Technical Information:

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Product: Pumps
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General Recommendations For Pumping Of Activated Carbon, Diatomaceous Earth, Lime And Other Suspensions.

A number of problems can be encountered when pumping these materials, abrasiveness, sedimentation or agglomeration. This can cause blockages, reduced pipe I.D, pump failure and failure of accessories.

Recommendations

1. The chemical storage tank should be stirred continuously so that sedimentation is prevented, high-speed stirrers should be avoided due to the possibility of abrasive attrition. It would be better to use a slow stirrer with a large propeller.

2. The suction line from the tank to the pumps should be taken from a point on the tank where the chemical is well mixed. It should be at some point above the bottom of the tank.

3. The suction line should be designed to be as short as possible and have a steady upward slope so that suspended matters do not form sediments when the pump is switched off , the suspensions will tend to fall back to the tank.

4. It may not be a good idea to use a foot valve as it can get jammed, a suction strainer with a mesh width sized to stop particles large enough to interfere with proper valve function could be used, this would have to be periodically checked.

5. A flushing device is strongly recommended on the suction side of the pump. The pump valves and dosing head should be flushed regularly and also when the pump is stopped. This flushing water should be under some pressure to help get rid of accumulations, e.g. 21 psi. During flushing the pump should be turned off. In some cases it may be necessary to flush with a solution which can dissolve / remove sedimentation e.g. an acid for lime. In some cases it may be necessary to periodically remove the dosing head and valves to check for any sediment build up.

6. The diameter of the suction and discharge lines should be sized so that the flow rate is sufficient to prevent sedimentation of solid particles. Too high a velocity should be avoided to prevent abrasive attrition. As a rule of thumb, do not use a smaller size than what is recommended for the pump.

7. Flexible tubing is normally better to use for piping as it tends to flex when the pump strokes and has less possibility of forming sediment since the tube wall is smooth and has no areas to start sedimentation, as compared to rigid pipe with 90 degree elbows etc.

8. Try not to use any devices directly in the path of flow in the suction or discharge lines, if a pressure relief valve is used then have it positioned on a side stream sloping upwards from the discharge line to prevent blockage, check it regularly for proper function. Sediment may cause them to be blocked or interfere with the relief diaphragm so that it does not close properly.

The service life of parts in contact with the chemical will probably be reduced, a more frequent check – replacement of these parts, valve seats / valve body, diaphragm should done to prevent unintended down time. A frequent check of pump capacity can usually tell if the performance of parts is becoming unreliable.

For very abrasive fluids, it is possible to have the ball seats made from Stainless Steel instead of PTFE. The Stainless Steel seats will also wear but not a frequent as the PTFE seats.

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