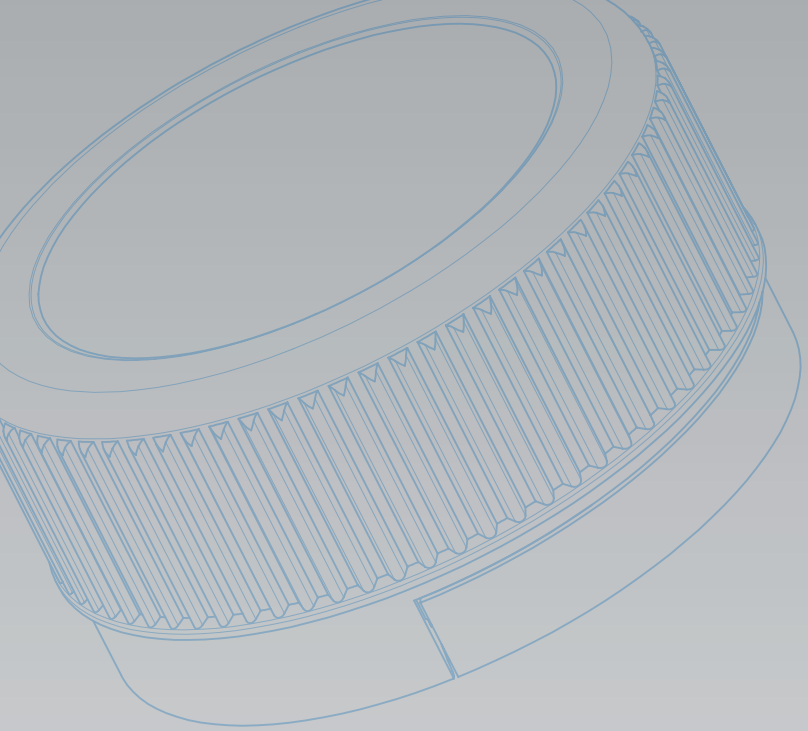
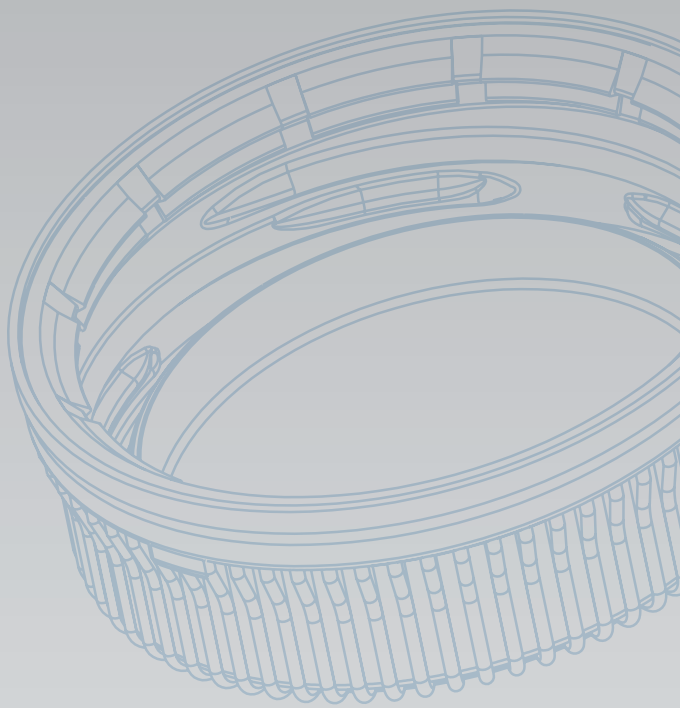


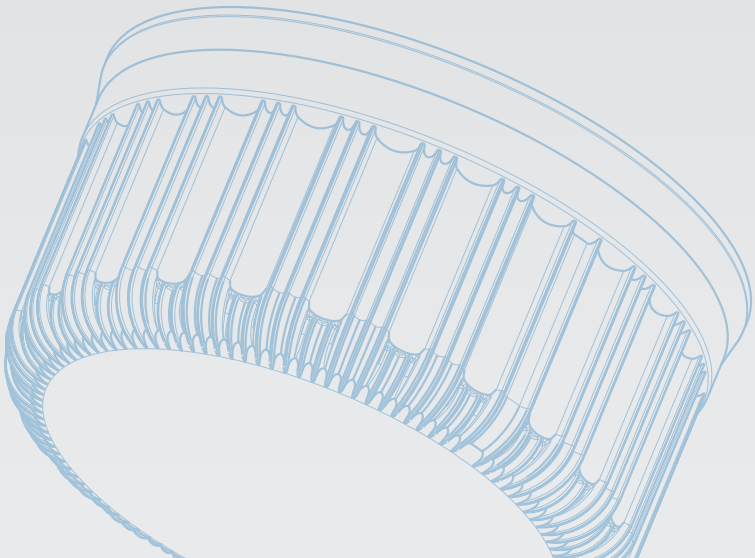


CCM

Continuous Compression Molding
连续压塑成型

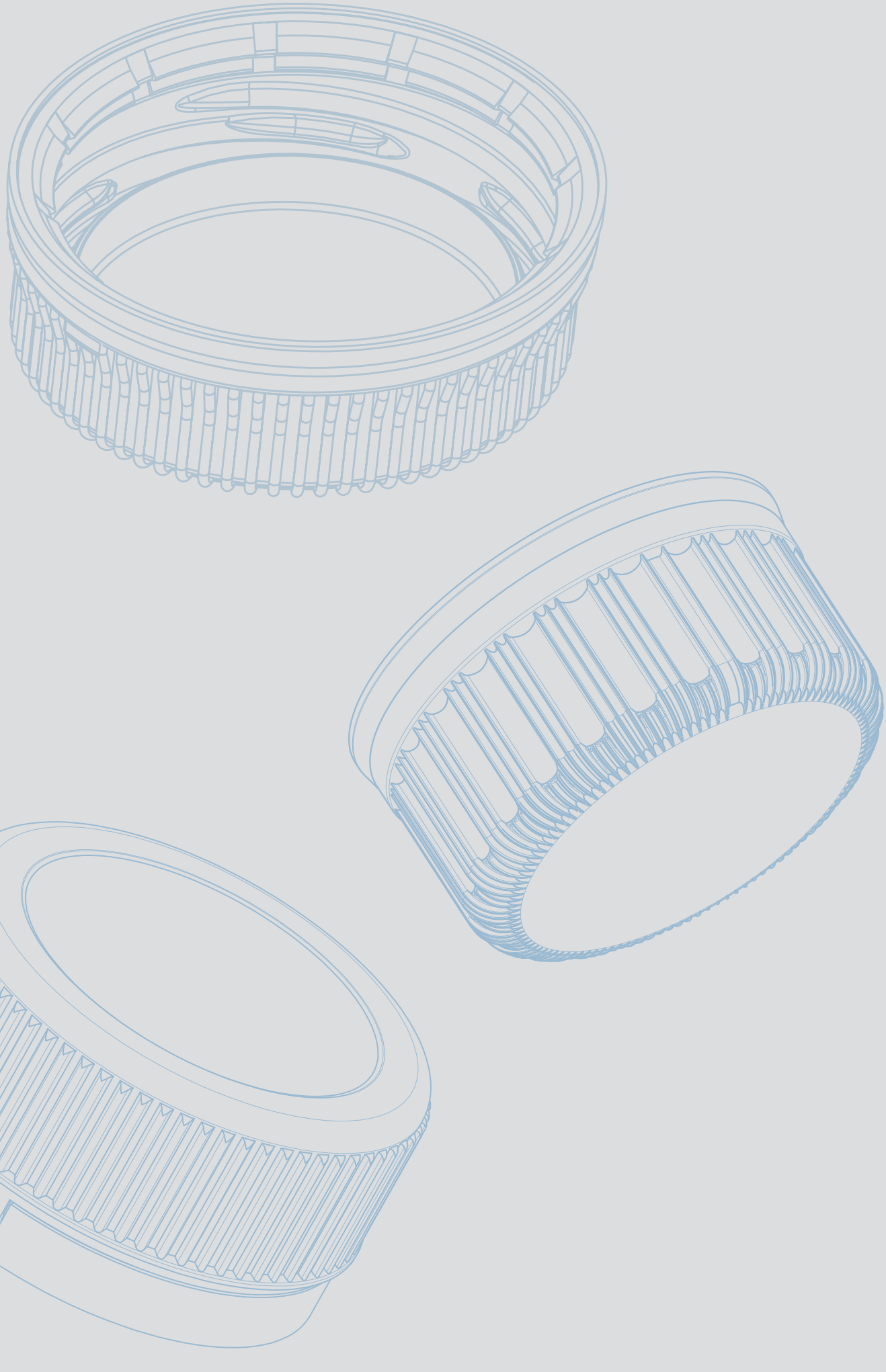
The advantages only compression molding can deliver for plastic closure manufacturing

塑料瓶盖压塑成型解决方案



SACMI

ENDLESS INNOVATION SINCE 1919



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Compression molding

压塑成型

A CLEAR-CUT CHOICE

明智之选

CCM stands for Continuous Compression Molding, the compression technology devised by SACMI and currently the standard of reference for the production of plastic bottle caps. Thanks to a simple and reliable continuous process, this technology delivers results in terms of productivity and quality unattainable using other methods.

