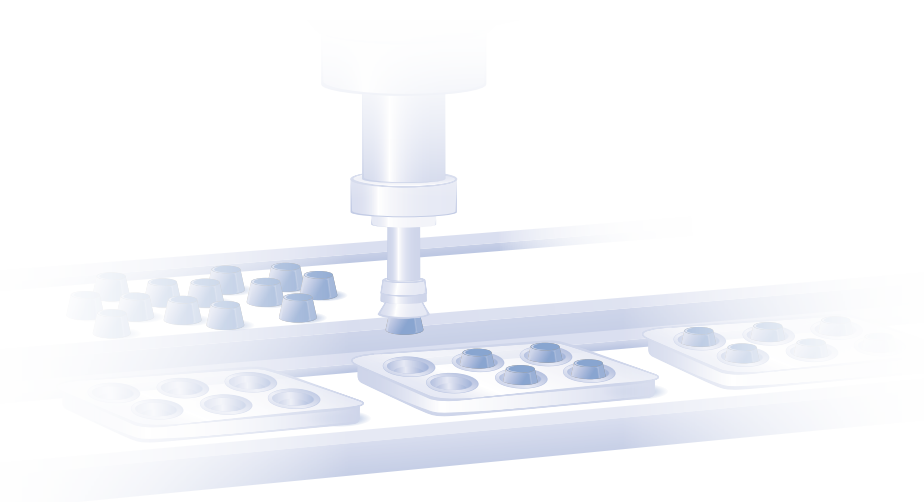




Expertise – Passion – Automation

**You make it delicious,  
we make it efficient**  
SMC solutions for chocolate industry



## You make it delicious, we make it efficient

### SMC solutions for chocolate industry

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**MR. PAOLO TORNAVACCA,**  
CLIENT GROUP MANAGER,  
SMC ITALY

According to Verified Market Research, the global chocolate market is expected to continue growing at a CAGR of 3.6 % between 2020 and 2027. For both machine builders and chocolate product manufacturers, this represents a challenge that brings the need of investing in machine upgrades, efficiency improvements and new designs, and it's crucial to count on the right partner for this task.

With this predicted growth, the challenge of keeping up with production, while maintaining product quality, only becomes bigger. The key aspects of the process such as viscosity, temperature and line-process speed are the factors to be taken care of, so as to guarantee the excellence of the final product. Controlling and monitoring these parameters will help not only in reducing machine downtime and unplanned stoppages, but also identifying optimum process conditions, leading to improved productivity and premium quality chocolate products.

This document will describe the main stages of the confectionery production process, focused in particular on chocolate. At each stage, you will find a thoughtful selection of the most suitable products for each particularity of the process, complemented with real stories of improvements and solutions applied to our customers' use cases thanks to our expertise.

Our local teams of highly trained experts are on hand to help you achieve your goals.



## Industrial maintenance

It's no secret that maintenance is the key to the prevention of problems, cost savings and improvement in productivity and that is why it has become a fundamental aspect of the everyday reality of production lines. With the solutions that SMC can provide to achieve successful maintenance actions you will find the best way to improve the efficiency and productivity of your process.



## Smart Flexibility

This is the main concern of the Industry 4.0, Factory of the Future, Smart Factory or Digitalisation, you name it. It is no longer a question of mass production, but to do so in a personalised, cost-effective, fast and sustainable way.



# We understand your daily needs

Our local teams of highly trained experts are on hand to help you achieve your goals

## Your safety in our focus

Creating confidence with confidence. SMC is an innovative, reliable and strong partner for pneumatic and electrical automation technology. We accompany our customers throughout the entire life cycle of their plant and, for all relevant safety issues, we have competent and professional solutions at your disposal.



## Energise your efficiency

In our 24/7 economy and as governments, industries and consumers battle with in the quest for ever increasing supplies of energy, SMC has always been fully committed to assisting customers in reducing their bills and and, of course, in making its modest contribution to global sustainability.

