DEMONSTRATION · SIMULATED DATA · OPERATIONS, ENERGY & WATER AUDIT

Sample dairy plant

Prepared by AquaMesh from 30 days of plant records

Period 2026-04-01 to 2026-05-01
Source Simulated plant records
Tags 186 with data
Values 1,607,040
Analysis AquaMesh Platform

MEASURED — taken straight from your plant records, not our opinion

ESTIMATED — we calculated it; the assumptions are written down

This is a demonstration. The plant and every reading in it were generated by a simulator to show the platform end to end. It is not a customer's plant and none of it is a customer's data. The audit below was produced by the same engine, with the same checks, that runs on a real historian export.

POTENTIAL ANNUAL SAVINGS	MILK TO DRAIN	WATER PER LB OF MILK	FINDINGS
$1,170,265/yr	**0.9% of intake**	**0.22 gal**	**19**
Milk kept, water, energy, chemicals, labor and surcharges, if the fixes in this report are made. Range $933,703 to $1,766,119.	about 9,000 lb a day; the best shift loses 0.5%	about 220,000 gal a day; cleaning is most of it	Each priced from the plant's own numbers.
E	M	M	M

Every finding below is checked against this plant's own equipment, not against generic industry values. Where a figure is calculated rather than read from an instrument it is marked ESTIMATED and the working is shown, so your engineers can check it.