连续压塑成型设备CCM由萨克米(SACMI)设计和研发，以其高效可靠和灵活多产的特点广受好评，产品品质上乘，主要采用压塑工艺，适用于生产塑料瓶盖。

The absence of a hot runner and the low extrusion temperatures positively impact cycle time, energy consumption and ease in color changeover.

无热流道机械结构和较低的挤出温度为缩短循环时间提供可能，此外，低能耗和产品换型便捷同样可圈可点。

The molds of the CCM press are independent, each weighing just a few kilos and individually replaceable in minutes. And because they're positioned around the circumference of a carousel, both molding pressure and thermoregulation are essentially uniform.

萨克米连续压塑成型设备CCM的模具独立安装在设备的主转盘内，即成型压力和温度调节基本达到一致，每个模具的重量仅有几公斤，数分钟内即可完成模具更换。

LET CCM TACKLE PRODUCTION OF THIN CAPS

The new range of CCM presses is designed to achieve the highest efficiency and ease of maintenance for the production of lightweight and ever thinner caps.

The SACMI CCM has a larger window of accessibility compared to other technologies and offers a wider array of applications and choice of raw materials.

PROFIT FROM A STABLE, REPEATABLE AND CONSTANT PROCESS

Since the molten plastic flows from just one nozzle, variability in cap weight is greatly reduced. In addition, low extrusion temperatures allow the production of cooler caps less subject to alterations in size.
The cooler the cap, the lower the shrinkage, and as a result there's less size variability.

轻量化瓶盖解决方案

萨克米连续压塑成型设备CCM适用于生产更轻薄的塑料瓶盖，为全球饮料和包装市场提供高效卓越的轻量化解决方案。

萨克米瓶盖压塑成型设备适用于各类树脂原料。随着压塑技术不断迭代更新，原材料应用亦更多样广泛。

高效运行和持续生产带来收益

在管理和控制瓶盖重量方面，由于熔融树脂原料来自同一个出料口，使瓶盖质量均匀统一。此外，在瓶盖冷却时，较低的挤出温度，对瓶盖尺寸影响较小。

瓶盖温度越低，收缩率就越小，尺寸变化也就越少。

SACMI: your 360° supplier

萨克米：全方位的供应商

LABORATORY AND R&D

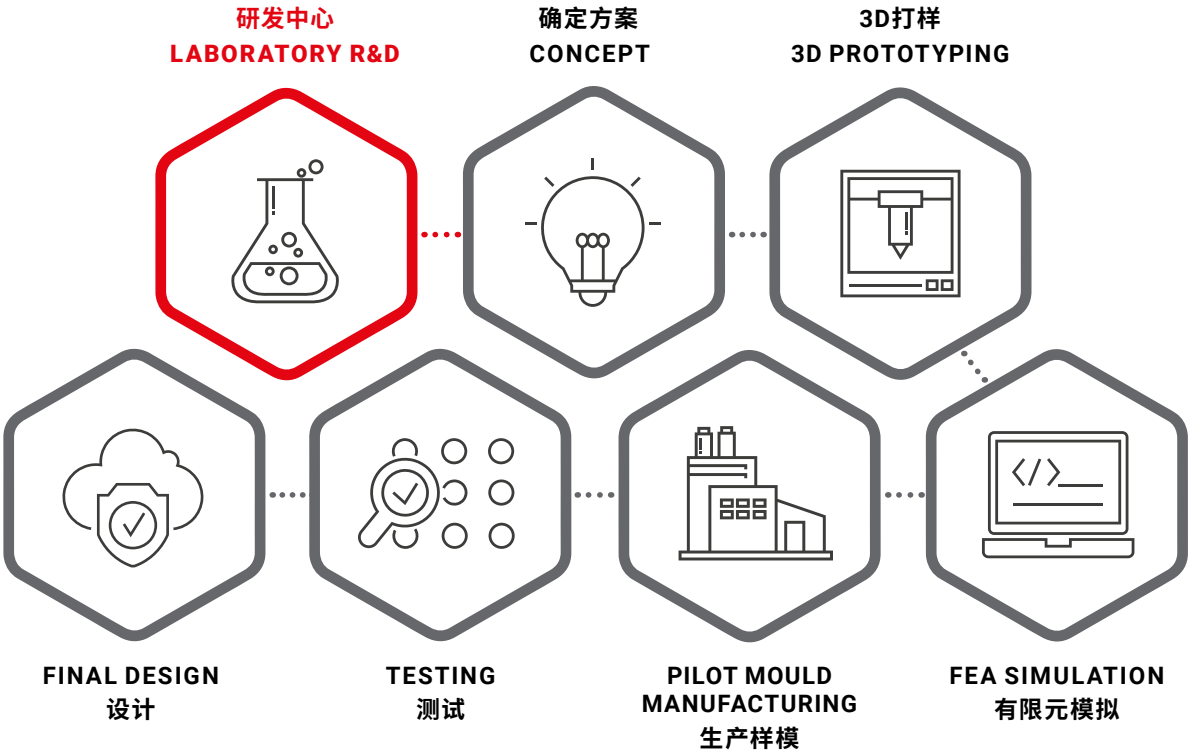
SACMI is manufacturer of machines, molds and closure designs thus giving customers complete and customized solutions by means of a unique Supplier. SACMI has already developed more than 500 different closures' version for clients worldwide.

R&D targeted in 2 main areas: technical solutions and technology, as the combination of these two aspects has always been the key to SACMI winning offer and will continue providing customers with even more competitive TCO (Total Cost of Ownership) in the perspective.

研发中心

萨克米既是设备，模具，瓶盖设计生产商，也是独家供应商，为客户提供整线或根据要求提供各类解决方案。萨克米已研发超过500种盖型，客户遍及全球。

研发部致力于提供技术解决方案和技术革新，是萨克米赢得市场的关键所在，同时也为客户提供更具竞争力的总成本(TCO)有效方案。



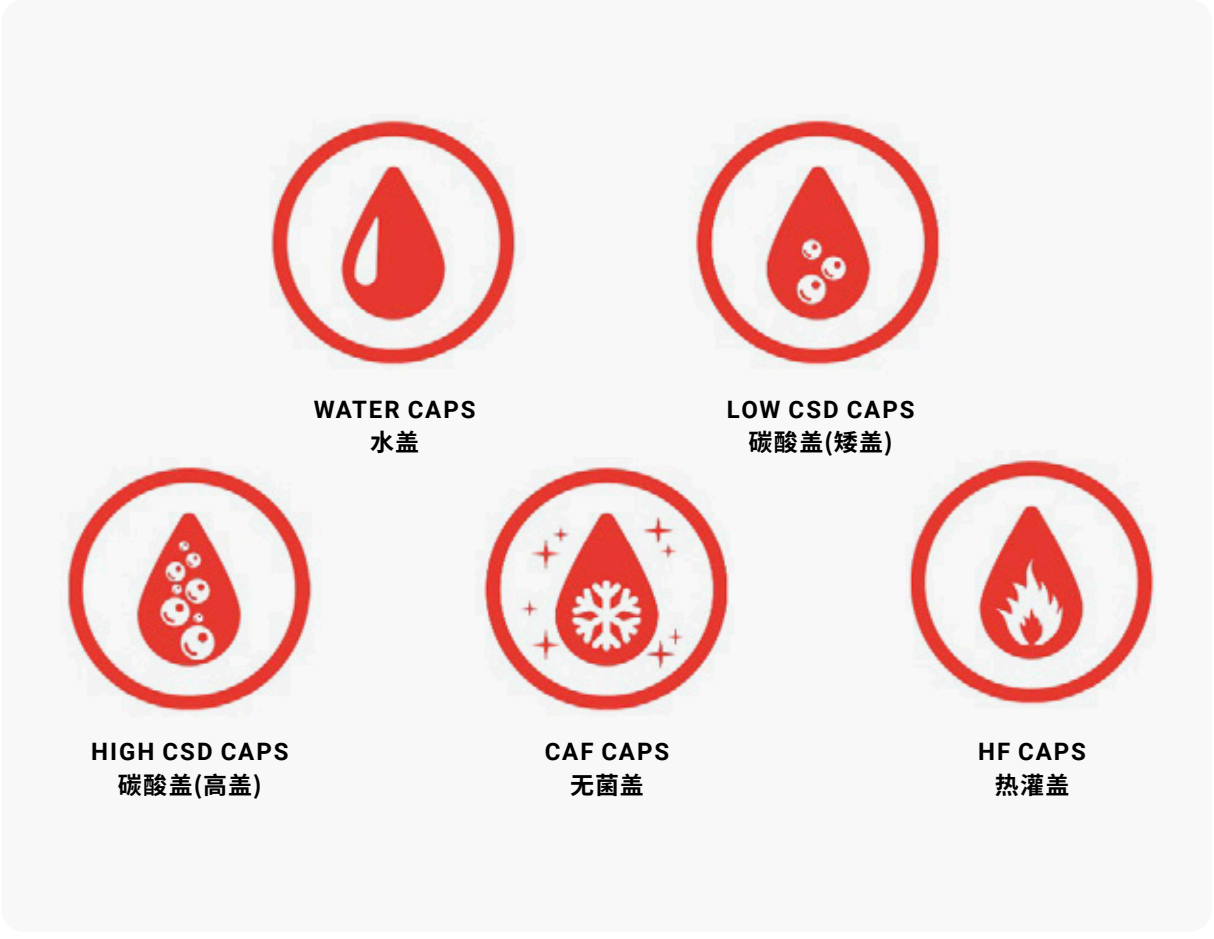
Most popular range of SACMI plastic closures

萨克米盖型一览

SACMI is at your side to help you take advantage of the opportunities of a constantly evolving market.

