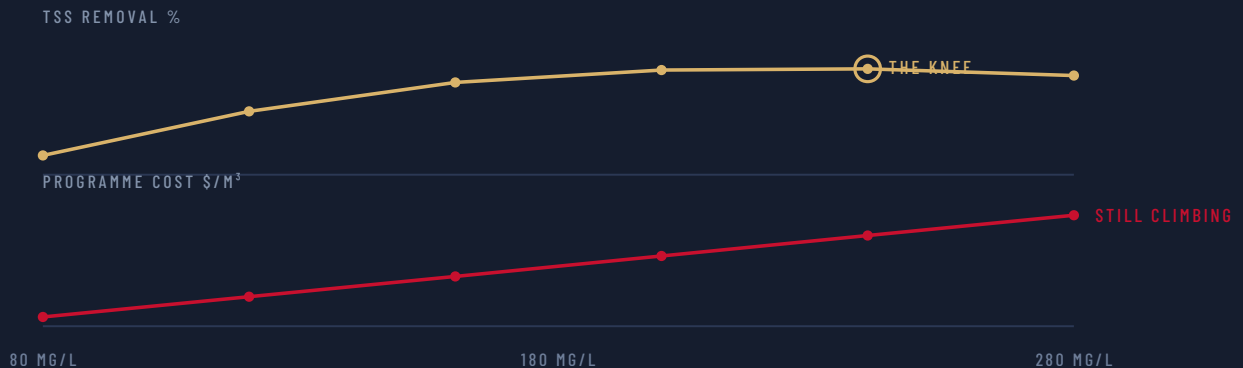


JAR TESTING, WATER ANALYSIS AND FULL-SCALE TELEMETRY IN ONE RECORD

STOP RUNNING THE SAME JAR TEST TWICE. EVERY JAR BECOMES EVIDENCE.

A jar test usually ends its life as pen on a page in a binder. JarLab keeps the water analysis, the doses, the results and the cost as structured records – so the programme we recommend can be traced back to the beaker it came from, and the next water can be matched against every water treated before it.



One jar test, read as money. Solids removal in gold and programme cost in red, both against coagulant dose. Removal flattens at 240 mg/L and falls beyond it; the cost line never does. JarLab names that jar – the last one worth paying for – on every report.

93

Analytes recognised across lab formats, with every reported value kept – not only the ones with a column

3.5M

Plant readings from a single pilot, summarised into 95 steady operating points beside the bench jars

0

Numbers the AI is permitted to transcribe. It maps labels to fields; any value not in the source is rejected

THREE QUESTIONS EVERY JAR TEST SHOULD ANSWER

01

WHAT IS IN THE WATER?

Lab PDFs and CSVs read straight in. Every reported analyte is kept, including the ones with no column, because the parameter nobody stores is the one that turns out to matter. A non-detect keeps its detection limit instead of becoming zero.

02

WHAT ACTUALLY TREATS IT?

Coagulant and polymer at each dose, pH and streaming current, floc quality, photographs, and the jar read again as it settles. Dose ladders and the jars that failed are kept — they show where the edges are.

03

WHAT WILL IT COST?

Every jar carries a cost per cubic metre and a cost per kilogram of solids removed, so the best-performing programme and the one worth buying can be told apart. Both are named on the report.

HOW IT WORKS

STEP 1

INGEST

Drop in the lab report. Text-layer PDFs are read and every figure checked against the source; a scan goes to the vision model and its readings are flagged unverified, because OCR drops decimal points and reads µg/L as mg/L.

STEP 2

TEST

Log the jars as you run them, or import a whole workbook. Dose response, pH programme and the water's own profile are drawn automatically, with the best three results on each measure marked.

STEP 3

CHECK

Metal coagulants consume alkalinity, and when it runs out pH collapses and coagulation stops. Every programme is checked against what the raw water actually carries, so one that cannot work says so before it is quoted.

STEP 4

SCALE

A running DAF is a jar test at full scale. Steady operating periods are pulled from the plant's telemetry and recorded in the same shape as a beaker — marked as plant, never blended with bench work.

THE WATER'S FINGERPRINT

A LABORATORY ANALYSIS IS THE WATER'S DNA. THE JARS SHOW HOW TO TREAT IT. THE PLANT PROVES IT AT SCALE.

