improve efficiency and reduce maintenance costs.