For any capping need, SACMI has the solution for you.

萨克米在您身边，帮助您抓住不断更新发展的市场机遇，为您提供各种瓶盖解决方案。



Introduction

Compression molding is a high-pressure molding process: the polymer is melted, mixed and homogenized inside a plasticizing unit.
A device draws doses of polymer in the exact weight of the product and inserts them into the molds. The pressure applied to each mold can reach values of about 400 Kg/cm^2.

1. HIGHER PRODUCTIVITY thanks to a shorter cycle time. The lower extrusion temperature allows the mold to cool the cap faster.

2. ENERGY SAVINGS due to the lower extrusion temperature. With less energy needed to heat the plastic, less is required to cool it.

3. PRODUCT WITH BETTER MECHANICAL PROPERTIES. Because plasticizing occurs at low temperatures and with no hot runner, the raw material maintains its characteristics and product performance is improved.

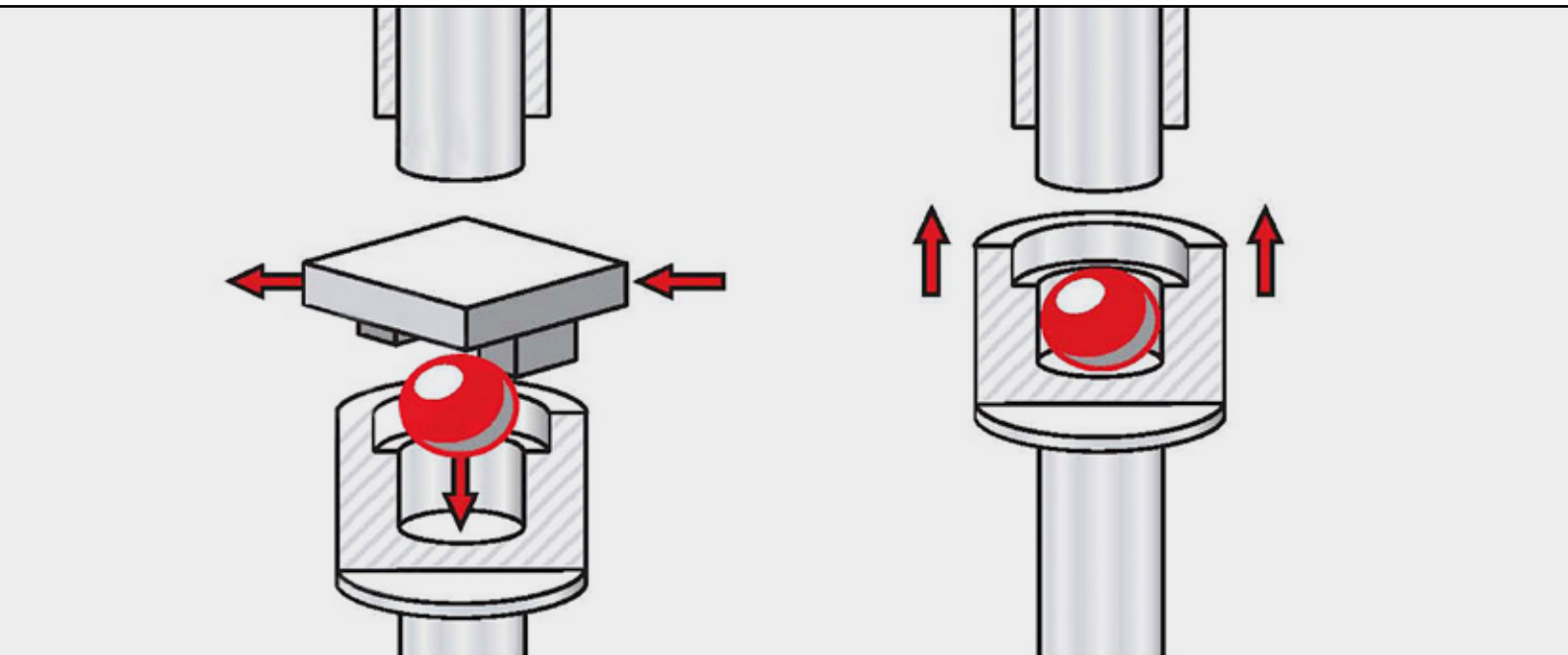
简述

压塑成型，即高压成型工艺，聚合物在塑化单元中熔化，混合和均质处理。
等量粒料被均匀挤出，并被投入到模具中。施加在每个模具上的压力可达到约400 Kg/cm。

1. 高产 较低挤出温度使瓶盖更容易冷却，所需循环时间则更短。

2. 节能 较低挤出温度意味着所需的能耗相应减少。

3. 机械结构优化 因采用无热流道机械结构，塑化时挤出温度较低，原料保持其特性同时，产品性能进一步得到改善。



4. CONSTANT WEIGHT AND SIZE OF THE PRODUCT is a winning feature of this technology, exceeding the best results of injection molding. A cooler product exiting the mold means less shrinkage and therefore less size variability.

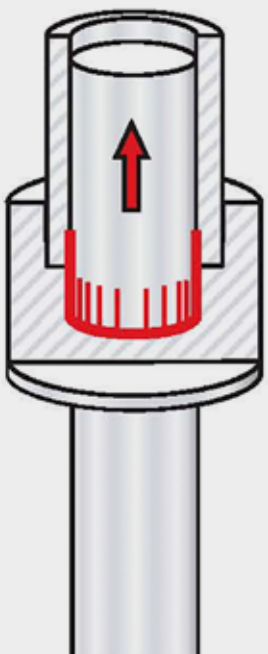
4. 产品均匀统一 压塑工艺不同于注塑，从模具中取出瓶盖时已经处于较低温度状态，这意味着收缩率较小，对尺寸的影响也更小。

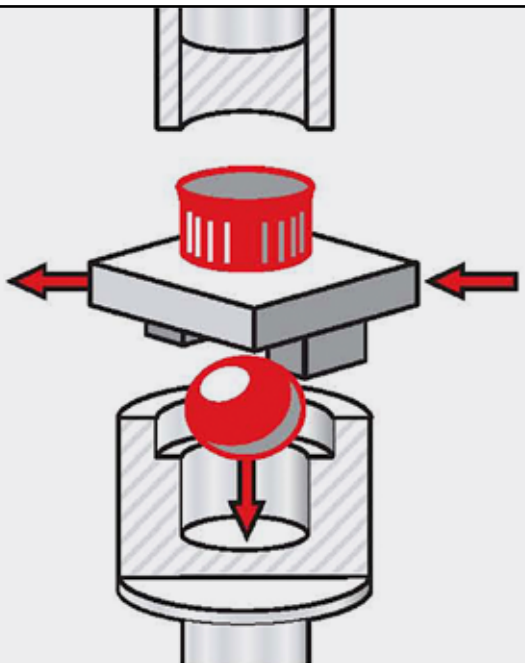
5. RAPID, EASY MAINTENANCE thanks to independent molds. Molds are replaced quickly and individually; maintenance is performed at the stand while the machine is operating.

5. 易于维护保养 独立模腔 模腔易于更换，即使在设备运行时，也可以进行维护保养。

6. FAST, ECONOMICAL COLOR CHANGEOVER The simplicity of the plasticizing unit and the absence of the hot runner speed up color changeover and considerably reduce waste of raw material during and after color switches.

