



BLANKETmaster™ — Frequently Asked Questions

What is BLANKETmaster?

BLANKETmaster is a real-time control system for the sludge blanket in clarifiers and thickeners. In secondary clarifiers it sets the return activated sludge (RAS) flow for each clarifier from the measured blanket depth. In primary clarifiers and gravity thickeners it controls sludge withdrawal in the same way. It sends its setpoints to the plant's SCADA system.

Why does blanket depth matter?

A blanket that rises too high increases the risk of solids leaving with the effluent, raises effluent suspended solids and BOD, and in extreme cases washes active biomass out of the process. In primary clarifiers it also increases hydrogen sulfide, with odor and corrosion. A blanket held lower than necessary wastes pumping energy and sends thinner sludge to thickening and digestion.

What has been measured in primary clarifiers?

In a full-scale study at the 167 MGD San Jose/Santa Clara Water Pollution Control Plant, two parallel primary clarifiers were operated with different blanket depths. At peak flow, the clarifier with the blanket above 2.0 m produced effluent with 25% more suspended solids, 23% more soluble BOD, 46% more BOD and 75% more dissolved hydrogen sulfide than the clarifier with the blanket held at 1.4–1.7 m. At low flow the differences were small. Sludge concentration was maintained as long as the blanket stayed above 1.37 m (4.5 ft). Manual blanket monitoring and pump adjustment took an estimated 16.1 operator hours per week; automatic control based on blanket measurement needed only weekly sensor cleaning (about 5 minutes per sensor) and calibration checks (under 2 minutes per sensor).

What is wrong with conventional return sludge control?

Return sludge flow is usually held constant or as a fixed ratio to influent flow, and often divided equally among the clarifiers in service. This works in steady dry weather, but influent flow and load change through the day, clarifiers do not receive equal flow, and in wet weather the blanket can rise sharply. Manual blanket readings, taken a few times a day, cannot follow these changes.

How does BLANKETmaster decide the return sludge flow?

Operators set two values: the blanket depth target and the maximum blanket depth. BLANKETmaster then sets the return sludge flow of each clarifier according to its own measured blanket, instead of dividing a plant-wide flow equally. It learns the daily pattern of loading so that it

acts ahead of the regular morning rise, and it switches to a wet-weather mode when influent flow stays well above its usual level for that time of day.

What happens if a blanket meter gives a wrong reading?

Every reading is checked before it is used. Sudden spikes, readings frozen at one value, readings outside the tank, and changes faster than the solids balance makes physically possible are rejected and not acted on, and operators are alerted.

Can operators override it?

Yes. Operators can override BLANKETmaster at any time, and they set the target and maximum blanket depths through the operator interface. The system can also run in an advisory mode, in which it calculates and records the flows it would command without sending them. This mode is used during commissioning.

Can it ever stop return sludge flow?

No. BLANKETmaster never commands zero return sludge flow.

Does it need new instruments?

It uses sludge blanket analyzers in each clarifier and the existing return sludge valves, pumps and flow meters. These can be bought from any supplier. Ekster & Associates sells none of them, but provides recommended performance specifications.

How does BLANKETmaster work with SRTmaster?

Holding every clarifier near its blanket target keeps the solids inventory in the aeration tanks more stable, which makes SRTmaster's control of sludge age more precise.

Can it be used with continuous and intermittent sludge pumping?

Yes. It is designed for both.

How are the benefits for my plant estimated?

A free plant assessment estimates them. Send one year of operating data and energy bills. You will receive a written estimate of savings in kWh and dollars, the assumptions behind it, any changes required before installation, and a fixed price. If your plant is already operating efficiently, the estimate will say so.

Sources

- Ekster & Associates (2026). RAS / Sludge Blanket Control System — Control Algorithm, revision AI (internal reference).
- Ekster, A., Pena, C. and Berdeen, B. Automated Pump Control of Primary Clarifier Sludge

Blanket Level. San Jose/Santa Clara Water Pollution Control Plant.

- Ekster & Associates. Sludge Blanket Control vs. Ratio Control (modeling note).

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