

ADAMS

ARMATUREN

Safe valves
for power plants

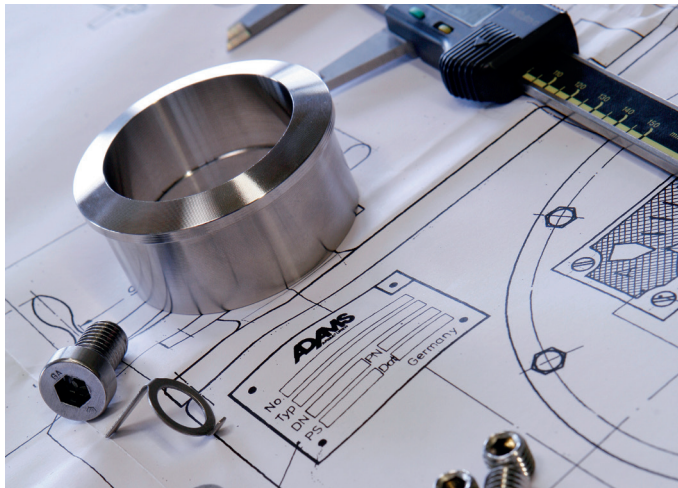


Made in Germany

The company

The plant in Herne was acquired in 1972 and the company management already planned a long way ahead. The land provided sufficient space to expand and thereby accommodate the fourteen production buildings erected so far, as well as the administration building. Today, more than 250 employees work in the main administration building and at the plant.

Our plant in Herne / Germany covers 70,000 square meters and currently performs practically all production steps required for the manufacture of valves, including welding, mechanical processing, assembling and approval. Only the making of cast parts is outsourced to certified foundries. We also operate a specially designed large-parts production area for manufacturing oversized valves. The broad scope of production that can be provided by the main plant in Herne is in keeping with the high degree of flexibility and quality that we offer our customers.



Commitment from all employees

Product development at Adams has always comprised two main areas: the general development of valves and details and the development of products specially designed for individual customers. In our view, we can only make real progress if research and development are solidly embedded as integrated corporate tasks. This also includes close interaction with other departments of the company, for example exchanging views with those of the sales department who pose questions straight from the market, or cooperation with the production department regarding the latest technologies, e.g. finishing processes, which enable the engineers' ideas to be implemented in the first place.

Continuity and reliability – worldwide

ADAMS Armaturen GmbH has been privately owned by the Adams family since 1960. As a medium-sized company we have established a sound reputation for ourselves among our customers as a reliable partner during this time. Our systematic trainee and further training programme, which we have been promoting for years, ensures that it will remain that way in the future. Thus a number of leading positions are occupied by young people who have nevertheless worked for the company for many years. A third-generation member of the Adams family is also a member of the board of management, thus ensuring continuity.



Safe valves for critical processes



We have a full range of experience with power plants which enables us to provide our customers with perfectly coordinated valve solutions for the different power plant types. Especially when it comes to valves for nuclear power plants, a higher level of safety is required than in other applications. Our valve constructions are designed to always meet these requirements. Our experience has brought us great expertise, which has enabled us to develop solutions others have not even thought of.

The fundamental areas of application for our valves in these types of power plants are identical with those of fossil-fired power plants. However, due to the extraordinarily high degree of safety required for nuclear power plant applications, redesigned custom-made parts and, in some cases, completely newly developed valves are used. For many years we have been developing these solutions in cooperation with our customers to satisfy the requirements of each individual type of power plant. Many of the valves are operating for decades now without showing any sign of malfunction.

We were presented with the "Supplier Award" by our customer Siemens AG for developing valves for the Olkiluoto Nuclear Power Plant in Finland. Furthermore, we have developed innovative flooding valves for the safe use in the critical reactor building. In case of a system failure, they will flood the reactor building with the nuclear fuel elements.



The ADAMS valves in power processes

Though there are different types of power plants, they all feature several similarities and likewise processes. These plants use coal, natural gas, uranium or other fuels that are burned to create steam which in turn drives the turbines. These turbines spin one or more generators that turn the mechanical energy into electrical energy. Afterwards the steam is cooled, condensed back into water and returned to the boiler so that the process can start over again.

