

ADAMS

ARMATUREN

**High temperature valves
for FCC expander**
Severe service



Made in Germany

The company

Certification in accordance with DIN EN ISO 9001

The ADAMS quality management system, in accordance with DIN EN ISO 9001, was certified for the first time in 1993. We have regularly obtained recertification ever since. Our quality management includes two points of central importance:

First, the particularly extensive training and further education of the company's employees and second, the maintaining of the company's own test stands for valves with state-of-the-art testing equipment, that we use for scrutinizing our finished products and prototypes. This typifies our systematic approach.



National standards and guidelines by which ADAMS is authorized to develop, produce and test:

AD information sheets, ANSI, API, ASME, ATEX, BS, PED, DIN EN / ISO, GOST, KTA, MSS, NACE, RCC-M

Quality tests

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. These are some of our 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)

Reason enough to perform great feats

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, around 200 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.



ADAMS Valves in severe service



Valves in operation since 1978

ADAMS valves, designed for critical requirements, have proven their reliability and efficiency since 1960 in a wide range of applications throughout the world. One of the first ADAMS FCC valve was delivered in 1978 to BP in Rotterdam for a UOP FCC process. These two valves HTK DN750 are still in service.

Rotary tight shut-off and control valve

Rotary valve technology, with metal-to-metal torque seating in case of triple eccentric valve design, offers exceptional performance, durability and reliability. Our valves have proven their longevity in the most critical applications under extreme working conditions and millions of cycles.

ADAMS valves are designed to comply with accepted international standards like ANSI, API, ASME, MSS, DIN EN/ISO, BS, AFNOR, GOST etc.

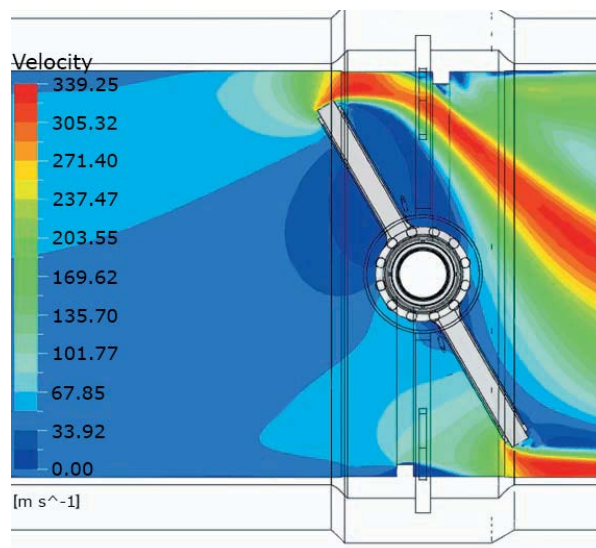
The manufacturing range includes size from DN80 / 3" to DN3600 / 144", operating temperatures from -196°C / -320°F to 950°C / 1742°F and pressure ratings up to 400 bar / 6000 psi.

Standard Materials

Carbon steel, low temperature carbon steel, stainless steel and other special materials such as Duplex and Inconel. A variety of materials allows tailored construction and complete adaptability to meet customers requirements.

Rotary tight shut-off and control valve

ADAMS team of engineers uses 3D design technology together with modern FEM and CFD simulations for a perfect valve design fitting to the special requirements of valves used in FCC and other severe service applications.

