

AJ TRIPLE ECCENTRIC BUTTERFLY VALVES



**RELIABLE PERFORMANCE
PROVEN FOR HYDROGEN**



ENGINEERED FOR RELIABILITY IN HYDROGEN APPLICATIONS

AJ triple eccentric butterfly valves are specifically engineered and qualified for hydrogen service, combining appropriate material selection, optimised design and validation testing to ensure safe, reliable operation throughout the hydrogen value chain.

Engineered for hydrogen

Hydrogen places unique demands on valve technology. Its specific properties and demanding operating conditions require a dedicated engineering approach that goes beyond conventional gas applications. Developed in accordance with the principles of ASME B31.12, the AJ triple eccentric butterfly valves for hydrogen service are designed to address:

- Hydrogen embrittlement risk
- Leak tightness requirements
- Long-term reliability
- Material compatibility

Developed to international standards

Our valves for hydrogen service are the result of a dedicated prototype development process carried out in line with the principles of API 6D, Appendix M, to support design validation and qualification for hydrogen applications. This internationally recognised standard ensures that critical aspects such as material selection, sealing performance and product validation are considered throughout the development process. The prototype development process includes:

- Material qualification
- Design optimisation
- General testing

Qualified materials

To verify long-term performance, materials are subjected to comprehensive mechanical testing under hydrogen exposure:

- KI_H Testing (ASTM E1681) - Hydrogen-

assisted crack propagation threshold

- FCGR Testing (ASTM E647) - Fatigue crack growth rate evaluation
- J-R Testing (ASTM E1820) - Fracture toughness and crack growth resistance

Designed for reliable performance

Reliable performance begins with an optimised design. The geometry of our triple eccentric butterfly valve has been enhanced to reduce stress concentrations and improve flow characteristics. This advanced design contributes to long service life and efficient plant performance. Key design features include:

- Reduced sharp edges
- Reduced risk of crack initiation
- Enhanced flow characteristics

Proven performance

The prototype development process includes validation testing to demonstrate reliable performance in hydrogen service:

- Seat leakage testing
- Shell leakage testing

Correlation studies between different gases support leakage assessment under hydrogen service conditions.

AVK Piacenza has successfully completed the prototype development process, thereby validating its design for reliable performance in hydrogen service.



**DESIGNED
FOR HYDROGEN**



**QUALIFIED
FOR SAFETY**



**BUILT
FOR RELIABILITY**

Solution

- AJ triple eccentric butterfly valves, Hydrogen version, DN100–1500 (4"–60"), PN10-PN250/ ASME cl.150-ASME cl.1500

Key benefits:

- Optimised geometry
- Developed in accordance with API6D Appendix M
- Hydrogen tested

Perfectly suited for:

- Hydrogen production plants
- Hydrogen storage facilities
- Compression stations
- Hydrogen pipelines
- Refinery plants