ADAMS has designed several valve types that can be used in the following systems of a power plant:

- Turbine protection
- Pump protection
- Cooling water process
- Water intake and treatment
- Low pressure heaters
- Evaporator
- Make-up Water



Tailor-made designs for each requirement



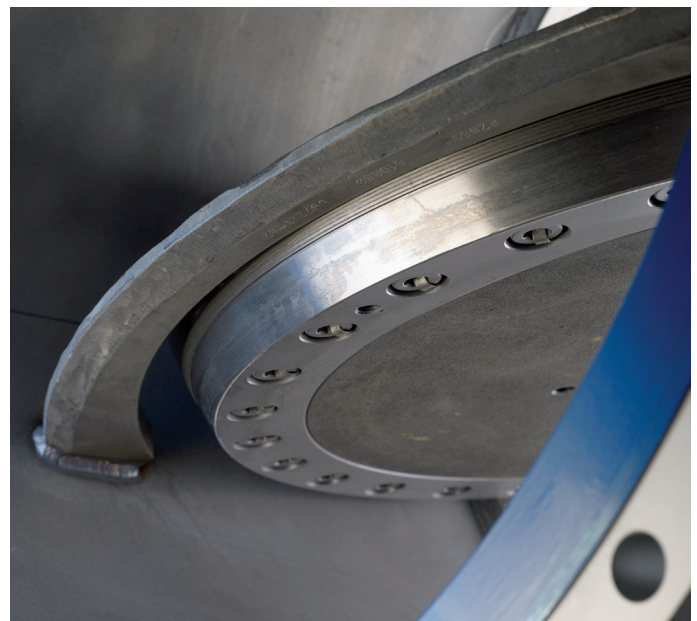
There is not the one ideal valve solution for all applications and processes. The valve design and the performance depend on the determined operating conditions.

We offer a comprehensive range of special valves for a broad range of applications. To prevent damages on equipment, environment and people, valves which close 100% tight are needed. This is especially important in critical applications where extreme temperatures and pressures or aggressive media are handled. For more than 60 years, we have researched and developed valves that would shut-off completely in the oil and gas industry, power plants, petrochemical applications and many more. Each of our valves has their unique features and can be adjusted to meet a broad variety of requirements.

Due to our long experience in different critical applications and especially in nuclear power plants, we know the needs and risks of the processes in these plants. With this expertise we are able to design our valves to meet all requirements and operate reliably for decades. We often develop valves together with our customers – completely in line with their specific requirements and wishes.

We have specially designed two valve types for nuclear power plants: the IP Inlet, stop and control valve type NSK and the flooding valves. Both were designed in cooperation with our customers and are used for safety purposes.

Our customers can be certain that we focus on durability and safety with every project. With the design, manufacturing and after-sales service taking place in our German plant, it is easy for us to supervise and guarantee quality in every work step. This leads to a long-lasting valve of high quality, a quality that is completely made in Germany.



Flooding valves

Nominal diameters

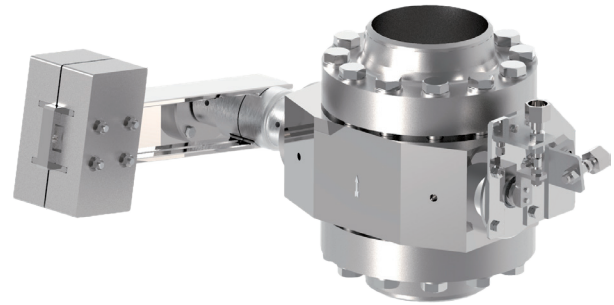
200 mm
8 inches

Temperature range

60°C up to 160°C
140°F up to 320°F

Pressure class

PN40



ADAMS Flooding valve

ADAMS has developed special safety valves for the use in nuclear power plants. Incidents and malfunctions in nuclear processes can lead to severe damages of the environment and fatalities. These valves will flood the core catcher with water in case of a core meltdown.

The normal operating position of the flooding valves is closed, it will open self-actuating in case of a hazardous incident. A tripping device is mounted at the end of the lever of the valve so that the lever is able to fall down if tripping occurs. The valve needs to be closed again manually with the help of a rope opening device.

