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The unique design features of the Wouter Witzel rubber lined valve
To whom it may concern

Herewith we have the pleasure to inform you regarding the unique features from the Wouter Wiztel rubber lined butterfly valves.

Product features
After years of innovation, manufacturing and experience, Wouter Witzel Eurovalve have created since 1966 a complete range of centric rubber lined butterfly valves. Up to date design and state of the art materials tailored to market needs and wishes such as no maintenance and long life time. The design philosophy is based on the principle objectives of achieving high reliability by an excellent disc sealing concept. Due to the vulcanized bonded liner many unique features are created such as, see point 1 - 12:

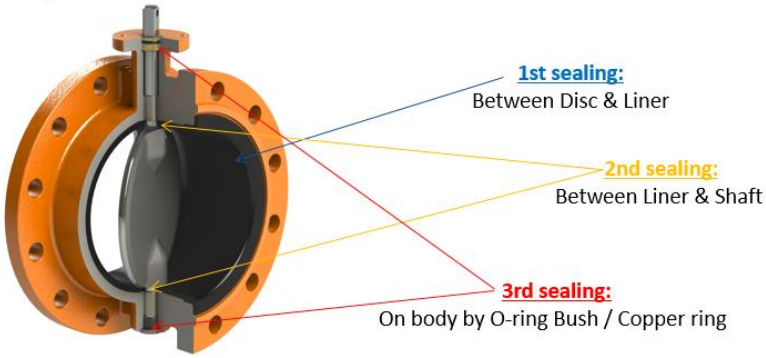
1. **High reliability by bonded lining,** The rubber lining is vulcanized to the body by a unique transfer moulding process, which guarantees the correct compression set and homogeneous quality. This process ensures that the lining forms an integral part with the body and guarantees a maintenance-free lifetime up to 5 times longer than valves with exchangeable liners!

   Because the tolerance between the vulcanized bonded liner and machined discs is minimum, we measure every inside body roundness in 360°, making sure that the disc protrusion into the rubber seat is always constant according to 6 bar, 10 bar or 16 bar working pressure.
   Furthermore there is no possibility that the medium or condense can be trapped between internal body and behind the rubber liner and start creating corrosion behind the liner.

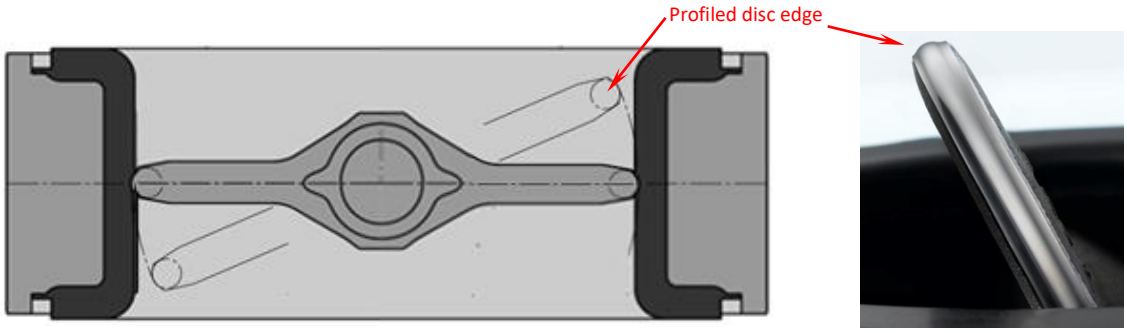
Due to our high quality valves, experiences in many industrial processes Wouter Witzel Eurovalve is able to allow a standard warranty of 5 years

Made in the Netherlands !

2. **Excellent sealing properties**, Wouter Witzel have a dry shaft design and prevents the medium penetrating the body/shaft/bearing area where corrosion can have a destructive effect on the lifetime of the valve. Furthermore there is no possibility that medium or condense can be trapped between internal body and behind the rubber liner and create corrosion. We have three types of sealing to create the perfect sealing.

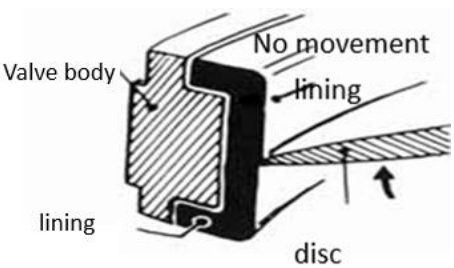


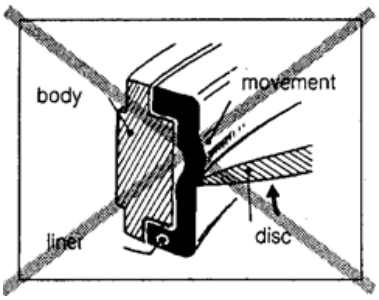
3. **Stream lined profiled disc edge**
Wouter Witzel have developed a special seating concept in which the disc has a profiled sinus curved edge. This accurate machined profiled disc edge makes sure that the disc rotates nice and smoothly in and out the resilient rubber lining to achieve the perfect sealing. The minimum deformation results in less wear of the lining and a low break out torque. This pays out in a longer life time and low cost of ownership.