6. 颜色更换简单快捷 塑化单元简化和机械结构无热流道，在更换颜色时更有利于减少废料。





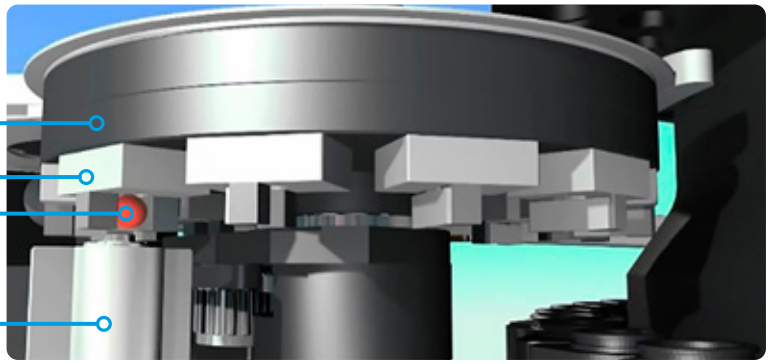
Process 工艺

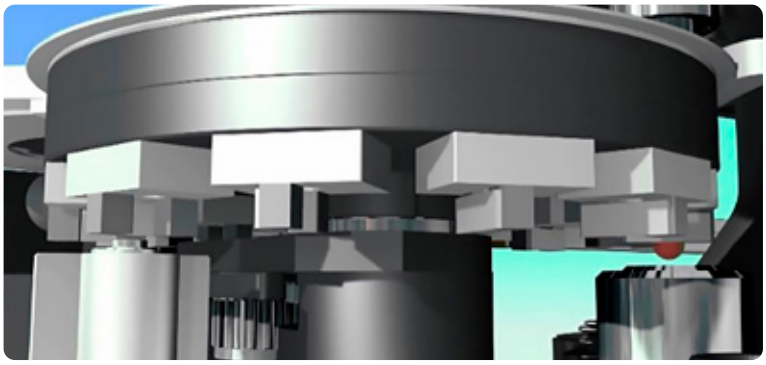
CUTTING AND INSERTING CAROUSEL
刮料和投料转盘

CUTTING AND INSERTING EQUIPMENT
刮料和投料设备

PELLET OF MELTED POLYMER
聚合物塑化单元

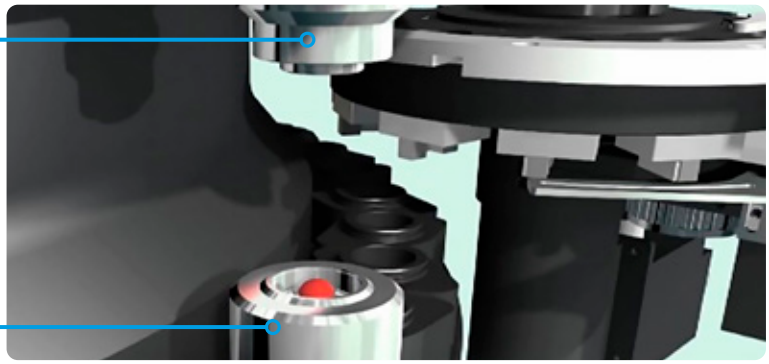
MELT NOZZLE
喷嘴

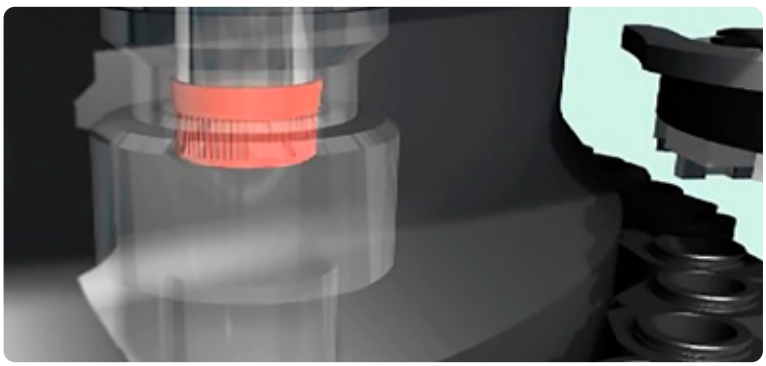




UPPER MOLD
上模

LOWER MOLD
下模





Advantages 优势

1. EXTRUDING PLASTIC AT LOWER TEMPERATURES consumes less energy. This means that product cooling takes the same time using less energy, or else is faster using the same energy.

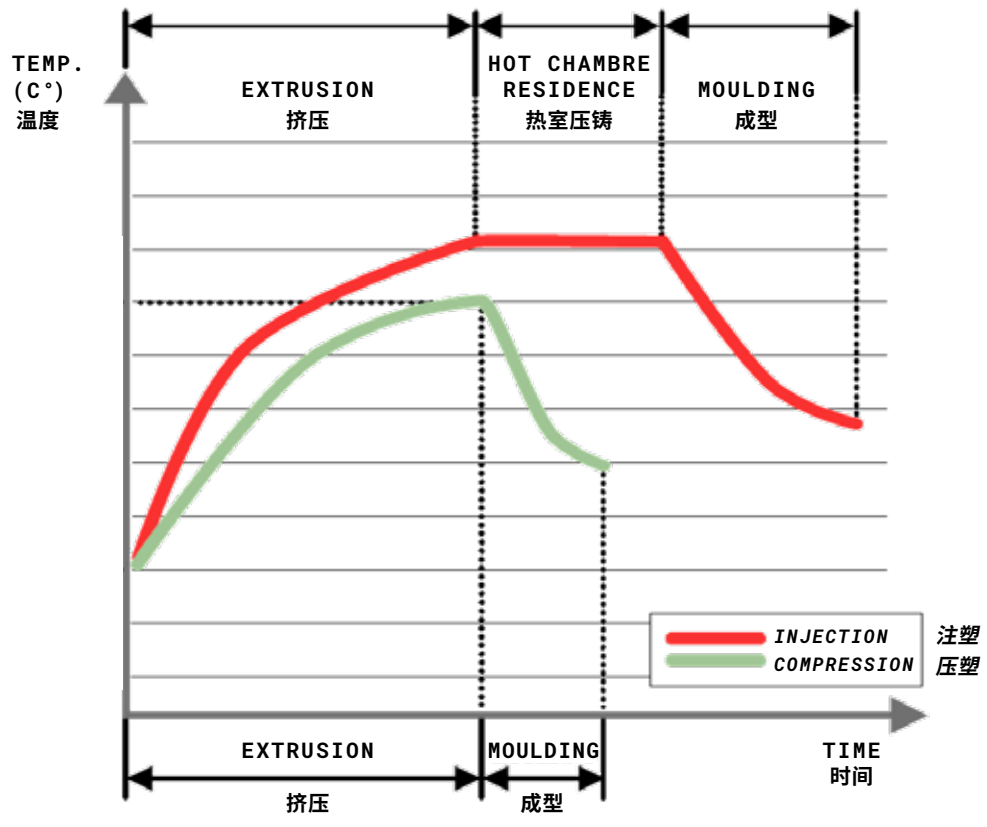
1. 在较低温度下挤出塑料 消耗能源量减少，这意味着产品可以使用更少的能源进行冷却，或者在使用同样多的能源的条件下，冷却更快速。

Typical energy consumption of a full manufacturing line including CCM molder, ancillaries and slitting machine: 0.55 KWh/kg*

包括制盖机，辅机以及切环设备在内的整条生产线能耗为0.55 KWh/kg*

*calculated at maximum extruder throughput, not including thermoregulator pump”

*按照挤出机最大吞吐量计算，不包括温度调节泵。



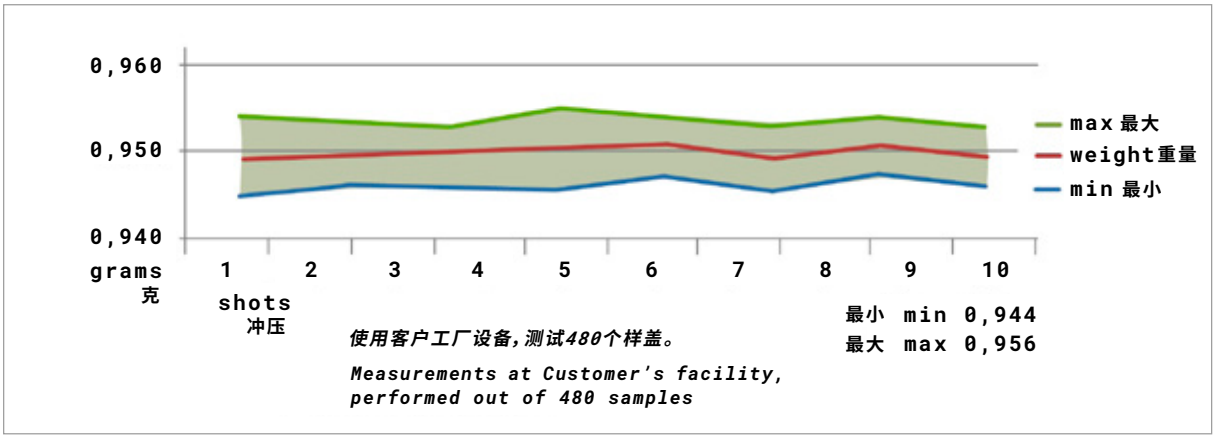
2. CONSISTENT PRODUCT WEIGHT

With compression molding all molds (and cavities) are filled with the same quantity of plastic through the same channel: there is no hot runner, just one nozzle. All molds are identical in compression; there are no peripheral, upper or lower cavities.