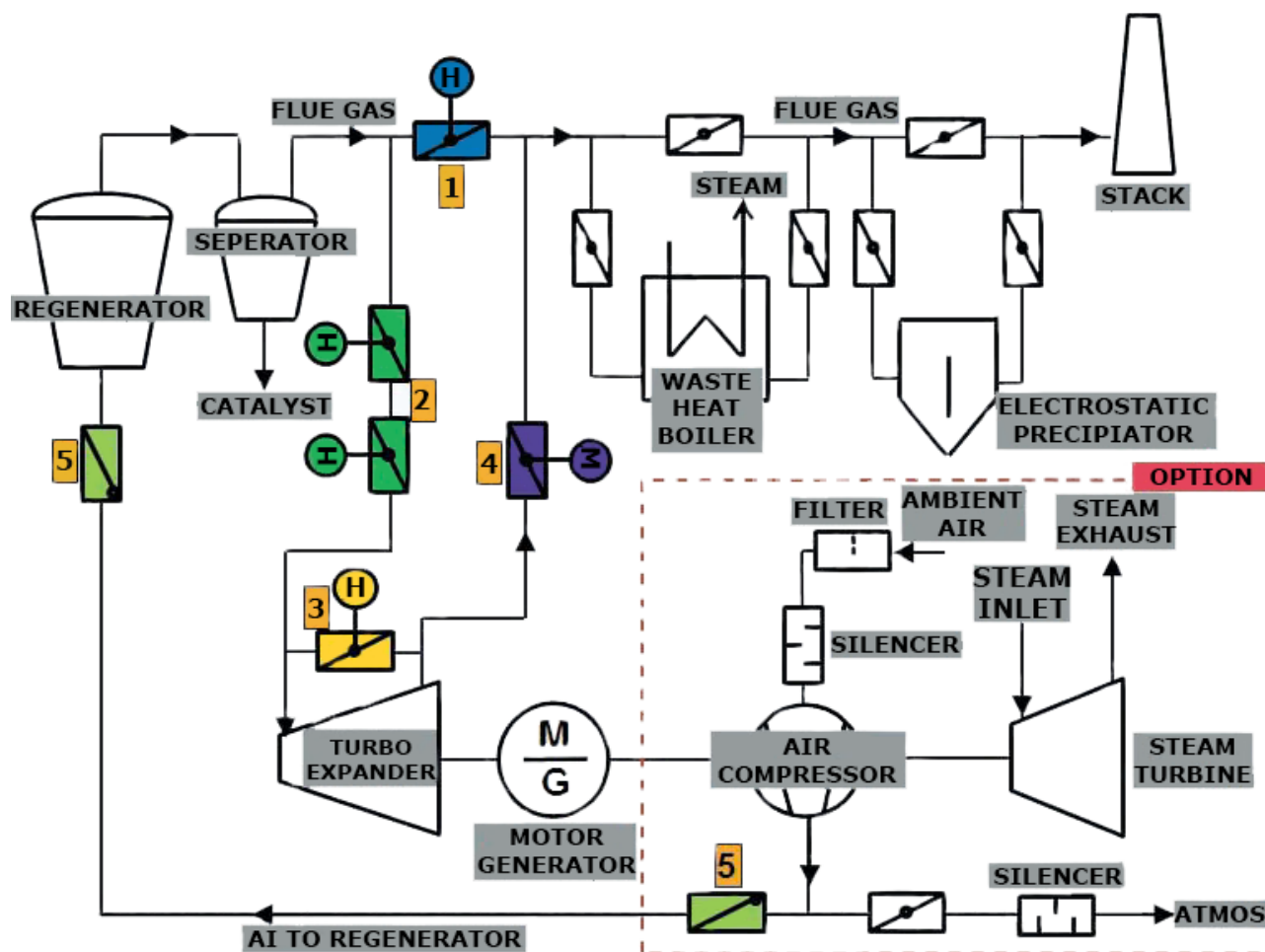


Valves in FCC Expander Unit

Well equipped flue gas trains have a power recovery system where the flue gas is fed into a turbo expander to recover most of the energy contained in the exhaust gas. The turbo expander is then used to drive a motor-generator.

However, the arrangement of the turbo-machinery equipment can also include an air compressor and a steam turbine for startup.

The flue gas leaving the turbo expander has lost nearly all of its pressure. Its temperature is reduced by about 150°C to 200°C (270°F to 360°F) as compared to the inlet gas temperature of around 650°C to 800°C (1200°F to 1470°F).



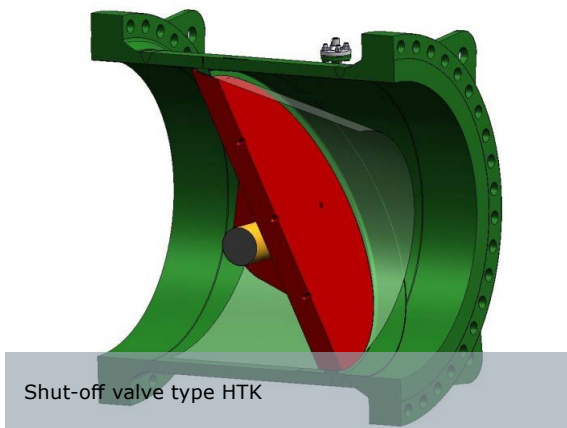
- | | |
|-----------------------------------------|-----------------------|
| 1 - Main bypass valve: | ADAMS Type ASK |
| 2 - Expander inlet valve: | ADAMS Type ASK or HTK |
| 3 - Small bypass valve: | ADAMS Type ASK |
| 4 - Expander discharge isolation valve: | ADAMS Type ASK or HTK |
| 5 - Compressor check valve: | ADAMS Type GMZ or MAG |

HTK valve (Hot wall)

Tight shut-off and control valve Flue gas line

The HTK valve is a rotary tight shut-off valve with metal-to-metal seat for use at high temperatures. The triple eccentric design avoids flutter, eliminates jamming and reliably compensates wear and temperature variations.

