



Expertise – Passion – Automation

**Powering performance in protein**  
SMC solutions for protein industry

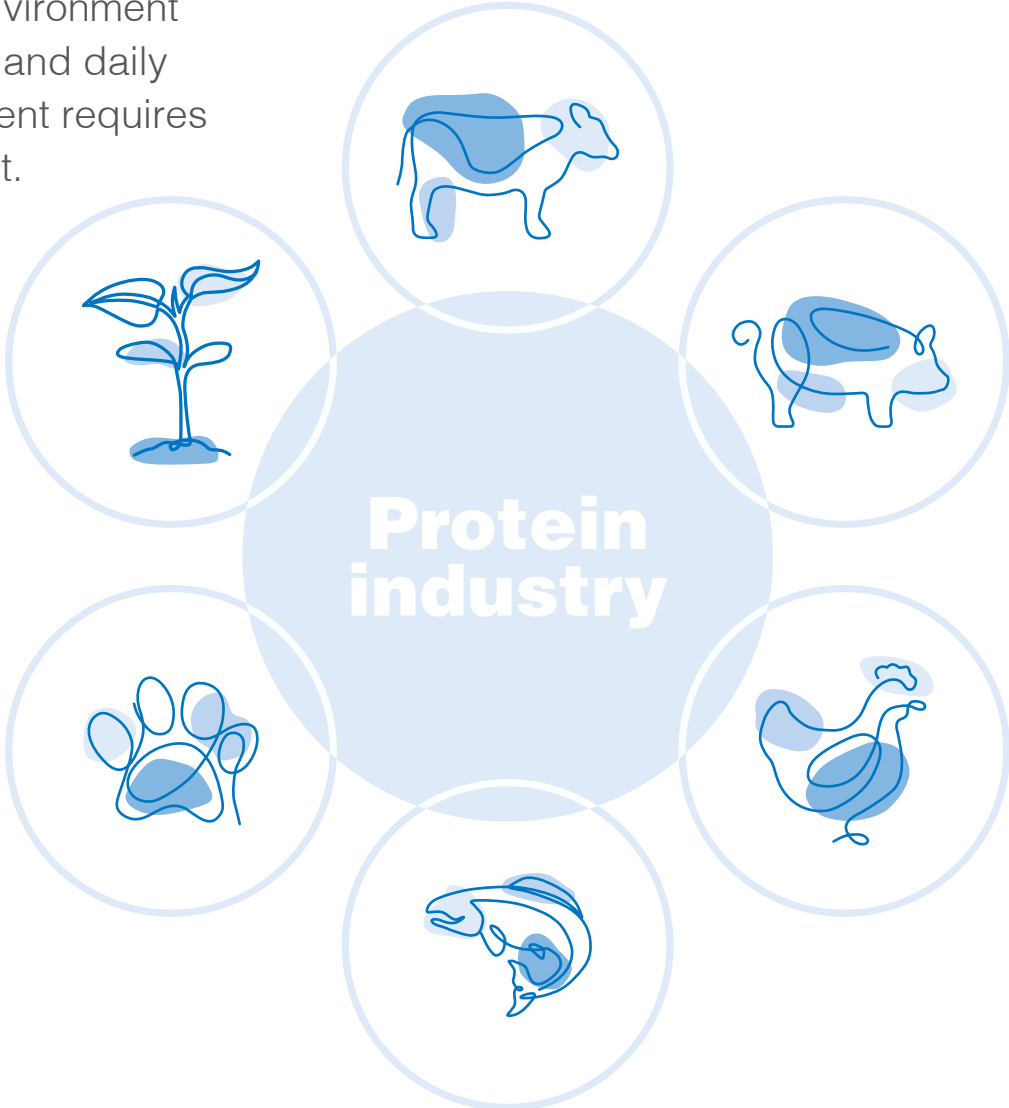
# Powering performance in protein

SMC solutions for protein industry

The protein sector is probably the most arduous working environment for both people and equipment, with temperature extremes and daily washdown requirements. To be productive in this environment requires the best-trained people and the best-engineered equipment.