Type NSK



ADAMS IP Inlet, stop and control valve type NSK

Nominal diameters

900mm to 1400mm
36 inches to 56 inches

Temperature range

258°C to 269°C
496°F to 516°F

Pressure class

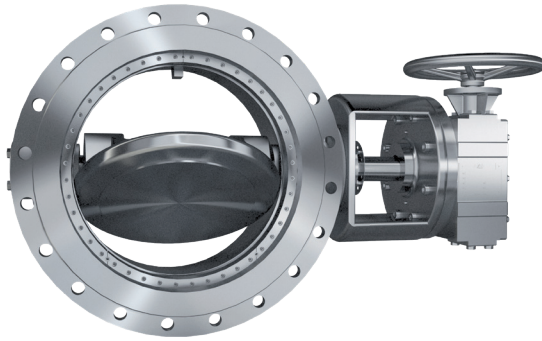
PN20/25

For absolute safety in nuclear power plants

We were presented with the "Supplier Award" by our customer Siemens AG for developing the NSK valves used at the Olkiluoto Nuclear Power Plant in Finland. The first construction of these valves has taken place in 2000 in cooperation with Siemens AG. They were specially developed for safeguarding turbines in nuclear power plants: a hydraulically actuated quick-closing and control valve that more than meets the increased safety requirements of a nuclear power plant.

The NSK is located downstream from the reheater in order to protect the low-pressure turbines. Depending on the design of the power plant, we plan and develop an ideal solution together with our customers. A specially segmented sealing system with an intermediate steam exhaust system guarantees, that the stems are reliably sealed.

Type MAK



ADAMS tight shut-off, throttle and control valve type MAK

Nominal diameters

80 mm to 2400 mm
3 inches to 96 inches

Temperature range

-253°C up to 600°C
-423°F up to 1112°F

Pressure class

PN10/16/25/40/64/100
ANSI 150/300/600/900/1500/2500

Mature technology for a broad range of applications

Based on the original patented triple eccentric valve technology, the MAK is a valve which can be universally modified to suit extreme operating conditions and high actuation torques. During the last 60 years, we have enhanced the design and applied it to the different processes and tasks in nuclear power plants.

Several thousands of the tight shut-off, throttle and control valves type MAK are already in operation for decades, without any sign of malfunctions, proving the high reliability and quality. We achieve such a quality due to the fact that our valves are tailor-made constructions according to the special requirements of each of our customers. The MAK is especially designed to handle temperatures of up to 600°C / 1.112°F, which makes it optimally suitable for the use in nuclear power plants. It is furthermore capable of dealing with extreme pressures up to Cl. 2500.

Type OSK

Nominal diameters

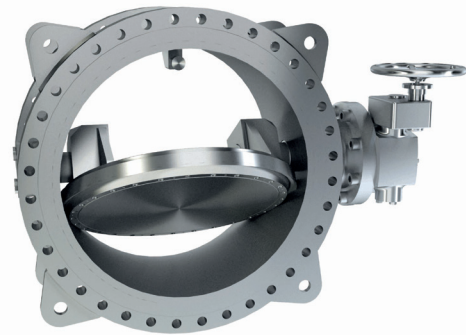
150 mm to 4200 mm
6 inches to 168 inches

Temperature range

-50°C up to 150°C
-58°F up to 302°F

Pressure class

PN2.5/10/16/25/40/64
ANSI 150/300/400



ADAMS tight shut-off valve type OSK

Economy in large dimensions

Our OSK valve offers an economical solution, for instance for piping systems conveying liquids or gases. Its compact design and flexible welded construction make it suitable for a wide range of applications.

The OSK's double-eccentrically positioned valve disc and the hydrodynamically optimised soft sealing system allow the medium to flow through homogeneously without dead zones. Low wear is guaranteed by two factors: the continuous valve seal is highly resistant to hydrodynamic forces and low friction is gentle on the sealing system.

Furthermore, rubber-coated valves or those made of stainless materials are available to ensure resistance to corrosion.

