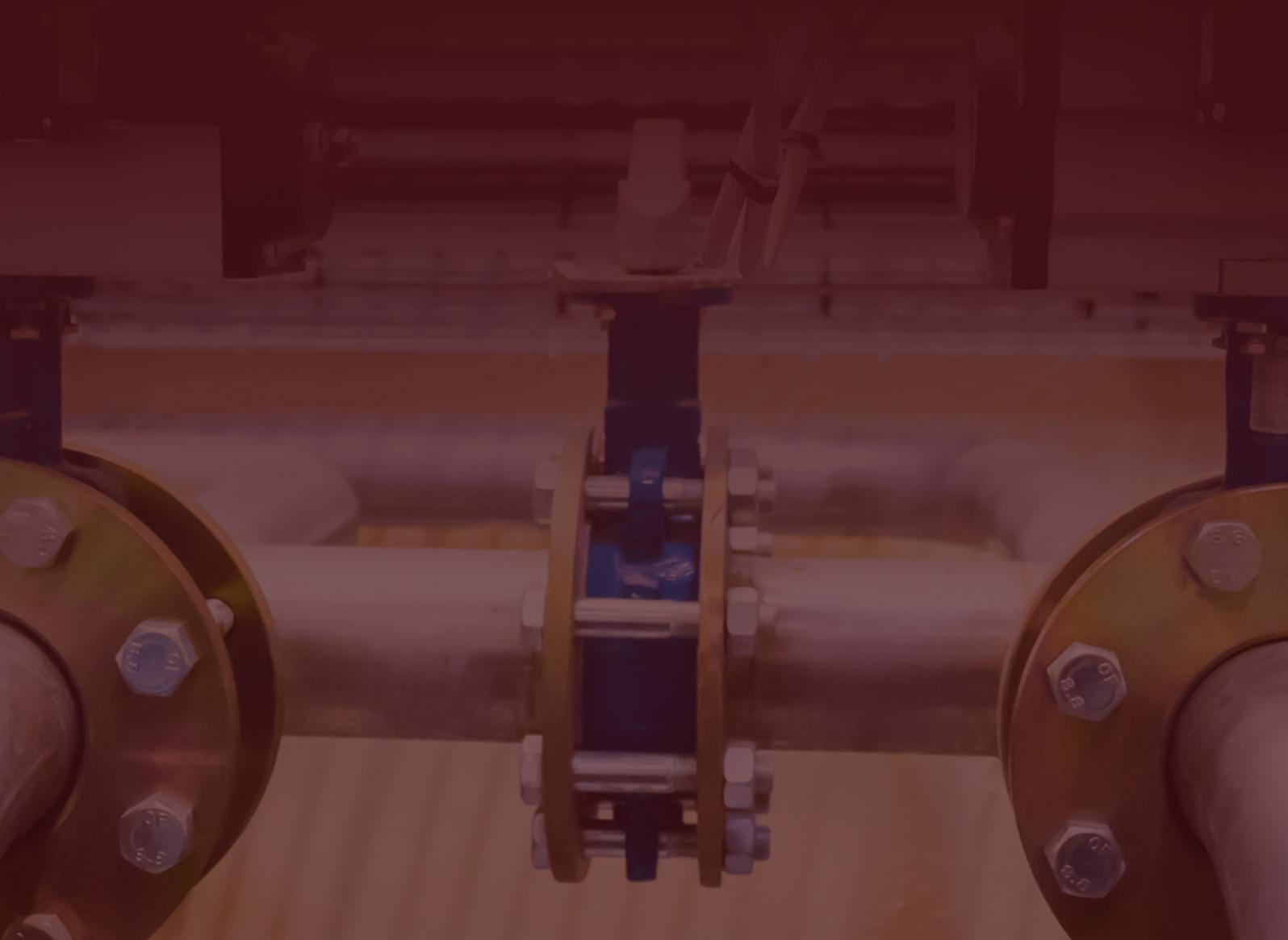




# SOMAS BALL SEGMENT VALVES WHITE PAPER

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# TABLE OF CONTENTS

- 2** OUR PARTNERSHIP WITH SOMAS
  - 3** BALL SEGMENT VALVES FOR YOUR INDUSTRY
  - 5** SOMAS RANGE OF VALVES
  - 7** WHY CHOOSE HIGH CAPACITY BALL SEGMENT VALVES
  - 9** THE MANUFACTURING PROCESS OF BALL SEGMENT VALVES
  - 11** FREQUENTLY ASKED QUESTIONS ABOUT SOMAS BALL SEGMENT VALVES
  - 12** CONTACT DETAILS
- 