*At SMC, we are aware of the challenge of meeting all the protein industry's requirements, so our dedicated team of experts will enable your success.*

- The key principles of protein production ..... 3**
- We understand your daily needs ..... 4**
- And we understand your process requirements ..... 5**
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*In the changing world of the protein industry, manufacturers must comply with food safety, increase productivity, and be more sustainable. By combining safety plans like HACCP with modern equipment and focusing on saving resources, the industry is leading the way in setting new standards for safety, efficiency, and being eco-friendly.*

## Protein industry



**STEVE ARNOLD.** FOOD STANDARDS MANAGER, EUROPE & US

### Food safety

*For any machine builder or end user business in the protein sector, the quality and safety of the final product produced is of paramount importance. The consumer must not be exposed to any potential food safety risk, therefore hygienic design principles must be followed to protect your business and the consumer.*

*A rigorous food safety management plan incorporating a mandatory HACCP (Hazard Analysis Critical Control Point) plan are the cornerstones of food safety. Hygienic design is central to a good HACCP plan as it helps mitigate or reduce the risk of food contamination.*

### Productivity

*Time is money. Time taken to strip down and clean a machine is unproductive and the aim should be to get your asset back up and running and ready for the next production run as soon as practicable.*

*SMC have developed a range of equipment perfectly suited to helping you obtain, maintain, and increase your machines' productivity, as well as achieving your required OEE targets (Overall Equipment Effectiveness).*

*The correct application of our available parts together with an effective monitoring regime will lead to productivity gains for your business in terms of reduced downtime, increased machine availability and product quality.*

### Sustainability

*Conservation of the earth's finite resources is the number one focus for today's consumers and as an OEM or an end user you will be under pressure to maintain your ISO 50001 certification and achieve Carbon Footprint reductions for your Scope 1, 2 and 3 emissions.*

*Utilising EHEDG design principles will enable your customer to reduce their use of harsh cleaning chemicals and the associated water use whilst enabling quicker cleaning and maintenance cycles, allowing them to get back up and running and produce their products more efficiently.*

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, 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.



## 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.



## Industrial maintenance

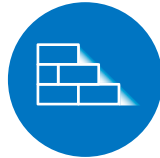
It's no secret that maintenance is the key to the prevention of problems, cost savings and improvement in productivity and that is why it has become a fundamental aspect of the everyday reality of production lines. With the solutions that SMC can provide to achieve successful maintenance actions you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

At SMC, we are aware of the complex regulations which must be complied with in the protein industry. Therefore, we want to accompany you in the different processes and advise you on the key products suitable for the production processes in your business.

We consider the following topics to be of key importance to you and your customers and we are keen to engage with you and your team to make sure that you choose the right equipment to meet your needs.



**Hygienic & clean design**



**Materials of construction**



**Air quality**



**Ingress Protection**



**EHEDG certification**



**Regulatory compliance:  
FDA and EU 1935/2004**



**HACCP monitoring**

# Hygienic & clean design



With the recent introduction by the **GFSI (Global Food Safety Initiative) of Scope J1 and J2**, OEMs and end users are placing greater emphasis on hygienic design. The inclusion of hygienic design principles can lead to a lower total ownership cost of your machinery and help you meet your environmental targets.

Our JSY5000-H valve manifolds, KFG2H-E EHEDG certified pneumatic fittings and our CG5-X2977 stainless actuators have been designed to follow hygienic principles and feature smooth surfaces and an optimum bend radius to prevent the buildup of soil and enable quick and effective washdown, reducing the quantity of water and chemicals used for cleaning.



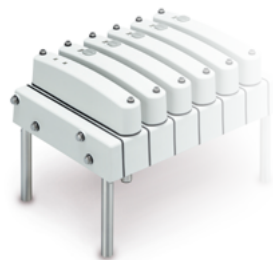
## Actuators

- **Stainless steel cylinder**  
CG5-X2977 Series ⊕
- **Magnetically coupled rodless cylinder**  
CY3 Series ⊕
- **Compact cylinder**  
CQ2-XC6 Series ⊕



## Fittings & tubing

- **Stainless steel speed controller**  
HF2A-ASG Series ⊕
- **Insert fitting**  
KFG2H-E & KFG2H-C Series ⊕
- **Polyurethane tubing**  
TU-X214 Series ⊕
- **FEP & modified PTFE soft tubing**  
TH & TD Series ⊕