Where the money is

DIRECT SAVINGS

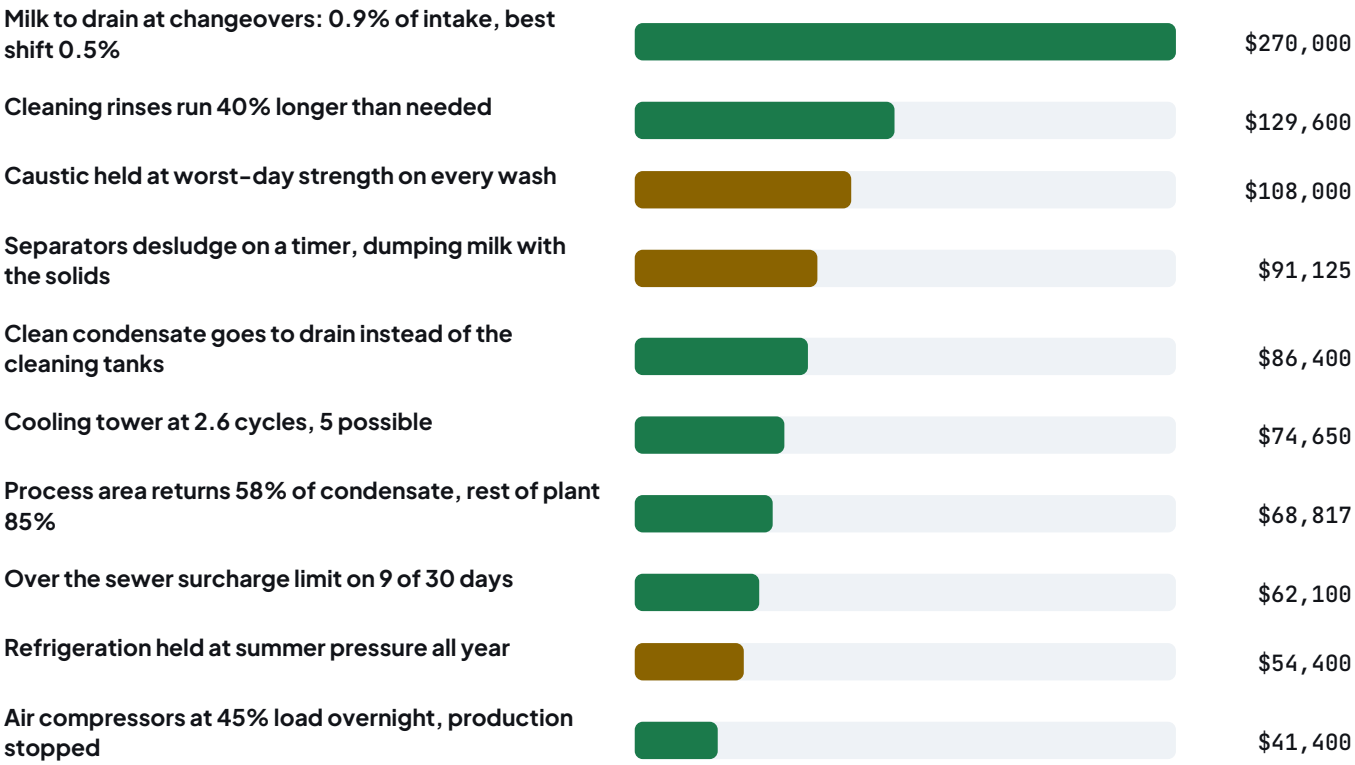
$1,170,265/yr

RANGE

$933,703 to $1,766,119

FINDINGS PRICED

19



■ measured from the plant's own records ■ estimated, with the assumptions written down · plus $16,380/yr of operator time returned

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What we found, and what it is costing

Milk to drain at changeovers: 0.9% of intake, best shift 0.5%

MEAS

$270,000/yr

Drain-line organic load jumps at each of the 14 product changeovers a day. The interface between product and water is cut on a timer, not on what is in the pipe, so milk is pushed to the drain with the rinse. The best shift already loses only 0.5%.

Milk to drain today	0.9% of intake	9,000 lb a day
Best shift	0.5% of intake	same lines, same products
Changeovers	14 a day	about 290 lb each

Do this. Cut the product to water interface on conductivity or turbidity instead of a timer, and push lines out to the product tank first.

Cleaning rinses run 40% longer than needed

MEAS

$129,600/yr

On all six cleaning circuits the pre-rinse and final rinse run on fixed times. Return conductivity is back at fresh-water level well before the step ends.

Rinse time used	100%	fixed timers
Rinse time needed	about 60%	return conductivity flat

Do this. End each rinse on return conductivity, with the current time as the maximum.

Caustic held at worst-day strength on every wash

EST

$108,000/yr

Caustic strength is held at 1.8% on every wash. Return readings show 1.2% cleans to the same end point on about 80% of runs.

Caustic held	1.8%	every run
Enough on most runs	1.2%	same end point

Do this. Set caustic strength by circuit and soil, and keep 1.8% for the heavy runs only.

Separators desludge on a timer, dumping milk with the solids

EST

$91,125/yr

All three separators shoot every 30 minutes whatever the solids load. On most shifts the solids would allow one shot an hour or less, and each shot carries milk with it.

Shots a day	48 per separator	fixed 30-minute timer
Needed on most shifts	18 to 24	from solids and backpressure

Do this. Trigger desludging on separator solids or backpressure, with the timer as a backstop only.

Clean condensate goes to drain instead of the cleaning tanks

MEAS

$86,400/yr

Condensate from milk concentration runs clean and warm most of the day, yet all of it goes to the drain while the cleaning system draws fresh water.

Condensate to drain	30,000 gal a day	conductivity in the clean range 85% of the time
Pre-rinse water drawn	52,000 gal a day	fresh water

Do this. Send condensate that passes a conductivity check to the cleaning pre-rinse tank, and divert the rest.

Also found

FINDING	$ / YR	WHAT TO DO
Cooling tower at 2.6 cycles, 5 possible	$74,650	Raise the cycles target toward 5 after the water treatment supplier confirms the scaling limit.
Process area returns 58% of condensate, rest of plant 85%	$68,817	Survey traps and condensate pots in the process area and find what is routed to drain.
Over the sewer surcharge limit on 9 of 30 days	$62,100	Fix the changeover interface first; alarm on outfall strength so a bad shift is caught the same day.
Refrigeration held at summer pressure all year	$54,400	Let condensing pressure float down with the outdoor wet bulb, to the floor the system allows.
Air compressors at 45% load overnight, production stopped	$41,400	Run a leak survey on a quiet night and fix the largest five; stage the compressors down when production stops.
Tanker rinses send milk to drain before tankers are empty	$40,500	Hold the rinse until the tanker outlet reads empty, and send the first rinse to the silo or a recovery tank.
Pasteurizer heat recovery slipped from 92% to 87%	$38,304	Move the regeneration section clean forward, and alarm on recovery below 90%.
15 operator hours a week copying readings into records	$35,100	Generate cleaning verification and shift reports from the logged data, with operators signing off instead of copying.