The ADAMS type HTK valve is specially designed to offer outstanding reliability and low leakage (FCI 70-2 Class IV to VI is possible) at high temperatures in the FCC process. ADAMS valve HTK is available as hot wall design only and usually used as expander inlet valve as tight shut-off and also control valve with fast closing function.



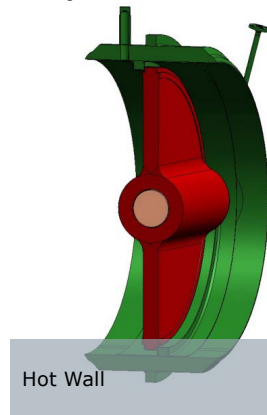
Shut-off valve type HTK

ASK/DSK valve (Hot or cold wall)

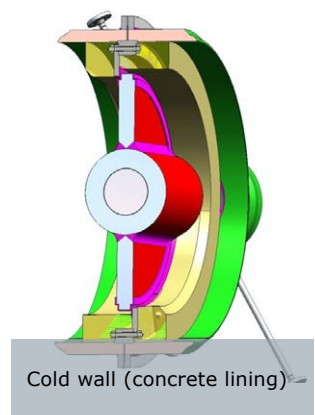
Shut-off and control valve Flue gas line

The ASK valve is a rotary shut-off valve using step seats as the sealing element. The valve is ideally suited for flow control based on the inherent flow characteristics which are closely matching equal percentage characteristics over a wide operating range.

The ADAMS type ASK valve is specially designed to offer outstanding reliability and offers tightness acc. to FCI 70-2 Class II at high temperatures in the FCC process. ADAMS valve ASK is available as hot wall design as well as cold wall design. It is usually used in areas where a tight shut-off is not needed but control and fast acting is the major demand.



Hot Wall



Cold wall (concrete lining)

GMZ and MAG

Check valve Blower / compressor protection

We have specially developed the MAG and GMZ check valves in order to protect turbines and compressors in steam and gas lines from flow reversals. The sophisticated technology features very fast closing times and a low level of pressure loss.

As automatically closing check valves, the 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.

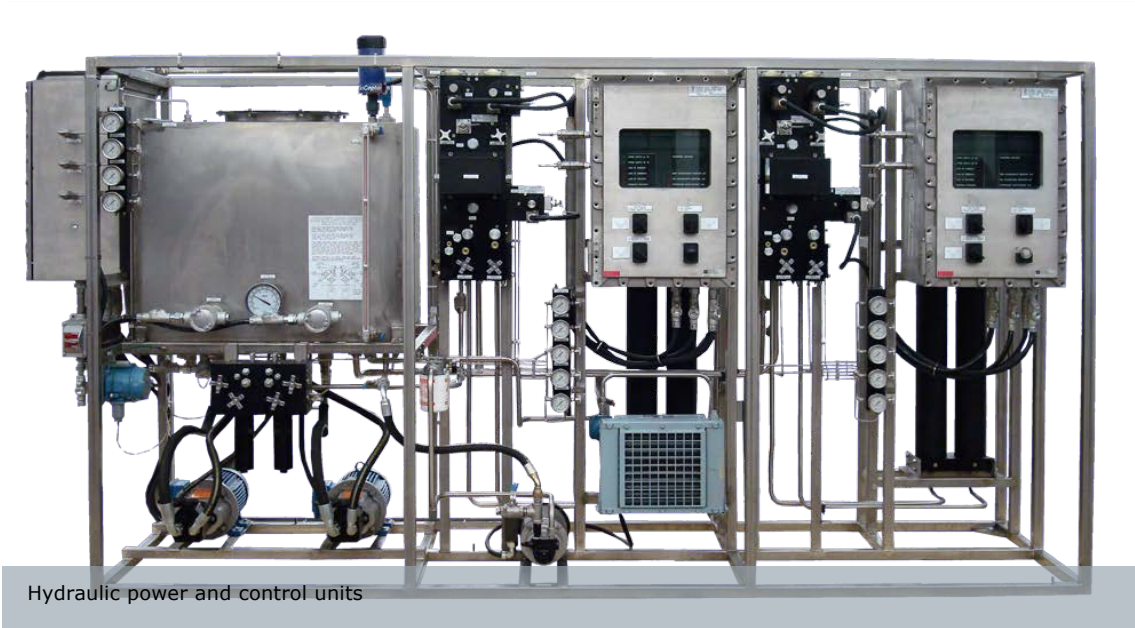
The valves can be fitted with either hydraulic or pneumatic auxiliary drive with spring loading as additional closing support. An overrunning clutch (MAG) enables the free movement, which is not influenced by drive and gland shaft friction.