# OUR PARTNERSHIP WITH SOMAS

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SOMAS Instrument AB are one of the world's leading developers and manufacturers of high grade, stainless steel control valves.

Based in Säffle, Sweden, SOMAS has been operating for over 70 years. The first valve manufactured by SOMAS was the so-called 'throttle valve' which today is what you would classify as a butterfly valve. They first produced the now very popular segmented ball control valve in the 1970s. This has proven to be the solution for many applicational issues within the process industry.

The current SOMAS catalogue consists of ball segment valves, ball valves, butterfly valves, check valves and pneumatic actuators and accompanying valve positioners.

BM Engineering are proud suppliers of SOMAS ball segment valves, specifically designed for the distilling industry. The SOMAS ball segment valves add to an extensive range of process and general-purpose valves that BM Engineering already supply. These include Actuated Valves, Ball Valves, Butterfly Valves, Gate Valves, Globe Valves, Knife Gate Valves and Non-Return Valves.

Established in 1999, BM Engineering is a family run business who have become one of the leading suppliers of valves to many process industries in Scotland. Based in Glasgow, they enjoy a varied customer base of blue chip companies and small contractors, with their main markets being brewing, dairy, food and beverage, pharmaceuticals and renewables.

# BALL SEGMENT VALVES FOR YOUR INDUSTRY

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Known for its high capacity, the Ball Segment Valve is in its element as a control valve. The reason it works so well for this purpose is down to the backlash free design of its ball segment and valve shaft.

Although at its best as a control valve, the SOMAS Ball Segment valve can also be used as an on/off valve. Its openness of flow and generous price make this an appealing valve for many applications within the process industry.

Here are some of the industry areas where segmented ball valves can be used to improve the function of applications.

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## **PULP AND PAPER**

The machinery and equipment used in pulp and paper mills are highly dependent on the proper control of various process fluids to desired conditions.

High-capacity ball segment valves are designed to fulfil strict process environments. For paper machines to operate effectively, strong flow control of various process media is vital. These include liquids with or without fibers at the wet end and steam at the drying section of the machine.

Segmented ball control valves are capable of handling any form of substance. With its open flow characteristics, even pulp is a non-issue and proper control of fluids to a paper machine's desired operating condition are easily enabled. This maintains the cleanliness of the fluid which is critical to the machine's operation and reliability.

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**SUGAR** Control requirements in the energy-intensive sugar industry are extremely stringent. Therefore, it is vitally important that production is efficient.

Ball segment valves are used largely in the steam applications within a sugar processing factory. They are ideally required to be relatively small, with seats made of HiCo or PTFE53.

Used because of the ball segment valve's large flow opening, the position of the seat is also a huge benefit. This is because it is positioned to prevent wear from the media. There is also the ability to alter the seat options, which allows the valve to adapt to different temperatures throughout the process.

**CHEMICAL** The chemical industry sector uses vast quantities of dangerous chemicals. Therefore, there are stringent demands on the valves used.

Segmented ball control valves can handle virtually all types of process media at a wide range of temperatures. The valve segment has a dual bearing that makes the valve highly durable with a low torque requirement.

**DISTILLING** Accuracy is vitally important to the distillation process. Failure to maintain accuracy can lead to a variety of negative outcomes. Among these are pressure fluctuation, changes in temperature and the variability of the feed.

The ball segment valve has proven to be a strong performer in this industry. Its backlash-free torque transmission makes the control of accuracy a lot easier.

Its success in this area is displayed in this BM Engineering case study on water control valves for Islands Distillery.