2. 产品重量一致性高

在压塑成型时，所有的模具（以及下模腔）注入等量原料：没有热流道，只采用一个喷嘴。

所有模具压塑过程完全相同，产品均匀统一，确保品质。



3. CONSISTENT PRODUCT SIZE because compression molding temperatures are lower.

To obtain the same product, CCM produces cooler caps compared to injected molded caps. The cooler the product, the lower the shrinkage, and the less the size variability.

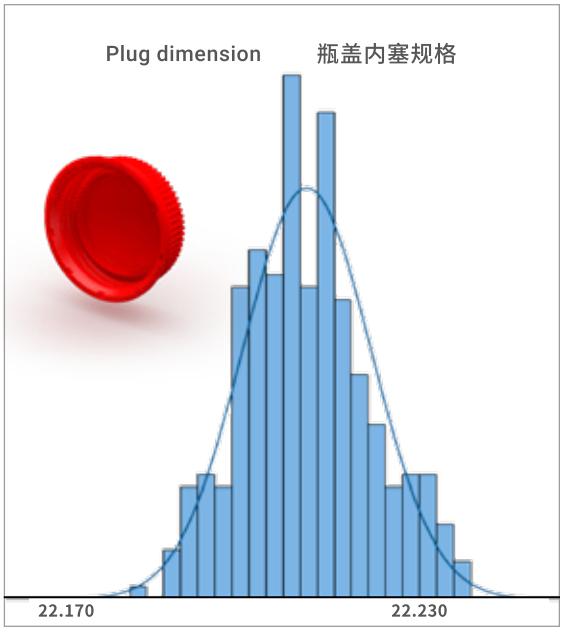
3. 产品尺寸一致性高 压塑成型时温度较低。

与注塑工艺相比，连续压塑成型设备CCM在生产瓶盖时温度较低。
瓶盖温度越低，收缩率就越小，尺寸变化也就越少。

Plug dimension of AB26W closure

624 caps sampling along 12 hours production

Sample mean= 22,21 mm
St. Dev. = 0,01 mm



AB26W瓶盖内塞规格

12个小时生产中抽样624个瓶盖

样本均值= 22,21 mm

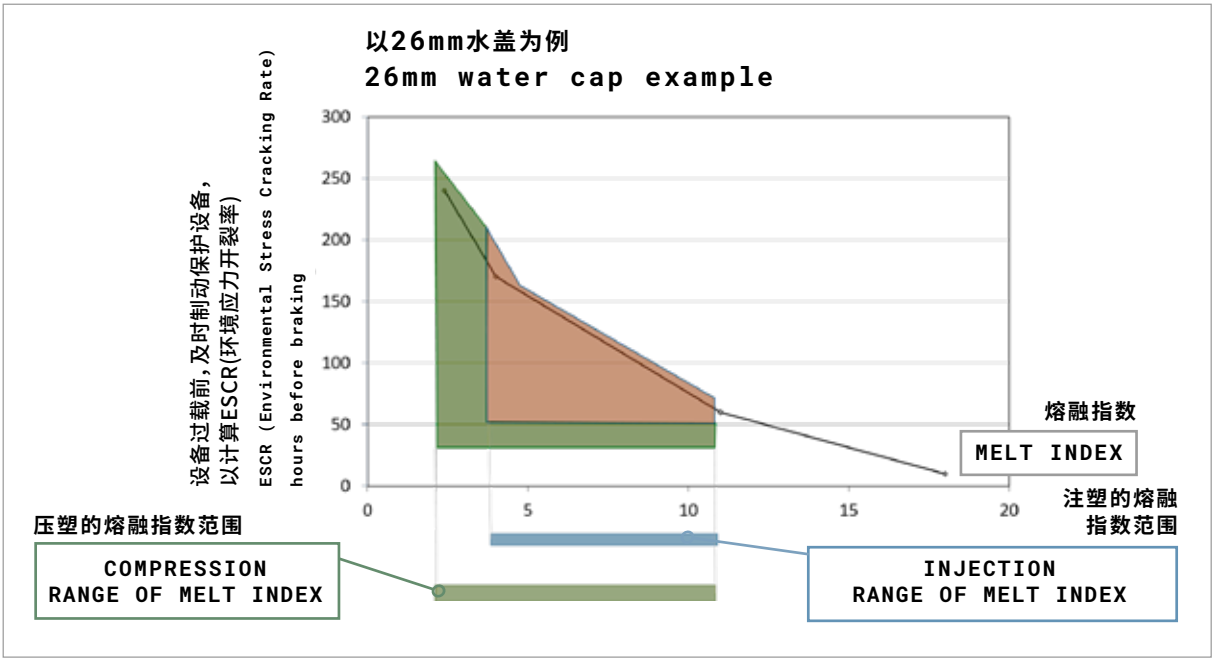
标准差= 0,01 mm

4. WIDE RANGE OF PROCESSABLE RAW MATERIALS

CCM presses allow the use of plastics with greater viscosity (lower MFI) and with higher stress cracking resistance (ESCR). This is possible because the plasticizing unit has no hot runner, so no energy is required to push the plastic through the many channels and narrow nozzles. In addition, the use of more viscous materials with better mechanical features allows for thinner and lighter caps with the same performance.

4. 原材料应用范围广

连续压塑成型设备CCM适用于较大黏度、较低熔融指数(MFI)和更高抗应力开裂的塑料原料(环境应力开裂ESCR)。因塑化单元没有热流道，所以无需推动塑料进入过多通道和喷嘴。此外，若采用较大黏度的树脂原料，不影响产品性能的同时，可以使瓶盖更轻更薄。



Simply digital

Pellet insertion is digitally monitored; the operator receives real-time indications of the precision and accuracy of this process.
A vision system controls the position of each inserted pellet (see the center of the photo); it provides statistics on each insertion equipment.
Automation makes it possible to manage the insertion parameters simply and graphically, optimizing maintenance in a predictive way.
An incorrect adjustment is immediately detected in the form of a change in the position of the inserted pellet before the problem manifests itself.
Drifts beyond the threshold of acceptability result in a suggestion for cleaning or maintenance before the problem occurs.
Adjustment times for size or material changes are reduced by up to 50%.

数字化

智能监督系统管理和控制投料，并向工作人员发送生产过程数据报告。

视像检测设备监督每一个投料位置(详见图例)，即提供每一次投料的数据，自动生成投料参数和图表，工作人员可以根据投料参数确定是否对设备进行预防性维护保养。

在问题出现之前，因检测到投粒位置的变化，工作人员即刻知道设备在调整时发生错误。

当投料偏移超出可接受范围时，在问题发生之前，工作人员可以对设备部件进行清洁或维护保养。

换型或换料的时间将有望减少50%。

SACMI COOL+ patent: the mold cooling standard

萨克米COOL+专利：瓶盖完美冷却

1. WHAT IS IT?

A solution patented by SACMI to cool the cap quickly and effectively. All parts in contact with the plastic actively contribute to cooling. With the patented Cool+ solution, SACMI offers the best heat exchange and, consequently, unbeatable cycle times.

2. ADVANTAGES:

absence of sliding sealings for cooling liquid (as they are not reliable and cause of frictions)

• standard manufacturing processes

• easily removable for cleaning operations

3. FEATURES:

the improved cooling performances can ensure an output increase up to 50% compared to standard molding tools, allowing a quicker return on investment for the complete production line.

什么是COOL+模具?

萨克米COOL+专利模具可以迅速有效冷却瓶盖。与塑料接触的所有部件均在瓶盖冷却中发挥作用。萨克米COOL+专利模具为瓶盖压塑成型的过程提供无与伦比的高效热交换，也因此循环时间无可比拟。