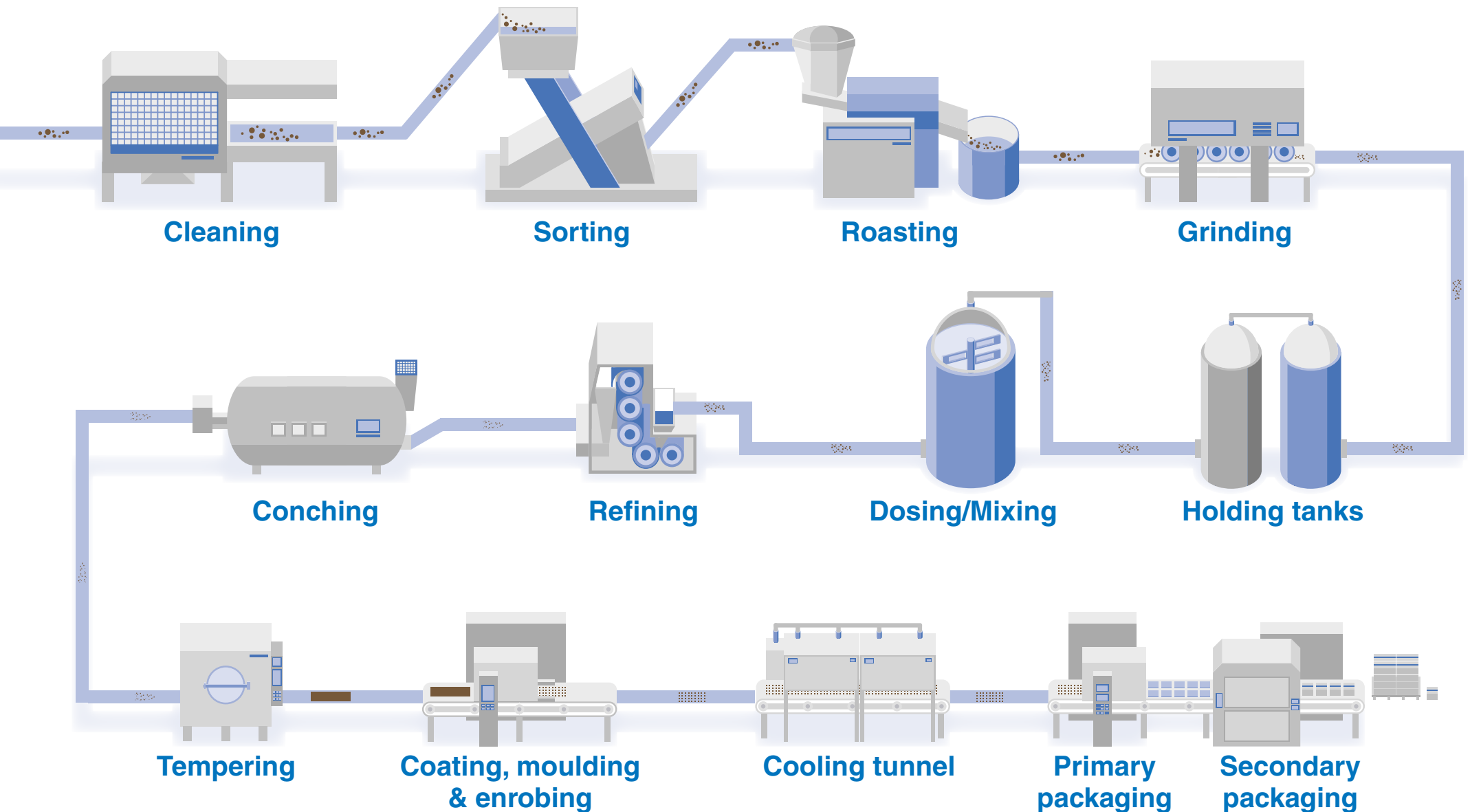
## Size & weight optimisation

Nowadays space and weight are at a premium. SMC is on the way to downsizing your machine components, continually re-designing our products so you can achieve more efficient, compact and light machinery.



# And we understand your production process

Knowledge is power. By thoroughly understanding each stage of the chocolate manufacturing process, from the initial cleaning to the final packaging, we ensure that we find the best solution for any of your requirements.