Type DSK/ASK

Nominal diameters

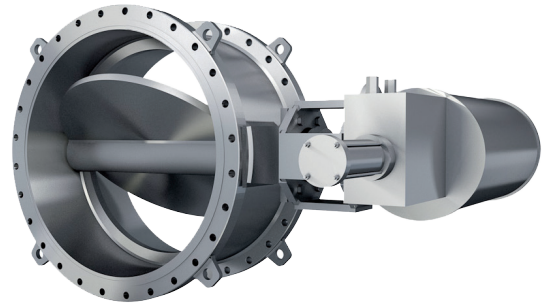
100 mm to 4000 mm
4 inches to 160 inches

Temperature range

-50°C up to 950°C
-58°F up to 1742°F

Pressure class

PN6/10/16/25/40/64/100
ANSI 150/300/600



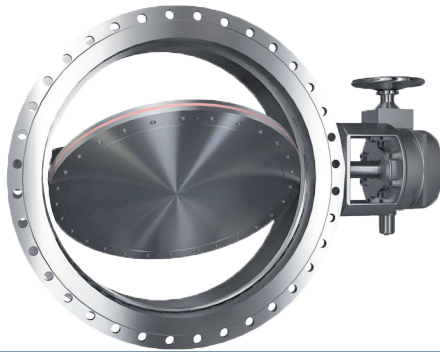
ADAMS throttle valve type ASK

Precise flow control

Our proven DSK and ASK throttle valves are based on a technically mature, economical steel construction. Thanks to their precise flow control and low actuation torques, these valves are ideally suited for both gaseous and liquid media.

The throttle valves are fitted with electric, pneumatic or hydraulic controls, depending on requirements. Their welded construction makes the valves flexible and they can be ideally adapted to suit customers' requirements with regard to flow as well as additional parameters. The convincing control behaviour of the valve is determined by the given proportionality of the regulation. In addition, the valves are hydrodynamically optimised in design and therefore cause only minimal pressure losses.

Type HTK



ADAMS tight shut-off valve type HTK

Nominal diameters

500 mm to 4000 mm
20 inches to 160 inches

Temperature range

-20°C up to 150°C
-4°F up to 302°F

Pressure class

PN2.5/10/16/25/40/64
ANSI 150/300/600/900/1500/2500

Reliability at large nominal widths

The strength of HTK valves is their absolute tightness at temperatures up to 950 °C. The triple eccentricity combined with the special metallic sealing system in the valve ensures easy opening and closing, even at extreme temperatures.

Our state-of-the-art welding technology makes it possible to work with large nominal widths and enables us a great deal of flexibility with which we manufacture special lengths and custom-made valves in accordance to the requirements of our customers.

ADAMS has developed a special HTK for the use in critical applications. This special design features a purge system and inspection ports as well as adjusted material selection to provide highest reliability. The ports make easy inspection on site possible, while the purge systems prevent slurry particles from reaching the bushing area. This leads to an improved lifecycle of the valve.

Type SCV



ADAMS check valve type SCV

Nominal diameters

150 mm to 1200 mm
6 inches to 48 inches

Temperature range

Steam up to 550°C
Steam up to 1025°F

Pressure class

PN2.5/6/10/16/25/40/64/100
ANSI 150/300/600

Ideal protection from backflows for steam turbines

Extremely reliable check valves are needed to protect steam and gas turbines from reverse flows. With their reliable, non-jamming closures, our SCV valves are optimally designed to fulfil this important protective function.

SCV check valves efficiently protect steam and gas turbines from backflows coming from steam extraction pipes. This is guaranteed by a free-swinging model that closes automatically by means of its own weight. This enables it to swing closed against a double bearing friction moment without the assistance of a drive system. This makes extremely short closure times of under 0.5 seconds possible. A pneumatic or hydraulic fail safe drive can be added as a closure aid by means of a two-part stem construction. The valve discs of installed valves can be replaced via the inspection and assembly opening.

Type FCV

Nominal diameters

150 mm to 1200 mm
6 inches to 48 inches

Temperature range

Steam up to 650°C
Steam up to 1202°F

Pressure class

PN2.5/6/10/16/25/40/64/100
ANSI 150/300/600



ADAMS check valve type FCV

FCV check valves protect large steam turbines and compactors when load shedding with flow reversal in fractions of seconds. The specially designed valve closes automatically and absorbs the occurring high dynamic forces.