2. 优势：

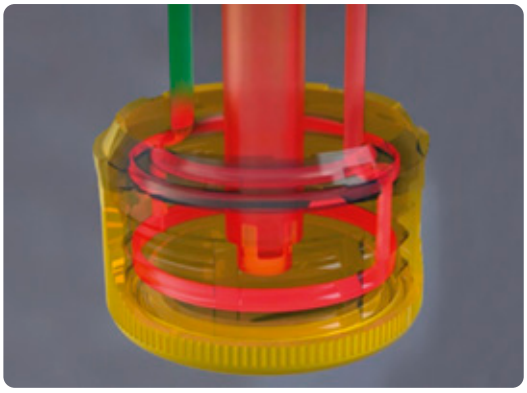
没有用于冷却液体的滑动密封件（密封件不可靠且会引起摩擦）。

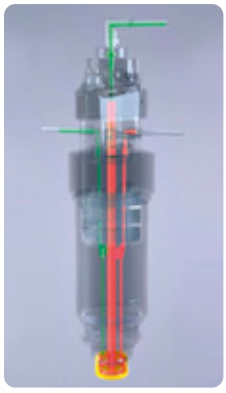
· 标准的制造工艺

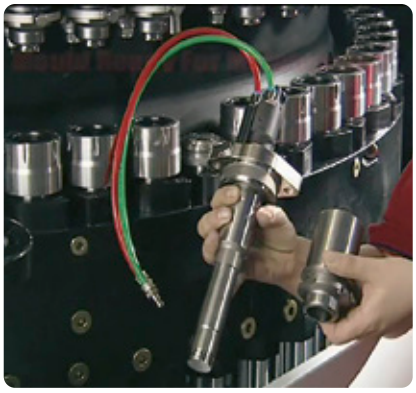
· 易于拆卸，便于清洗操作

3. 特征：

与标准模具相比，改进的冷却性能可以确保产量增加50%，允许整个生产线更快地得到投资回报。








SACMI
CCM
SACMI
SACMI

Technical data 技术参数

	CCM24SB	CCM24SF	CCM32MC	CCM48SD	CCM64MC	CCMM32A
Raw material 原材料	PH - HDPE - LDPE - PS - PET - PC - BIO					
Outer max ø mm 最大外部直径 mm	41	41	53	41	53	60
Max height mm 最大高度	25	25	25	25	25	45
Number of cavities 模腔数	24	24	32	48	64	32
Max prod.Capacity pcs/minute 最大产能 瓶盖/分钟	600	1000	1066	2000	1920	800
Electrical power (up to) kw/kg 耗电量 kw/kg	0,58	0,4	0,4	0,4	0,45	0,8
Overall dimension mm 总体尺寸 mm	6400x2360	7600x2550	7800x2850	8000x2850	9000x3500	8700x2850
Min cycle time s 最小循环时间 s	2,4	1,44	1,8	1,44	2	2,4
Smart Pack	/	Available 热销中	Available 热销中	Available 热销中	Available 热销中	Available 热销中

Slitting and folding the tamper-evident band

防盗环切环与折边

WE MAKE YOUR MANUFACTURING EFFICIENT BY PROVIDING ULTRA-RELIABLE FLEXIBLE MACHINES THAT HAVE LONG BEEN THE INDUSTRY BENCHMARK

我们的设备一直以来都是行业标杆，其超强的稳定性能够保证您的高效生产

THE TECHNOLOGY

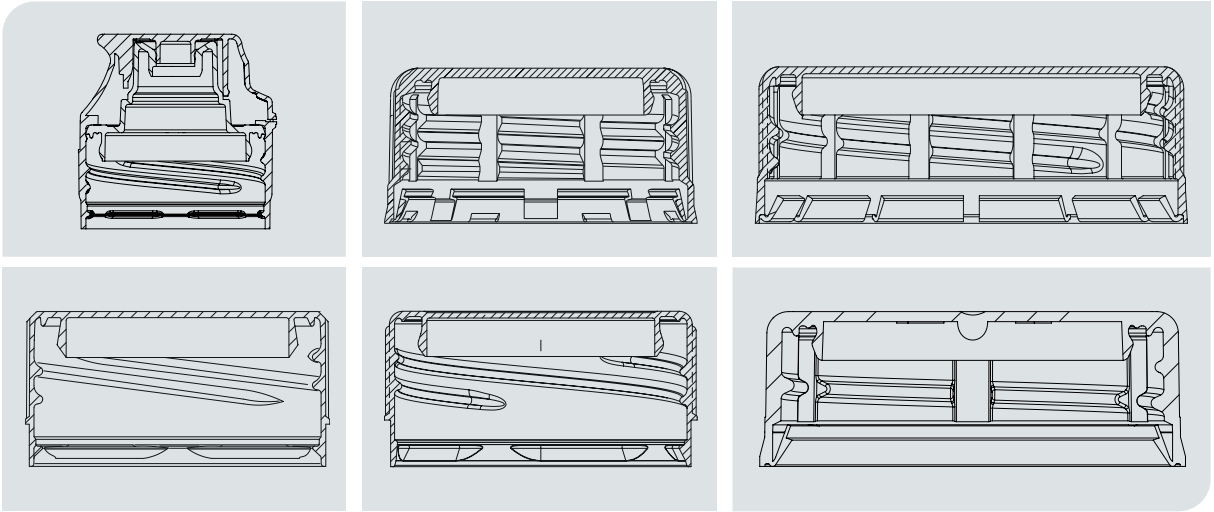
We help you to choose the most suitable and convenient suitable and cost-effective for your cap, whether tethered or traditional configurations.

You obtain maximum efficiency by combining the slitting and folding tasks on just one machine (SFM) or, when necessary, by using separate slitting (SCM) or folding (FLM) machines.

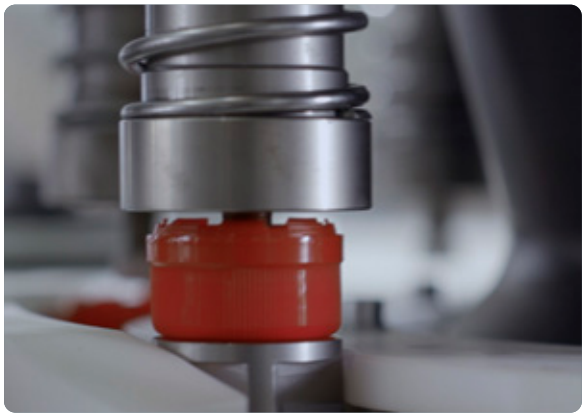
技术

无论是连环瓶盖或标准瓶盖，萨克米为用户推荐高效实用的盖型。

可以采用一台设备(SFM)完成切环和折边的工序，或必要时，采用单台切环设备(SCM)或折边设备(FLM)以优化产量。




CVS
SAGMI
SAGMI
SFM



ADVANTAGES FOR THE CUSTOMER

RELIABILITY, as demonstrated by hundreds of customers and thousands of installations worldwide.

OUTSTANDING FLEXIBILITY: the combi SFM can perform scoring and folding or folding and scoring processes according to cap morphology.

SIZE RANGE: 18<Ø<63(73) mm, 10<H<25 mm.

OUTPUT UP TO 132,000 caps per hour.

UNBEATABLY FAST cutting tool changeovers.

PERFECT CUTTING REPEATABILITY thanks to spindle rotation via a dedicated servo motor.

ERGONOMIC DESIGN, making all components easy to access and cleaning-adjustment-size changeover tasks extremely simple.

NATIVE INTEGRATION with SACMI vision system, **IN-LINE INSPECTION**.

REMOTE SUPPORT via machine automation.

我们能够为客户带来以下优势：

可靠性: 通过全球数以百计的客户，以及数以千计的安装服务得到印证。

杰出的灵活性: 根据瓶盖需求切环折边设备SFM可兼具切环折边功能，也可单独进行折边或者切环。

尺寸范围:18<直径<63(73)mm，10<高度<25 mm

产量高达132,000瓶盖/小时

换型简单快捷

切割重复性强，主轴通过专用伺服马达旋转，品质上乘。

符合人体工程学的设计，易于清洁和尺寸转换异常简单。

与萨克米(SACMI)视像检测系统整合进行**在线检测**

通过机器自动**化进行远程服务支持**

Technical specifications 技术规格

		切环折边机				切环机				折边机
		SCORING & FOLDING				SLITTING				FOLDING
		SFM08	SFM08	SFM12	SFM12	SCM08	SCM08	SCM12	SCM12	FLM12
			4 heads optional		*6 heads optional*		*4 heads optional*		*6 heads optional*	
			4头备选		*6头备选*		*4头备选*		*6头备选*	
Nominal max. closure diameter 额定瓶盖最大直径	mm	63	63	63	63	73	73	73	73	73
Max. closure height 瓶盖最大高度	mm	25	25	25	25	25	25	25	25	25
Output rate 产量	pcs/ min	up to 1200	up to 600	up to 2200	up to 900	up to 1200	up to 600	up to 2200	up to 900	up to 2200
Average absorbed power 平均吸收功率	kW	6,5	8	8	8	3.5	3.5	3.5	3.5	3.5
Compressed air consumption at 0,5 Mpa 压缩空气损耗0,5巴	Nl/ min	230	230	230	230	230	230	230	230	230