# Sorting

Discover more by clicking on the products

Impurities of cocoa beans and other additional ingredients are unacceptable for a fine-quality chocolate, and that's why the sorting stage is so important. For this task, reliable machines and efficient processes are required, and SMC is the right partner to provide you with the best solutions.



## 2-port high speed valve SX10 Series

Achieve high-speed sorting.



## Circulating fluid temperature controller, standard type HRS Series

Control temperature for  
cooling lens circuits.



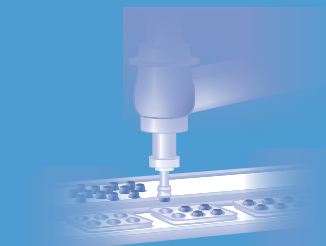
## Air combination unit for food industry HF1-AC-D-X7000 Series

Guarantee the right air  
quality with food-safe  
components.



## Mechanically jointed rodless cylinder MY1-Z Series

Control the brush for  
cleaning the lens.



## Facts over words

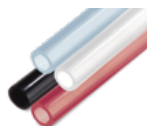
The high-speed valve is the core pneumatic component that guarantees the quality of the machine in terms of sorting speed. Our customer had some leakage problems in their valves and needed to replace them, so the SMC team offered an ideal solution with the **SX10 series**. Our differentiating characteristics such as high-speed response, long life service, low power consumption and compactness were ideal for achieving improved process quality.

While sorting is responsible for the selection of the best candidates, achieving the right flavour of the chocolate depends heavily on the roasting stage, where temperature is the dominant factor. With our wide range of products, you can be sure to guarantee a perfect control of the process.



**Stainless steel 316 fittings**  
KFG2 Series

Resist corrosion and high temperature.



**FEP tubing (fluoropolymer)**  
TH Series

Withstand high temperature.



**Clean and chemical resistant tubing**  
TLM Series

Guarantee the endurance of the piping.



**NAMUR interface 3/5 port solenoid valve**  
VFN2□20N Series

Ensure longer lifetime thanks to the standardised connection.



**NAMUR interface 3/5-port solenoid valve, clean design type**  
VFN2120N-X23/36 Series

Get a multifunction acting, resistant to high temperatures with clean design.



# Refining

Discover more by clicking on the products

After grinding has taken place, the next stage for the cocoa paste is refining. These complex machines do the job of creating a smooth and homogeneous liquid with the right particle size to get the perfect texture, needing a precise control of the rollers that can only be achieved with quality equipment.



## Round air cylinder CG1-Z Series

Avoid foreign matter accumulation.



## Compact 5-port solenoid valve JSY Series

Control water valves and general pneumatic circuits.



## Pilot operated 2-port solenoid valve JSXD Series

Control cooling of the refiner rolls, hydraulics and motors.



## FRL combination units AC-D Series

Match the air standardisation requirements with a modular and uniform design.



MR. DIEGO MIRABELLI,  
INDUSTRY MANAGER  
FOOD, EUROPE

*A proper refining process relies on three key factors: efficiency, quality and automation, and you can count on our help for their appropriate management.*

*First, water is a fundamental resource the waste of which must be carefully controlled and reduced. With our thermo-controllers, you can create closed circuits that allow saving huge amounts of water per year, thereby helping to reduce consumption and to comply with energy efficiency policies.*

*In the same way, our temperature control equipment can also help to make the difference in the product quality. This aspect is closely linked to the right water temperature, which is usually problematic. Reaching the right point can be a challenge, especially during warm months, so good equipment can really help to reach the expected results.*

*Last, but not least, it's important to carry out smart monitoring and management of the complete process, so as to guarantee that the performance of the components and the overall machine are optimal and to prevent any eventualities that may affect the final product or the production line.*

In order to volatilise the remaining acetic acid of the chocolate paste and develop its flavour, conching equipment needs precise temperature and speed control, as well as reliable operation over time, since the process takes several hours or even days.



**Direct operated, 2-port solenoid valve**  
**JSX Series**

Control the flow of the water circuit.



**Electro-pneumatic positioner**  
**IP8000/8100 Series**

Open and close the valve for chocolate mass.