Modern high-performance steam turbines are efficient but expensive continuous flow machines, which need to be protected from possible damage. The FCV check valve features high responsiveness and automatic closure through its own weight within a mere 0.3 seconds. This is achieved through low moments of inertia, the short closure distance and the tripleeccentric closure system with obliquely positioned sealing cones. Force-actuated closure is possible with pneumatic, hydraulic or spring-loaded closing drives.

The FCV is equipped with a triple-eccentric shut-off system and is manufactured as a forged model. The seal seat and seal periphery are hard-coated. An inspection opening, an internal steam heating and a drainage connection are available as well as elements for remote transmission. The FCV is also available as a flange model.

Type MAG

Nominal diameters

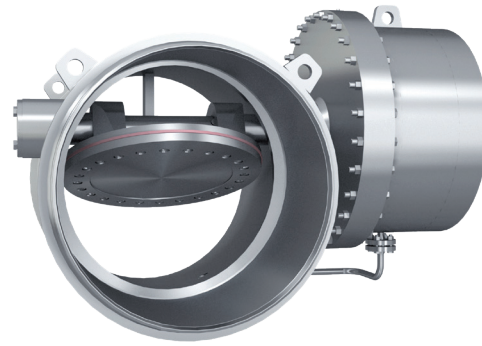
100 mm to 2000 mm
4 inches to 80 inches

Temperature range

-50°C to +450°C
-58°F to +842°F

Pressure class

PN6/10/16/25/40
ANSI 150/300



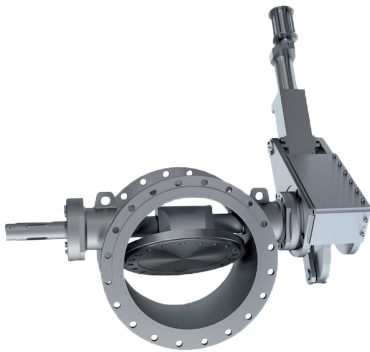
ADAMS check valve type MAG

Safety when flows reverse

The hallmark of the MAG is an external balancing weight that optimally counterbalances the valve disc. The advantage is that the valve is very responsive and the disc reliably reaches its final closing position. Due to the positioning of the balancing weight in its own pressure-resistant body without gland shaft seals, the valve exhibits low internal friction, which benefits the optimal closing and opening characteristics.

As automatically closing check valves, MAG and GMZ are used in exhaust steam pipes in steam turbines as well as in pressure lines of compressors in air and gas systems. The valves can be fitted with either a hydraulic or pneumatic auxiliary drive with spring loading as additional closing support. An overrunning clutch (MAG) enables the free movement, which is not influenced by drive and gland shaft friction.

Type RZN and RZI



ADAMS Check valve type RZN

Nominal diameters RZN

150 mm to 1000 mm
6 inches to 40 inches

Temperature range

-50°C up to 200°C
-58°F up to 392°F

Pressure class

PN10/16/25/40/64
ANSI 150/300/600

Nominal diameters RZI

500 mm to 3000 mm
20 inches to 120 inches

Temperature range

-50°C up to 200°C
-58°F up to 392°F

Pressure class

PN10/16/25/40
ANSI 150/300

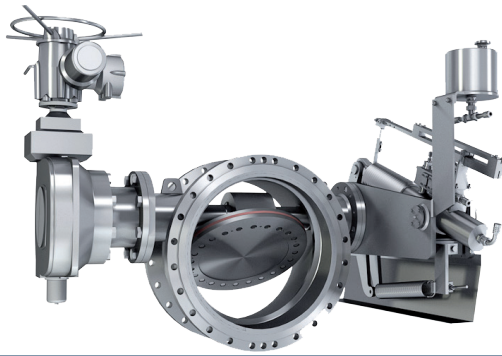
Complete pump protection in sophisticated areas

Our RZN check valve offers proven pump protection for applications with liquid media, more reliable than any other check valve in the market. The individually adjustable damping system enables the butterfly valve to perform shock-free checking, even in critical areas. This inimitable damping system enables it to suit the needs of each system.

