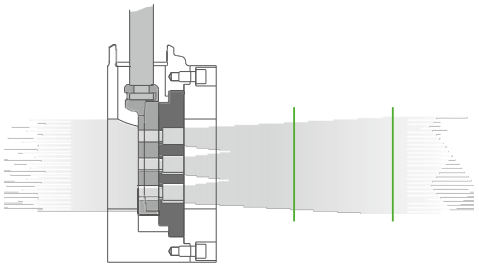
Reduce cavitation damage via the utilization of Schubert & Salzer sliding gate valves

The principle of the sliding gate valve makes it easier to tackle cavitation in the flow. The 8021 range with its stainless-steel de- sign in conjunction with stellite sealing discs were utilized for this purpose.

At the heart of this design are two slotted discs that slide against each other and form a seal. The sealing disc which is secured in the housing perpendicular to the direction of flow is equipped with a carefully calculated number of transverse slots at the same height. A further sealing disc with the same slotted arrangement is moved vertically against the first disc, thus changing the flow. The differential pressure across the valve pushes both sealing discs against each other and ensures the sealing effect.

This principle only requires approximately 10 % of the actuating power that is required to drive a seat / ball valve of a similar bore. Together with the relatively low strokes (6 – 9 mm), this results in a highly advantageous and extremely dynamic response behavior in terms of the valve control technology. The compact nature of this valve design means that it is significantly lighter and has considerably lower power consumption than other, more traditional valve designs.



In many processes it is impossible to avoid operation conditions that provoke cavitation

Fig. 5 The implosion of the cavitation bubbles takes place when the sliding gate valve is downstream of the valve and not within the valve housing.

The geometry of the sliding gate valve with its straight flow guidance and the short installation length, neutralizes this problem as the implosion of the steam bubbles will only occur in the pipe downstream of the valve (typically approximately between 1 and 2 meters) (**Fig. 5**). If there are no adjacent pipe walls in this area (e.g. pipe bends), the cavitation will have no damaging effect. Therefore, it is usually enough to have only a small number of diameters of straight lengths of pipe down-stream of the valve. An expansion of the pipeline behind the valve reduces the speed and the length.

The special design of the throttling component means that cavitation is no longer an issue within the sliding gate valve. Traditional valve designs often exhibit cavitation but sliding gate valves in similar applications are virtually unaffected by cavitation and demonstrate significantly extended service life. Short strokes and the low mass of moving parts mean the drive and the spindle seal are not subject to high stress and have a much longer service life. Due to the superior design, the maintenance of a sliding gate valve can be carried out quickly and easily by a single person and even directly on site. Consequently, the overall efficiency of a plant can be optimized by the utilization of Schubert & Salzer sliding gate valve.

Loy Instrument, Inc. is your local distributor for Schubert & Salzer Valves. Call us today to schedule a site visit and learn how we can assist with your process control valve issues.

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