Feel free to contact us to obtain a tailor-made plant configuration

请随时与我们联系以获得定制的生产配置

Lining of the plastic cap

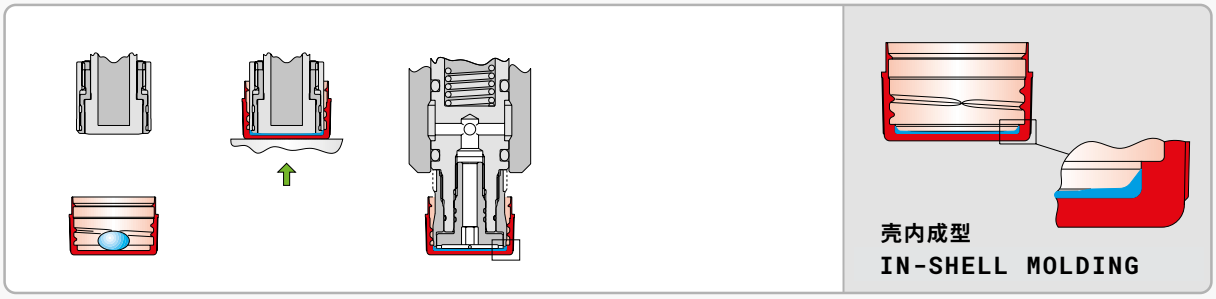
塑料盖加垫

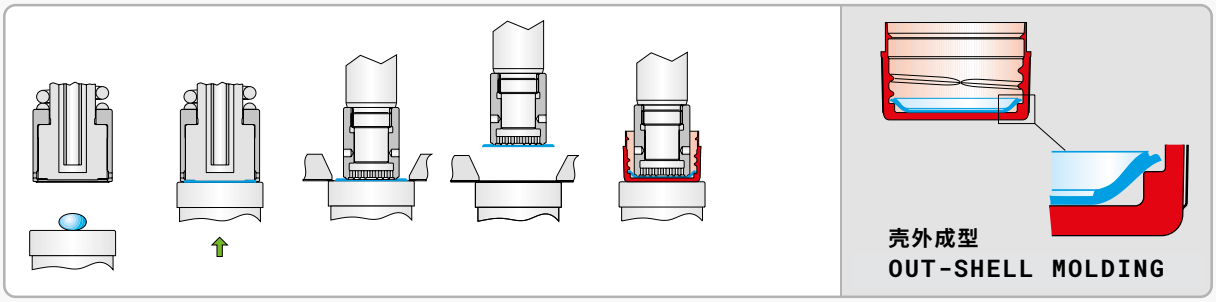
In order to ensure proper sealing and retention of CO_2 levels with highly carbonated beverages we mould a PE/EVA liner into the cap's shell. For that purpose SACMI has developed two distinct and separate technologies, whose name is self-descriptive: in-shell moulding and out-shell moulding.

为确保碳酸饮料良好的密封和二氧化碳的含量，需在盖壳内中加入PE/EVA内垫。为此，萨克米开发了两种独特技术:壳内内垫成型和盖外内垫成型。

PMV224	PMV238	PMV230	PPA24L	PMD200	PMD230
Version / 类型					
IN SHELL / 盖内加垫			RING-LINING 环形内垫	OUT SHELL / 盖外加垫	
Max cap ø mm / 瓶盖最大直径mm					
22-33	35-43	34-43	38-82	28	28-38
Max height mm / 最大高度mm					
15-24	15-24	15-24	24	20	24
Weight kg / 重量 kg					
5200	5200	6400	9000	3700	5200
Number of punch / 冲头数量					
24	20	30	24	24	30
Max prod. Capacity pcs/minute / 生产速度 瓶盖/分钟					
1600	800	1200	1000	800	1200
Electrical power average kw/kg / 平均耗电 Kw / Kg					
15	15	23 e Ø 45 28 e Ø 60	28	13	21
Overall dimension mm / 总体尺寸					
5250X1600X2100	5210X2800X2530	6790X2250X1990	6300X3900X2750	4200X2600X2530	7050X2350X2070
Compressed air consumption nl/1 / 压缩空气消耗 nl/1					
1500	1200	1200	1200	1750	3000


PMV
SACMI





1. **THE PLASTIC RESIN** is extruded, a pellet is cut and placed into the cap's shell

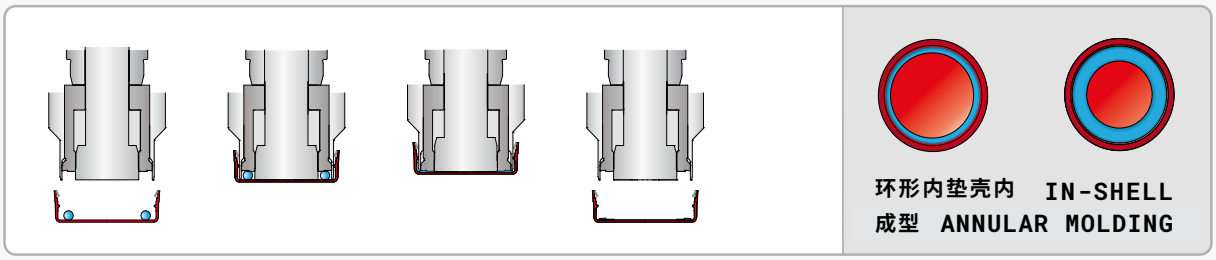
2. **THE PLASTIC PELLET** is moulded to the desired profile and the liner material bonds to the cap's shell

3. **QUALITY OF THE MOULDED LINER** is checked by means of a vacuum QC system (optional) and/or by means of a Vision QC System

1. **挤料**，切割粒料置入盖壳内

2. **内垫成型，**粒料经过模压后与盖壳融合

3. **内垫品控，**真空质量装置（备选）或视像检测系统检测内垫质量



1. **PLASTIC PELLETS** are drafted

2. **THE PLASTIC PELLETS** are moulded, a gasket is obtained

3. **THE QUALITY OF THE GASKET** is checked by CVS

1. **投料**

2. **内垫成型**

3. **品控，**视像检测设备CVS检测内垫质量

Computer Vision Systems

Each SACMI machine integrates a **CVS** vision system to control the machine process.
By alerting the operator in real time to any detected drift, the system allows the challenging goal of zero defect production to be met.
SACMI's continuous innovation has introduced new developments that make inspection even more detailed and precise.
Thanks to new dedicated image acquisition units, CVS is able to identify defects such as very small missing material in the cap wings or assess the flatness of the capsule bottom.

视像检测系统

萨克米压塑成型设备能与视像检测设备连线，并控制设备加工过程。
识别投料偏移同时，引导工作人员进行调整和修正，从而实现零缺陷质量管理的生产目标。

科技赋能创新，使现代化、自动化、精细化高品质管理成为可能。

得益于图像捕捉装置的进一步优化和改良，视像检测系统能识别产品的细微缺陷，包括瓶盖折边的缺料或瓶盖底部的平整程度。

The key benefits of a profitable digital r-evolution

可盈利数字化改革的核心优势

DIGITALIZING PROCESSES IS PROFITABLE, AS SACMI DEMONSTRATES WITH THE 4.0 DEVELOPMENTS BEING APPLIED ON ITS PET CAP AND PREFORM PRODUCTION LINES

萨克米PET瓶盖和瓶坯生产线4.0技术应用，数字化工艺让利润具有可持续性

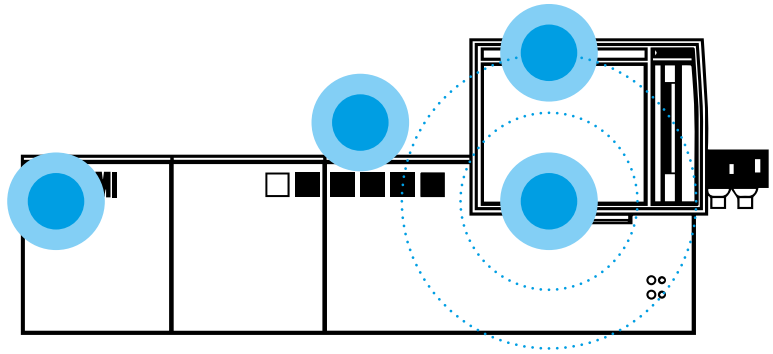
SMART PACK

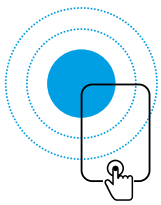
ON-BOARD PREMIUM FEATURES

Ensures process stability and continuous production, through intelligent monitoring of machine's data and behaviour.

高级功能上线

智能监测系统实时监控数据和管理加工过程，确保设备持续生产和稳定运行。





HERE

MANUFACTURING EXECUTION SYSTEM

Maximizes the availability of machines and lines through:

- profitable maintenance planning
- optimal production schedules

生产执行系统

设备和生产线改良和优化旨在：

· 可盈利维修计划
· 生产计划优化

SMART CARE

IN-CLOUD IOT PLATFORM AND SERVICES

Maximizes machine performance, monitors KPIs and runs machine health checks using AI analytics to predict the necessary maintenance tasks.

物联网云平台和服务

设备性能最大化，监控主要业绩指标(KPIs)，确保设备稳定运行。采用人工智能技术分析和监督设备运行，并提供可预见性维护保养建议。

The benefits of the SACMI 4.0 manufacturing line

1. Enhance your process controls, thanks to the latest generation of TwinCAT automation.
2. Prevent economic and reputational damages, detecting incorrect resins.
3. Up to 9% reduction in plasticizing energy consumption, thanks to the new CMFlow© extruder.
4. Optimize maintenance and save time and money, thanks to the control and analysis of the hydraulic oil and refrigerant mixture.
5. Increase mold life by preventing condensation.