## Directional control valves

- **Manifold & single valve**  
JSY5000-H Series ⊕
- **NAMUR interface 3/5-port solenoid valve**  
VFN2120N-X23/36 Series ⊕



## Fluid control equipment

- **Angle seat valve**  
JSB Series ⊕
- **2-port solenoid valve**  
JSX Series ⊕

# Materials of construction



The correct selection of materials of construction can have a massive positive impact on your Food Safety Management System, from preventing the contamination of food products to increasing productivity due to increased component life.

SMC's CG5 actuators are manufactured from **grade 304 stainless steel** ensuring no oxidation or corrosion of the actuator that could contaminate food stuffs. The surface finish of the stainless steel is 0.8 Ra, reducing the likelihood of pathogens remaining on the surface of the actuator after cleaning.



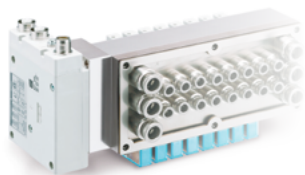
## Actuators

- **Magnetically coupled rodless cylinder**  
CY3 Series ⊕
- **Stainless steel cylinder**  
CG5 Series ⊕
- **Compact cylinder**  
CQ2-XC6 Series ⊕



## Airline equipment

- **OSHA standard compliant nozzle for one-touch fitting**  
KNA Series ⊕
- **Bacteria removal filter**  
HF2B-SFDA Series ⊕



## Directional control valves

- **Plug-in bottom ported manifold, stainless steel plate**  
JSY3000-S Series ⊕
- **Manifold valve**  
JSY5000-H Series ⊕



## Fluid control equipment

- **2-port solenoid valve**  
JSX Series ⊕
- **Angle seat valve**  
JSB Series ⊕



## Fittings & tubing

- **Polyurethane tubing**  
TU-X214 Series ⊕
- **FEP & modified PTFE soft tubing**  
TH & TD Series ⊕
- **Insert fitting**  
KFG2H-E, KFG2H-C & KFG2-F Series ⊕
- **One-touch fitting**  
KQB2-F & KQG2-F Series ⊕
- **Stainless steel speed controller**  
HF2A-ASG Series ⊕
- **Stainless steel quick coupler**  
KKA Series ⊕



## Vacuum

- **Stainless steel vacuum ejector**  
ZH-X267 Series ⊕
- **Bernoulli gripper**  
ZNC-C Series ⊕

# Air quality



Compressed air is often classified under utilities within food manufacturing plants and, as such, its quality is often overlooked. However, this is an important factor as compressed air is often used for both direct and indirect food contact applications and recent changes to GFSI guidelines are leading factory auditors to take a closer look at the quality of compressed air used in point-of-use applications. There is no mandatory regulation for the quality of compressed air used and it is up to each manufacturing site to risk assess particular parts of the manufacturing process. Nevertheless, it is generally accepted that ISO 8573-1 for air filtration is the default document for guidance on air filtration quality.

SMC have developed both our HF1 and HF2 series of air filtration sets which can be used to ensure clean, dry, oil and bacteria-free compressed air at the point of use. These filters perform to **ISO 8573-1**, and they have been independently tested by Lloyds to **ISO 12500** to verify their performance.



## Airline equipment

### HF1

- **Air combination unit**  
HF1-AC-D-X7000 Series ⊕
- **Main line filter**  
AFF Series ⊕
- **Mist separator**  
AM Series ⊕
- **Micro mist separator**  
AMD Series ⊕
- **Filter sets with clogging switch**  
AMK Series ⊕



### HF2

- **Antibacterial air combination unit**  
HF2-BAC Series ⊕
- **Bacteria removal filter**  
HF2B-SFDA Series ⊕

# Ingress Protection



The protein sector is one of the harshest environments for both the plant and its machinery to operate in, making it vital for automation equipment to have the highest level of ingress protection. The Ingress Protection rating system specifies a piece of equipment's resistance to the ingress of dust and water across certain test conditions. The IP rating is generally applied to electromechanical equipment together with enclosures.