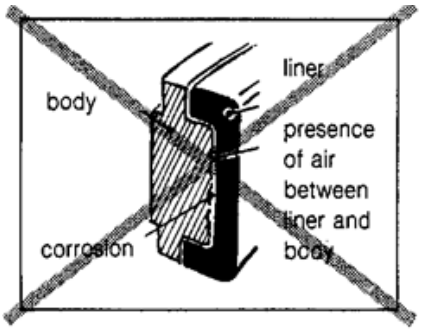
4. **Very low operating torques**, created by the bonded liner with the optimal rubber hardness of 74 shore A. Due to our low torques, Wouter Witzel creates impressive cost / space / weight saving aspects for the size selection of the actuators. For a complete valve package project, a lot of money can be saved because Wouter Witzel is able to select smaller actuators based on lower torques.

5. **No movement of the rubber lining**, during operation allowing (>900.000) opening / closing cycles of the valve without wear and leakage, Wouter Witzel is most suitable for frequent cycling frequencies. Due to our bonded liner design there cannot be any stretching of the liner against the body (pumping effect) which causes wear on the back of the liner. Any movement of an exchangeable liner will wear out quickly and disturb the running torque for control valves.





6. **No internal body corrosion possible for the Wouter Witzel bonded valve.**
   It is not possible that medium, compressed air or condense can be trapped behind the liner and create corrosion. Furthermore due to our bonded liner which is thick enough it is not possible that the body starts to corrode even in case of small rubber damages.

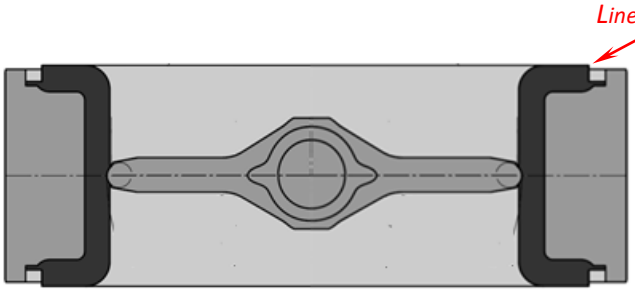


7. **Bi-directional, bubble tight shut off**, the concentric position of the valve disc has the following advantage: Mounting without any restrictions regarding direction of flow because the valve is 100% bubble tight in both directions. This bi-directional tightness is based on the simple principle of interference between valve/disc and rubber lining; the highly reliable performance is due to the concentric bearings, disc and shafts, as well as the high quality of the rubber.

8. **Wouter Witzel Valves are suitable for absolute VACUUM conditions.**
   Due to our vulcanized bonded liner, the liner can never be sucked out and cause major problems. Especially in the industrial segment many processes are being used under vacuum conditions.
   Our valves are suitable for high vacuum duties up to the following absolute pressure: 1.3 x 10^{-6} mbar.

9. **No deformation of the rubber liner / Easy installation including actuators**
   Because of our bonded liner and optimal hardness of the rubber 74 shore A, there is a minimum of rubber seat deformation in case the disc is in the full closed position. For example in combination with assembled single acting actuators the spring will always close the disc in full close position which is no problem for Wouter Witzel valves. Compared to exchangeable liners, this rubber liner is soft and will deform in case the disc is fully closed for a longer period of time.

10. **No gaskets needed**. No distortion of the lining during installation between flanges and thus no need for special positioning tools. Because Wouter Witzel vulcanizes their rubber liners a few mm outside the flange body, no gaskets are required during installation when tightening the bolts between the pipe flanges because the rubber lining will move into the cavity ring and avoid any leakage throughout the flange surface.



11. **No expensive maintenance,** The Wouter Witzel valve is designed as a maintenance free valve which means it can stay in line for many years without replacing any component. This pays out with a longer lifetime (examples 20-30 years), creating a low total cost of ownership.
    By means of replacing exchangeable liner (price up to 70% of total price of valve) and associated cleaning, coating, assembling and installation hours of the valve (more expensive than buying a new valve)

12. **Optimal characteristics due to streamlined slim shaped disc/shaft**

    Wouter Witzel has a two part shaft construction compared to one piece shaft construction, one long shaft from top to bottom. Our slim fit shape disc/shaft design it is resulting in:

    - We have one of highest KV-values
    - We have the highest allowable flow velocities 5 m/s
    - Slim shape disc with two pieces shaft results in less cavitation
    - Hardly any turbulence
    - Low pressure drop
    - Less Material Weight
    - Less chance of bacterial growth
    - Reduces pump energy and pump cost