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FINDING	$ / YR	WHAT TO DO
Wastewater strength sampled by hand every day	$34,080	Put continuous strength monitoring at the outfall and keep weekly lab checks for calibration.
Wastewater: basin 2 is running 1.4× above your posted oxygen range	$16,858	Check the air split to that basin: valve and damper position against its twin, and the oxygen control loop.
Wastewater: pre-air blowers are commanded on and off instead of following demand	$12,241	Move the pre-air blowers to oxygen-controlled speed modulation, with a floor so the mixing never stops.
Wastewater: one influent pump is doing more than twice the work of its twin	$997	Confirm the two can back each other up. If they can, put influent pump on lead-lag alternation so they share the hours.
Wastewater: waste sludge 1 is short-cycling hard enough to shorten motor life	$800	Widen the control deadband on that machine, or let a drive hold the setpoint, to stop them starting 120–120 times an hour.

This week, with no capital

- Cut the product to water interface on conductivity or turbidity instead of a timer, and push lines out to the product tank first. `$270,000/yr`
- End each rinse on return conductivity, with the current time as the maximum. `$129,600/yr`
- Set caustic strength by circuit and soil, and keep 1.8% for the heavy runs only. `$108,000/yr`
- Trigger desludging on separator solids or backpressure, with the timer as a backstop only. `$91,125/yr`
- Send condensate that passes a conductivity check to the cleaning pre-rinse tank, and divert the rest. `$86,400/yr`
- Raise the cycles target toward 5 after the water treatment supplier confirms the scaling limit. `$74,650/yr`

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What instrumentation adds

Everything above was found in data you already collect. This section is what becomes available once the platform is running and the savings are verified. The whole package costs about 9% of the savings already identified, so it can be funded out of what the first phase delivers rather than a capital request.

AquaSpectra™ on the drain lines: milk solids and BOD, every minute

`$310,500/yr · 0.1 yr payback`
$25,000 capital

Measures product in the drain water in real time: milk solids, fats and the BOD they carry. A changeover or a leak shows up in minutes, not in the next manual sample or at month end.

AquaSpectra™ at the outfall: BOD, fats and pH, every minute

`$96,180/yr · 0.3 yr payback`
$25,000 capital

Continuous strength and pH at the discharge, calibrated to the plant's own lab results. Fills the hours between manual samples, so a high-strength day is caught while it is happening, and cuts the daily hand sampling.

AquaSpectra™ on condensate: milk carryover before reuse

`$155,217/yr · 0.2 yr payback`
$30,000 capital

Checks condensate for milk carryover in real time, so clean condensate can go back to the boiler and the cleaning tanks and only the contaminated slug is diverted.

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Conductivity on each cleaning return: when the rinse is clean

$237,600/yr · 0.1 yr payback
$12,000 capital

Ends each rinse when the return water is clean and sets caustic strength from what comes back, instead of fixed times and worst-day strength.

Solids signal on each separator: when to desludge

$91,125/yr · 0.1 yr payback
$9,000 capital

Triggers desludging on the solids actually in the bowl, instead of every 30 minutes.

Vibration monitoring on the four blowers

$2,033/yr · 2.5 yr payback
$5,000 capital

The maintenance programme in this report is inferred from run hours and start counts. Vibration turns inference into condition: the difference between "this blower is statistically due" and "this bearing is failing."

Half the blower maintenance value above, as condition replaces inference

What that later phase is worth

ITEM	CAPITAL	$ / YR	NOTE
AquaSpectra™ on the drain lines: milk solids and BOD, every minute	$25,000	$310,500	
AquaSpectra™ at the outfall: BOD, fats and pH, every minute	$25,000	$96,180	
AquaSpectra™ on condensate: milk carryover before reuse	$30,000	$155,217	
Conductivity on each cleaning return: when the rinse is clean	$12,000	$237,600	

ITEM	CAPITAL	$ / YR	NOTE
Solids signal on each separator: when to desludge	$9,000	$91,125	
Vibration monitoring on the four blowers	$5,000	$2,033	Half the blower maintenance value above, as condition replaces inference
Instrumentation package	**$106,000**	**$n/a**	

Capital figures are order-of-magnitude and should be firmed with quotes. Only value counted in the package total is added up. Items that secure a saving already counted in the findings show it for reference and add nothing to the total, so the payback is not flattened.

Questions on any finding, or to walk through the checks, info@aquamesh.ai