# SOMAS RANGE OF VALVES

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SOMAS takes a customer-centric approach towards the production of all of their industrial valves. This allows them to meet the specific requirements of various business areas within the process industry sector.

Their valves are continuously evolving to meet the ever-changing requirements of the business areas they serve. New process media are also being used, leading to the requirement of new valve materials. Here are some of SOMAS' industrial valve selection.

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## BALL SEGMENT VALVES

For optimal control, the SOMAS ball segment valves are often the process industry's popular choice. This is largely down to its high capacity and rustic design, which enables it to fulfil the strictest requirements.

The segmented ball valve is in its element as a control valve. Its properties make it useful for most applications, regardless of the state of the process media or temperature. The entire valve is designed with free flow in mind. This philosophy means that the SOMAS ball segment valve minimizes the risk of clogging.

The KVTW and KVTF (wafer and flanged design respectively) are ball segment valves with a centrally mounted ball segment. These valves are best suited for liquids or media containing impurities.

Alternatively, KVXW and KVXF valves feature an eccentrically mounted segment. These ball segment valves are better suited for dry or clean media types as the ball segment rotates out from the seat when the valve is opened, which reduces the wear on seat and segment. These also feature both wafer or flanged designs.

SOMAS' ball segment valve has an openness in terms of flow. This combined with its generous price, also make it a good option as an on/off valve.

The SOMAS ball segment valves are also customisable. There is the option of a LN (Low Noise) ball segment with low noise trim for high differential pressure and the KVM-ball segment with V-groove for high fibre concentrations.

## TRIPLE OFFSET BUTTERFLY VALVES

The SOMAS butterfly valve has a unique design and robust valve seat. This means that it requires virtually no maintenance. Much like the Ball Segment Valve, they can handle any type of process media, whether it is steam, gas, water or other fluids.

With SOMAS advanced trademark triple eccentric design, the butterfly valve is capable of operating as an on/off valve and a control valve.

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## BALL VALVES

SOMAS offers two types of Ball Valve, the SKV and the full bored 3-piece. The versatile ball valves are designed with hard chrome plated ball as standard and a full cylindrical bore. The bore gives the valve maximum capacity and low pipe resistance. This makes the SOMAS Ball Valve beneficial to applications using abrasive media.

With its two valve seats, the ball valve is most suitable as an on/off valve. Chromed as standard, it can be supplied with Hi-Co coating. It also operates in some cases as a control valve. This is largely thanks to its bi-directional seat and low resistance when opened fully.

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## CHECK VALVES

The SOMAS Check Valves come in two configurations, with or without a spring. Among the advantages of SOMAS' Check Valves are their high capacity, short closing time and minimal energy loss.

The closing time is short due to the seat angle in the body. This makes them well suited for fluids, steam and gas process media. It is also easy to disassemble for the customer when the valve needs cleaning or replacing.

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# WHY CHOOSE HIGH CAPACITY BALL SEGMENT VALVES?

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The process industry offers many challenges. Stringent requirements surrounding size, temperature and process media are all things that end users have to deal with on a daily basis.

When it comes to which industrial valves to use, tough decisions have to be made. Some of the factors that have to be considered are precise control, high flow performance, fine-tuning and of course budget. That is where the high capacity ball segment valve fits in.

Precise control is vitally important during most industrial processes. Failure to achieve good levels of control over aspects, such as flow and temperature, can lead to poor performance and efficiency. This will ultimately affect production.

The high capacity ball segment valve is in its element as a control valve. When combined with a pneumatic actuator and positioners, the valve is a flexible unit with a wide control range. This makes it useful for almost any application.

Its single-seat design is what puts it out ahead of the rest. This ensures that no fluid is locked within the segment body, avoiding the problems of differential pressure and fluid stagnation in the ball's interior. The shaft device is also in one piece, which allows it to produce a backlash-free torque transmission.

Tuning problems are another issue that users have to face. When connected to an actuator, the ball segment valve avoids these. Its relationship between the actuators input signal and the flow is more linear than with a conventional ball valve. Nonlinear characteristics only have an optimal response at one single operating point. This causes an unstable loop as the valve position moves away from the operating point, resulting in tuning problems.