ADAMS check valve types GMZ and MAG

Diverse actuators for ADAMS valves

Butterfly valve actuator and hydraulic power and control units are specifically designed for each customer. ADAMS works together with different sub suppliers to fulfill customer demands to their full satisfaction. Based on the customer and licensors requirement, ADAMS chooses the best fitting equipment.

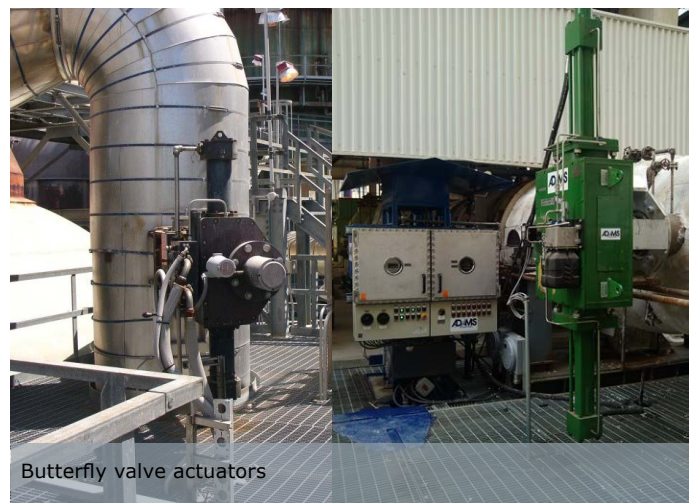


Hydraulic power and control units

Actuator options

Depending on the type, the ADAMS valves can be fitted with different actuators:

- Hydraulic actuators
- Pneumatic actuators
- Electric actuators



Butterfly valve actuators

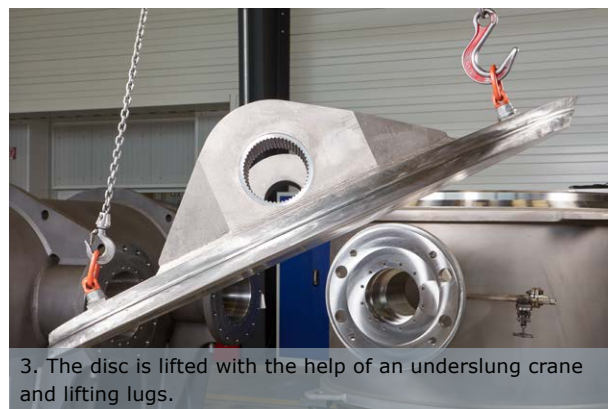
The assembly of the valves is like nearly all manufacturing processes done in-house. With the help of state-of-the-art equipment, our employees assemble all parts in the valves. The fact that nearly all processes are done in-house makes it possible for ADAMS to maintain the high quality.



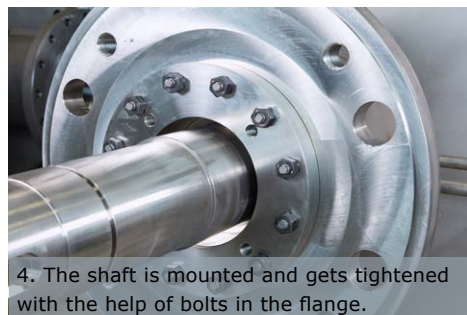
1. All components are checked before assembly.



2. The disc is mounted in the body of the valve.



3. The disc is lifted with the help of an underslung crane and lifting lugs.



4. The shaft is mounted and gets tightened with the help of bolts in the flange.



5. The gear is mounted on the shaft.



6. The end of the shaft is covered.



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