

AdvanTex®-AX100 FAQ

Q. What is the typical dose time and volume?

- A. A typical dose will vary between 1 and 2 minutes and will deliver about 6 gallons (22 L) per nozzle per dose. The “off” time will vary from one design to another.

Q. What is the recirculation rate?

- A. Typical operating recirc ratios will vary between 2:1 and 4:1, and the “off” time varies as a function of the recirculation ratio. It is important that the operator calculate the actual flow of a new system after start-up and adjust the “off” time appropriately to stay within the suggested range.

Q. How is the pump sized for the AX100?

- A. For optimal distribution, the manifold needs to operate at 3-4 psi (20.7-27.6 kPa). In order to achieve that pressure in the manifold, the pumping rate for a single AX100 unit should be about 50 gpm (3.15 L/sec), and a ¾-hp (0.56 kW) motor is required. For multiple AX100 units, pumps with higher flow rates are used. We also include an adjustment valve and fitting for a pressure gauge so each system can be adjusted at start-up to operate between 3-4 psi (20.7-27.6 kPa).

Q. What is the spray pattern of the spin nozzles?

- A. The distribution pattern of the spin nozzle is nearly square-shaped.

Q. What is the flow rate of the nozzles used in the AX 100?

- A. The baseline operating flow for our spin nozzles is about 6 gpm (22 L) per nozzle. Typically a single pump is used to energize the distribution manifold. There are four laterals in each filter, as can be seen in the top view of the drawings. Each lateral is fitted with two spin nozzles. The flow can be varied by adjusting the manifold pressure to between 3 and 4 psi (20.7 and 27.6 kPa).

Q. How many AdvanTex pods can a recirculating pump assembly pressurize?

- A. Each AX100 pod will be pressurized individually, and no more than three AX100s can be operated by the same duplex pumping system. This is based on the manufacturer’s recommended maximum pump cycles per day – which is 300 cycles for the 50-gpm, ¾-hp pump (3.15 L/sec, 0.56 kW) – and on the system being operated at a 4:1 recirc ratio during a peak event.

Q. How is the recirculation tank designed?

- A. The volume is based on 80% of peak flow and is not to be less than 100% of the actual flow (or more, as required, to meet special surge requirements, nutrient reductions, or regulatory criteria).

Q. Are you able to handle peak flows by flow equalization in the recirc tank?

- A. Yes. A significant amount of “surge volume” is designed into the recirculation chamber to accommodate fluctuations in daily flow, metering the flow out over the course of the entire day and attenuating peaks.

Q. Are you able to handle peak flows by using a timer override?

A. Yes. If the amount of flow exceeds the amount of “surge volume” available, then a more aggressive set of timer settings activate, increasing the discharge capability while continuing to maximize and optimize treatment.

Q. Will you have a separate tank, in order to flush the sludge from the recirculation tank into it?

A. In most recirc systems, it hasn't been necessary to provide separate tankage for sludge, since the sludge production isn't great. The typical blended wastewater characteristics in the recirc tank, operating at a 4:1 recirc ratio, are on the order of 30-40 mg BOD₅/L and 20-30 mg TSS/L. Over time (typically >1 yr), a light floc layer will accumulate on the bottom of the recirc tank. In certain high strength cases, the floc can build up to the point at which it should be pumped, but this occurs rarely.

Q. What is the sludge production rate of the textile filter?

A. Even though the textile media is being hydraulically loaded greater than a recirculating sand filter (at about 5-10 times more per square-foot of surface area), the overall effective surface area within the textile media that is available for microbial attachment is more than 20 times greater than is available in a recirculating sand filter. The organic loading is still maintained within the endogenous metabolic range. The endogenous coefficient (C_{end}) is typically 0.05d⁻¹.

Q. Since you have told us that the loading rate for the AdvanTex system is 25 gpd/ft² (1,019 L/day) and 4.0 pounds (1.8 kg) BOD per 100 ft² (9.3 m²), is that what you expect to see in designs?

A. Yes. These loading rates are based on our continuous “actual” design criteria and on targeting a 5/5 BOD₅/TSS effluent quality in the discharge effluent. Also provided is information that demonstrates equally acceptable performance at higher discharge levels. As shown in our stress testing study, an AX100 (100 ft², or 9.3 m²) could handle organic loads of over 8 pounds (3.6 kg) per day for periods of a year or more.