Control over leakage is another area where the high capacity ball segment valve excels. In some environments, this is a strict requirement and its industry counterparts often cannot guarantee high tightness. This is not a problem for the segmented ball valve.

In a lot of instances, users have issues over control valves being sized too large for the flow rates. When control valves are oversized, small changes in the position of the valve can negatively affect the flow. The high capacity ball segment valve offers a smaller, nominal valve size, that allows it to maintain high control performance. This in comparison to other valves, results in a larger performance to price ratio, making the ball segment valve a good economical choice. It can also operate as an on/off valve on shut off applications.

Overall the high-pressure ball segment valve has the capability to meet most of the process industry's toughest requirements. It offers excellent tightness and free flow that enables it to adapt to pretty much any type of process media. The ball segment valve can also operate under most temperatures without compromising performance.

# THE MANUFACTURING PROCESS OF BALL SEGMENT VALVES

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The manufacturing process of the ball segment valve is broken down by its parts. Here is a step-by-step guide of the manufacturing process for the SOMAS high capacity ball segment valve.

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## STEP 1 - VALVE BODY

The production of the valve body begins with the shaping which is formed by lathe turning the raw materials. Once this is completed, the next stage is the making of the shoulder and lower part of the body. At the same time, using their multi-operation machinery, the milling and perforation of the valve body are carried out.

## STEP 2 - SHAFT

There are actually two ways to produce the shaft on a SOMAS ball segment valve.

The first alternative begins with the lathe turning in two paces of the long and short shaft. Following this, the manufacturers process the surface for where the ball segment will be placed. For longer shafts at this point, there is also a need for making space for the key/wedge before the production of the shaft is completed.

The second alternative for the production of the shaft sees complete processing of the whole shaft unit, however, this is performed at the same chucking.

## **STEP 3 - BALL SEGMENT**

When developing the ball segment part of the valve, the first step is to work with the flat surface facing towards the shaft. This is followed by producing sphere.

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## **STEP 4 - SEAT**

The seat is made through multiple rounds in the lathe turner. SOMAS use special customised features when developing their fixtures for the seats.

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## **TESTING AND DISTRIBUTION**

As they are developed, the valves assemblies are factory tested as complete units with actuators, positioners and accessories. Providing these tests are passed, they are then ready for distribution.

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## **FREQUENTLY ASKED QUESTIONS ABOUT SOMAS BALL SEGMENT VALVES**

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Deciding which valve manufacturer for your application can be a difficult one. There are many different factors to consider based on the demands of your project.

As such, we thought it might be useful to compile some of the most Frequently Asked Questions (FAQs) about the SOMAS ball segment valves.

Which industries do the SOMAS ball segment valves serve?  
Any industry which uses steam including energy, pulp and paper, marine and chemical.

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## **WHAT ARE THE SOMAS BALL SEGMENT VALVE'S DIMENSIONS?**

The Dimensions for the SOMAS Ball Segment Valve can vary between DN25/2 up to DN700.

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## **WHAT PRESSURE CLASSES DOES THE SOMAS BALL SEGMENT VALVE FULFIL?**

The pressure classes for the SOMAS Ball Segment Valve are PN10 – PN100.

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## IS THE VALVE SERVICE FRIENDLY?

The valve seat can easily be replaced from the outside without the need to disassemble the valve, so, therefore, yes, the SOMAS Ball Segment Valves are service friendly.

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## CONTACT US

BM Engineering Supplies have been providing industrial valves, actuated packages, steam equipment and instrumentation to blue-chip companies and SMEs for more than 30 years. Over this time, they have built relationships and partnerships with some of the leading manufacturers within the Process industry.

Working with a select network of couriers, BM Engineering deliver all over Scotland, including remote locations like the Scottish Highlands and Islands. They also distribute to all locations across the UK.

If you are interested in more information about how SOMAS Ball segment valves and how they can help your business, **please call BM Engineering today on 0141 762 0657, email [sales@bmengineering.ci.uk](mailto:sales@bmengineering.ci.uk) or visit [www.bmengineering.co.uk](http://www.bmengineering.co.uk) for more information.**