Our JSY5000-H hygienic & clean design valves are **IP69K** rated, meaning they can be fitted without the additional need of an external stainless control cabinet and thereby reducing the total purchased cost, machine footprint and shipping weight of the finished machine. Mounting a valve set closer to the working actuators also enables a saving on compressed air consumption, further reducing the total ownership cost of a machine.



## Directional control valves

- **Manifold & single valve**  
JSY5000-H Series ⊕
- **NAMUR interface 3/5-port solenoid valve**  
VFN2120N-X23/36 Series ⊕



## Fittings & tubing

- **Insert fitting**  
KFG2H-E Series ⊕

# EHEDG certification



**EHEDG – European Hygienic Engineering Design Group** are considered the pioneers of hygienic design and having products designed into your machinery that are EHEDG certified gives both you and your customers absolute confidence that the machinery you are purchasing is of the utmost quality.



## Fittings & tubing

- **Insert fitting**  
KFG2H-E Series ⊕

Our unique EHEDG Certified pneumatic fittings – KFG2H-E (**C200017 EL Class 1 AUX**) feature smooth surfaces and radiused that eliminate potential harbourage for pathogens, enabling thorough cleaning, removal of soil and minimal opportunity for liquid pooling which reduces the potential for bacterial growth and keeps your food production process safe.

\* This certification is renewed every year.



# Regulatory compliance



Food manufacturers are required by law to prevent food from becoming contaminated or tainted by the materials used in food contact manufacturing equipment. Two of the most common requirements relate to the US Food and Drink Administration's Code of Federal Regulations Title 21 177 and the European Union's EU 1935/2004 regulations.

SMC use NSF-H1 food grease across our HF range of products so you can be confident that there will be no contamination risk to your food products or food packaging from our equipment and many of **our seals and gaskets are now manufactured using FDA and EU 1935/2004 approved materials.**



## Actuators

### FDA & EU 1935/2004

- **Stainless steel cylinder**  
CG5-X2977 Series ⊕



## Airline equipment

### FDA

- **Antibacterial air combination unit**  
HF2-BAC Series ⊕
- **Bacteria removal filter**  
HF2B-SFDA Series ⊕



## Vacuum

### FDA

- **Bernoulli gripper**  
ZNC-C Series ⊕



## Fittings & tubing

### FDA

- **One-touch fitting**  
KQG2-F & KQB2-F Series ⊕
- **Insert fitting**  
KFG2H-C & KFG2-F Series ⊕
- **FEP & modified PTFE soft tubing**  
TH & TD Series ⊕

### FDA & EU 1935/2004

- **Insert fitting**  
KFG2H-E Series ⊕
- **Polyurethane tubing**  
TU-X214 Series ⊕



## Directional control valves

### FDA

- **Manifold & single valve**  
JSY5000-H Series ⊕

# HACCP monitoring



**HACCP – Hazard Analysis & Critical Control Point** is a mandatory requirement for any food manufacturing facility in Western Europe, North America and increasingly the Far East. It is a vital part of a food manufacturer's **Food Safety Management System**, and it is designed to prevent or mitigate any potential food safety issues during food production caused by chemical, physical, microbiological or allergen contamination.

Monitoring your machine's performance can help to prevent machine breakdown and form part of your business HACCP procedures. Simple pressure differential sensors can help to remotely identify when point-of-use air filtration filters need replacing and this can save time on routine maintenance inspections and help ensure clean compressed air for your process.



## Sensors & switches

- **3-screen display, multi-channel digital sensor monitor**  
PSE200A Series ⊕
- **Condensation checker humidity & temperature switch**  
PSH Series ⊕



## Airline equipment

- **Main line filter**  
AFF Series ⊕
- **Mist separator**  
AM Series ⊕
- **Micro mist separator**  
AMD Series ⊕
- **Filter sets with clogging switch**  
AMK Series ⊕

Discover more on  
SMC Business Continuity Plan

## 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

7,900 sales engineers worldwide ready to recommend the best solution for you.  
Over 80 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 9 global logistic centres and production sites in 30 countries, 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)  
PROTEIN-A-UK