   Reduce unexpected stops thanks to the detection of mold cleanliness.

   Prevent thermal drifts, by detecting and analyze the temperature of manufactured caps.

   Inspect the whole surface of the cap, both internal and external.

   Reduce the adjustment time up to 50% through the pellet insertion digital controls.

萨克米4.0生产线的优势

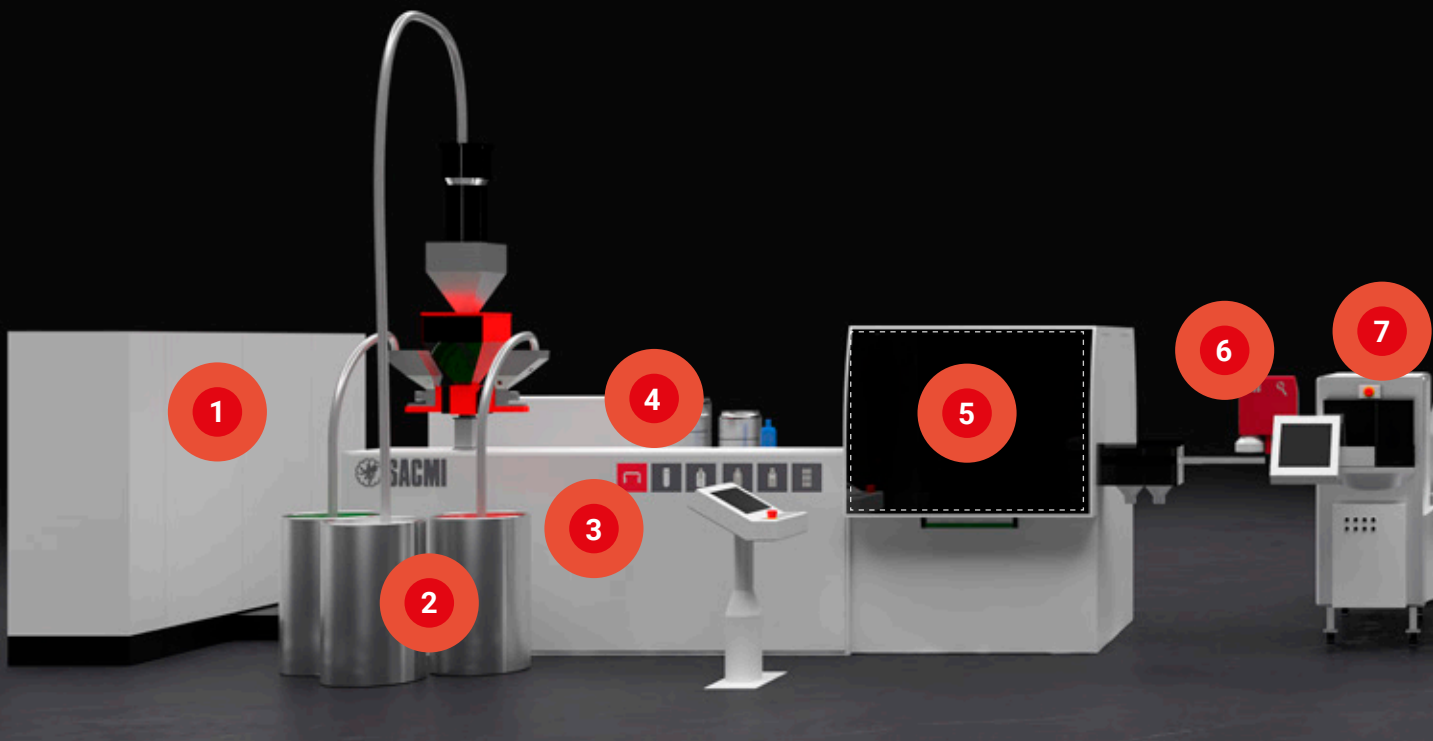
1. 全新TwinCAT自动化软件，进一步加强对生产过程的管理和控制。
2. 检测树脂原料的准确性，预防经济损失和防止品牌声誉受到影响。
3. 采用CMFlow© 螺杆，降低能耗9%。
4. 控制和分析液压油和制冷剂混合物，优化维护保养，节省时间和成本。
5. 有效防止冷凝，延长模具使用寿命。

   对模具清洁进行监督和分析，有效减少设备停机的发生。

   对瓶盖温度检测和分析，预防投料偏移。

   检测盖顶和盖底(瓶盖内部和外部)。

   对投料控制和分析，减少50%设备调整时间。

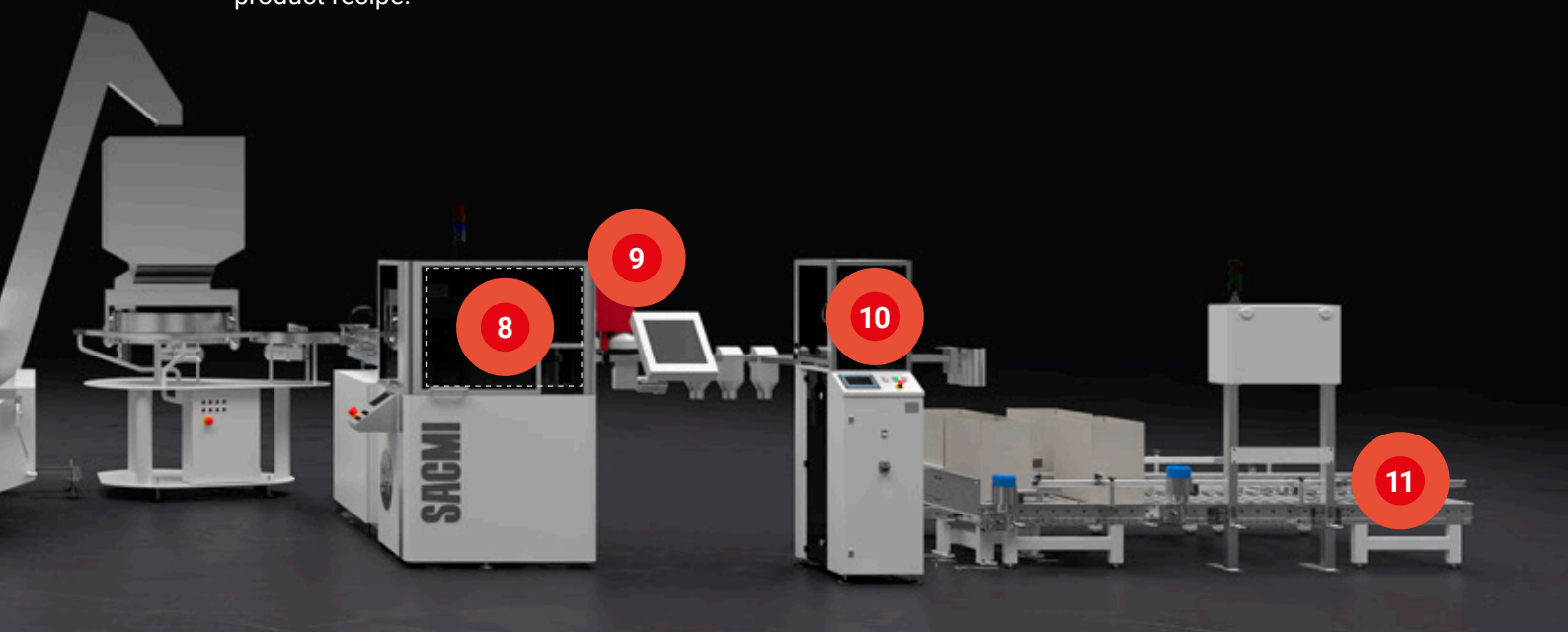


Predict the inserting carousel maintenance thanks to detecting drifts on each inserting equipment.

6. Drift prevention and time saving by measuring the concavity and convexity of each cap produced.
7. Prevent problems related to cap temperature downstream of the CCM; the cooling tumbler self-adjusts according to the product recipe.
8. Save time and money adjusting the band cutting parameters by following the results of the PFMC (Pull Force Machine CVS-CUT) controls.
9. Save time and money thanks to the integrated inspection process, taking advantage of the defect-spindle and defect-mold relations.
10. Prevent band slitting problems through in-line control of the bridges break force and inspecting the cutting zone at the highest high resolution.
11. Prevent loading of incorrect boxes, thanks to the handling module fully integrated with the product recipe.

投料时检测原料是否发生偏移，并预判设备是否需要进行维护保养。

6. 检测盖顶是否平整无凹凸，预防投料偏移，节省时间。
7. 根据生产线配置自动调整模温以确保瓶盖充分冷却。
8. 根据拉力检测设备(PFMC CVS-CUT)的测量结果，自动调整防盗环切环参数。
9. 在加工过程中，对已发生缺陷的上下模腔进行检测和分析。
10. 在线高清检测切环区域和控制瓶盖断环拉力，预防防盗环在切环时可能产生的切环问题。
11. 生产线模块化配置，预防发生装箱错误。



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