The high-quality check valve features first-class hydrodynamic characteristics and low pressure losses. It is possible to simply readjust the RZN and the RZI to adapt to new requirements if changes are made to the system at any point in the future. This makes them the most economical solution in changing conditions. The compact design of the RZN check valve even makes it possible to operate in very limited spaces. The valve is robust and long lasting and can additionally be equipped with soft seals in a metallic seat or strip-metal seals for use at higher temperatures.

The RZN is the most-suitable valve for the protection of pumps for liquid media. The high flexibility of material and seal models enables the valve to be used in a wide variety of applications.

Type GBZ/AZI



ADAMS tight shut-off valve type AZI-AGF

Nominal diameters

100 mm to 800 mm
4 inches to 32 inches

Temperature range

-50°C up to 200°C
-58°F up to 392°F

Pressure class

PN2.5/10/16/25/40
ANSI 150/300

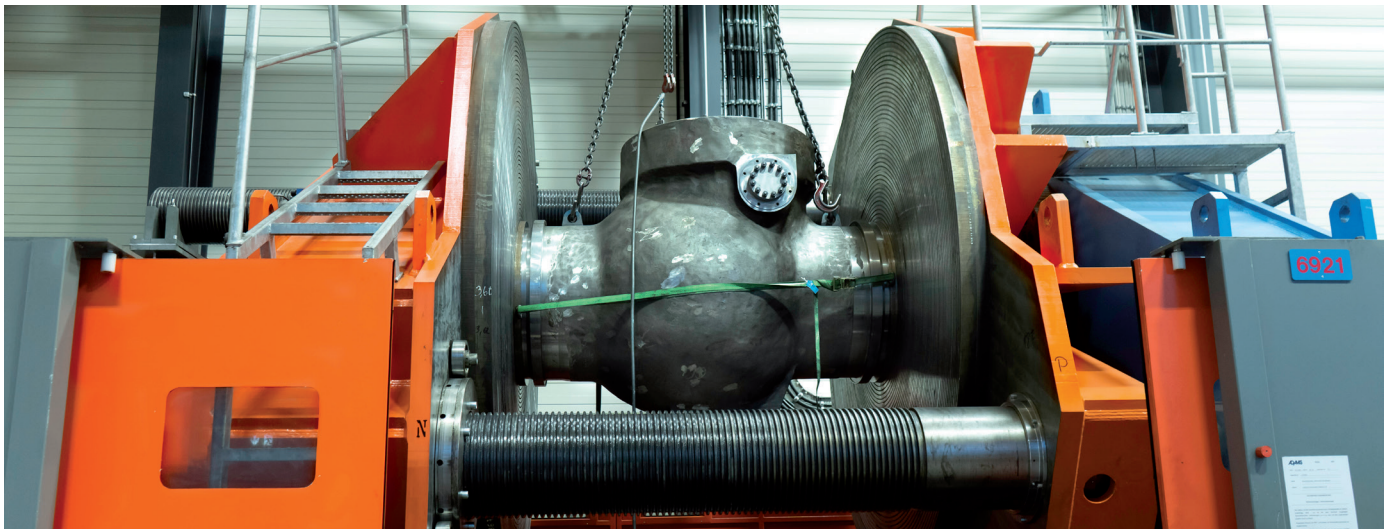
Well combined

Our GBZ and AZI combination valves provide a particularly efficient solution: they combine tight shut-off, throttle and check valves in one single unit.

The GBZ and AZI combination valves are especially space-saving as their triple function replaces the two valves that would have otherwise been necessary the check and shut-off elements.

Its shut-off and control operations are achieved via an overrunning clutch. The advantage is that the hydraulically damped disc can move freely and closes automatically and shock-free if a pump fails. Therefore this type of valve is particularly reliable and economical. The GBZ and the AZI are equipped with a hydraulic damping system separate from the operating medium, externally fitted and multi-adjustable.

Quality management



At ADAMS, we focus for more than 60 years on high quality to guarantee longlasting and sustainable valves for our customers. Our tests comply with the above-mentioned standards. We perform the testing processes with our own state-of-the-art equipment either personally in-house or in cooperation with well-known testing institutions.

Destruction-free testing procedures:

- Dye penetrant test (PT)
- Magnetic particle test (MT)
- Ultrasound test (UT)
- Visual test (VT)
- Leak test (LT)
- Positive Material Identification (PMI)
- X-ray test (RT)



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