**Digital flow switch for water**  
**PF3W Series**

Monitor flow and temperature of cooling water circuit.





Fat crystals in the chocolate must be stabilised to avoid undesired features such as blooming, crumbly texture or dull appearance. To carry out the delicate operation of heating and cooling the chocolate, you can trust our products to ensure the precision and control that the process requires.



**Circulating fluid temperature controller, standard type**  
**HRS Series**

Control temperature of the water cooling system.



**Digital flow switch for water**  
**PF3W Series**

Monitor flow and temperature of the cooling water circuit.



**Pilot operated 2-port solenoid valve**  
**JSXD Series**

Ensure a long life operation of the water circuit control system.

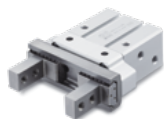
## Facts over words

Whenever a problem was detected in the tempering process by one of our customers, the block temperature had to be manually checked using a handheld monitor. After an investigation, our experts identified a significant reduction of the flow rate, which was caused by the blockage of the filters. The solution designed by SMC consisted of installing **PF3W series** flow meters to help prevent clogging. Thanks to the monitoring of both pressure and temperature, together with the red/green indicators and an alert in the case of excessively low flow, great results were achieved, reducing intervention in the process and downtimes.

# Coating, moulding & enrobing

Discover more by clicking on the products

The final step before cooling can vary depending on the product, but no matter if you need to block and engage moulds, or ensure the right tension of the belt, our products will be there to help you with the task.



## Compact type parallel style air gripper JMHZ2 Series

Carry out gripping operations with a lightweight and compact solution.



## Safe dump valve VP546/746 Series

Combine it with FRL units to achieve a safe solution.



## Compact cylinder, double acting single rod JCQ Series

Save space and weight and improve cycle times.



## Bar type/nozzle type ionizer IZT40/41/42 Series

Eliminate electricity charge for plastic moulds.



## FRL combination units AC-D Series

Match the air standardisation requirements with a modular and uniform design.



## Efficient nozzle KNH series

Increase cleaning efficiency of the moulds.

## Facts over words

In a factory, during the process of unmoulding, chocolate bars were getting stuck in the crates, not being able to get them wrapped. The SMC team identified that this was happening due to static issues, so the solution was to install **IZT40 series** bar ionizers. The rapid static neutralisation of this product helped the customer to solve the issue, reducing stoppages and defective products and improving final product quality.

## Sustainable growth also means ensuring uninterrupted operations

We are committed to ensuring that SMC is prepared for any emergency and that our business activities will not stop in the event of such circumstances. SMC aims to fulfil our product supply responsibilities and maintain our customers' trust by contributing to both sustainable growth and the expansion of technological innovations.

SMC, as a comprehensive manufacturer of automatic control equipment that supports automation, is able to promptly provide products that meet our customers' needs anywhere in the world.

### Finance BCP

#### Safe & Solid financial base

In the event of an emergency, SMC can provide a safe and solid financial base (with cash, deposits, and equity capital) that will sufficiently cover the working capital and funds needed to rebuild buildings and the equipment required for business continuity. This is done to provide peace of mind to our customers and workers alike.

### Information security BCP

#### Vital data kept safe

Strengthen information security for protection against computer viruses and cyberattacks, plus the installation of data centres to establish a disaster recovery system. Your information is safe with us.

### Sales BCP

#### Consistent sales support

8,700 sales engineers worldwide ready to recommend the best solution for you.  
83 global locations to make sure that wherever you are, we are there too.

### Production BCP

#### Ensure customer order fulfilment

Reliable delivery for you thanks to our 8 global logistic centres and 34 production sites, 10 of which are located in Europe. Moreover, flexibility to rapidly respond to any sudden change in the manufacturing environment.

**Aiming to gain your trust  
Sustainability through  
reliability**

### Engineering BCP

#### Consistent technical support

1,700 engineers at our 5 technical centres around the globe (2 in Europe - Germany and UK).





Expertise – Passion – Automation

[www.smc.eu](http://www.smc.eu)

DIG-CHOC-A-UK