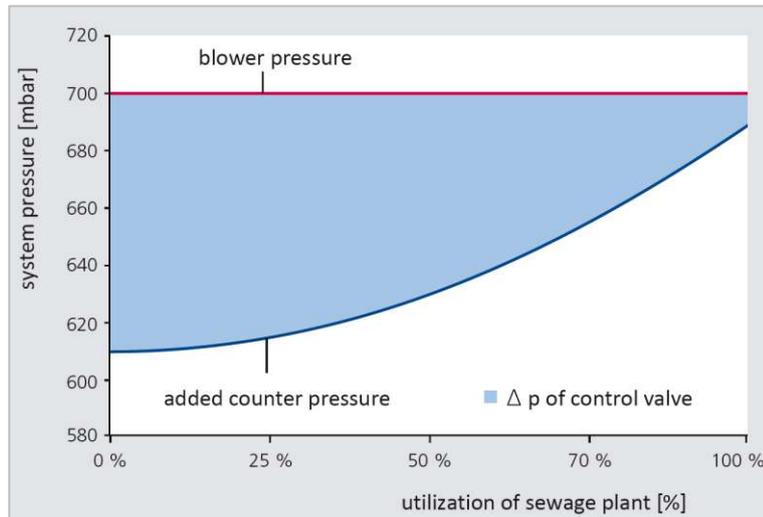


# Energy Efficiency in aeration control

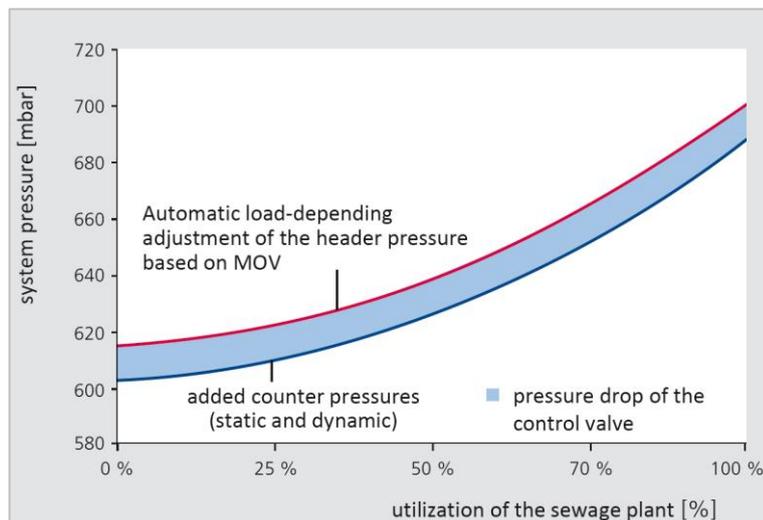
## Part 4: System of the most open valve

Standard aeration controller run the aeration system at constant header pressure. This pressure must be determined and set to the worst conditions: maximum load, maximum pressure drop of the control valves, including old aerators with deposits on the membrane and some safety distance.

This will lead typically to a blower pressure setpoint 50 to 100 mbar higher than required under normal load situation.



Monitoring the actual stroke of the valves and trying to operate the system at the actually required pressure level, minimum 8 – 10% of total aeration energy can be saved.



This means in detail: as soon as the most open valve exceeds a customized limit and the DO-concentration is below the setpoint, the header pressure starts to increase until DO-setpoint is achieved or the valve is fully open (econtrol-p). If second, the header pressure must become higher and so the air flow rate still increases until the DO-setpoint is reached.

Increase of header pressure can be stopped slightly earlier to reduce the overshoot of dissolved oxygen concentration. This will lead to another small percentage savings in energy.

During all this time the DO-concentration and strokes of the other valves must be monitored too. In case the control loop with the most open valve will cause of stop of further increase while in another tank there is a big lack of oxygen, the valve in this tank becomes the “most important valve” MIV.

The MIV is finally the decisive valve for a further pressure increase and will itself later on become the MOV automatically. Using the MIV, any time delay in this tank is overcome and process safety increased.

Sometimes blowers are controlled by air flow rate instead of pressure. Even in these cases required air flow rate SET can be calculated, transferred to main PLC and valves adjusted accordingly (econtrol-Q).

Related VACOMASS® products:

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