Thirty to fifty numbers characterise a water's chemistry — solids, organics, charge, alkalinity, hardness — and they are what make one plant's effluent behave unlike another's. That analysis is the fingerprint. The jars run against it show how a water of that character responds to a programme, and the industry says what kind of operation produced it.

A running DAF is then the same experiment without end: influent in, doses applied, effluent out, every minute. Archer's IIoT gateways stream that to ThingsBoard, and JarLab pulls back only the periods where feed and dose held steady — one record per steady window, in the same shape as a jar.

A **stream** is what holds the two together: the pipe that persists while the bottles come and go. Each analysis fingerprints the water on that stream, and every steady window between analyses is a treatment observation against it — a month of plant operation worth more than a dozen bench sessions, because it is the real unit at real residence time.

ANSWERING TO THE PERMIT

NOT THE BEST JAR. THE CHEAPEST ONE THAT CLEARS YOUR LIMIT.

JUDGED AT YOUR RESIDENCE TIME

Set the site's TSS, turbidity, pH band, FOG and BOD, and the minutes your clarifier gives the water. Every jar is read at that horizon, and the cheapest that complies is named.

THE DOSE TO GET THERE

Where a chemistry misses, the dose that would reach the limit, read between jars actually run. Never extrapolated past your highest — past the optimum, more coagulant is worse.

AND WHAT IT COSTS TO HAUL

Ferric and alum become solids themselves. The report gives that increase as a percentage, across the cake your press actually reaches, beside the chemical cost.

WHAT IT REFUSES TO GUESS

ON THE WAY IN

Reading a laboratory report

- The model maps labels to fields and never transcribes a number
- A value absent from the source document is rejected outright
- A non-detect keeps its limit and is flagged, not rounded to zero
- Guideline and permit columns are limits, never results

ON THE CHART

Where the evidence runs out

- Dose and pH combinations nobody has run are left blank, not interpolated
- Each square carries the number of records behind it
- A solids probe reading zero against a turbid discharge is recorded as unreported
- An instrument that never moves is treated as failed, not as steady
- Too few shared parameters and no programme is offered at all

ON THE VERDICT

Judgement stays with the operator

- Best removal, best value and cheapest solids removed are computed and named; the star stays on the jar the operator chose, and where the two disagree the report shows both
- Jars that did not start from the same water are never ranked on removal
- Every figure the model writes beside a jar is checked against that jar; a note that fails is rewritten, or not printed
- Two identical jars that disagree lead the cover; no smaller difference is claimed

FIND CHEMISTRY

Give JarLab a new water and it measures the distance to every water on record, normalising each analyte by the spread of the dataset itself, then returns the closest ones with the programmes actually run on them. It is arithmetic, not a language model – reproducible, and free to run.

DISTANCE	MATCHED ON	INDUSTRY	PROGRAMME THAT WORKED	REMOVAL
0.160	30/30	meat/poultry	Ferric sulfate 60% @ 250 mg/L; Anionic emulsion polymer @ 8 mg/L	93.6%
0.160	30/30	meat/poultry	Ferric sulfate 60% @ 220 mg/L	93.2%
0.160	30/30	meat/poultry	Ferric sulfate 60% @ 150 mg/L	92.0%
1.431	2/30	rendering	Coagulant @ 3000 mg/L; anionic polymer @ 40 mg/L	98.3%

Read the second column first. The top rows rest on all thirty shared parameters; the last rests on two, and its distance says so. A match computed over two analytes and one computed over thirty are not the same claim, and the software will not let them look alike.

WORKS WITH THE REPORTS YOU ALREADY GET

JarLab is laboratory-agnostic: it reads the certificates your lab already issues, and recognises the same analyte under whatever name a given lab prints – total suspended solids, TSS, suspended solids at 105°C. Non-water samples are stored and reported in full but never enter the matching, because one of them would distort the statistics for every water beside it.

Why it exists. Every plant that has ever been jar-tested holds the answer to some other plant's problem, and that knowledge normally survives as a photograph of a worksheet and whoever happened to run it. JarLab makes it a dataset: one clean row per jar, with a lookup that finds the closest water on record and the programme that worked on it. It runs on Archer's own servers, and a client's people see their own facilities and nothing else.

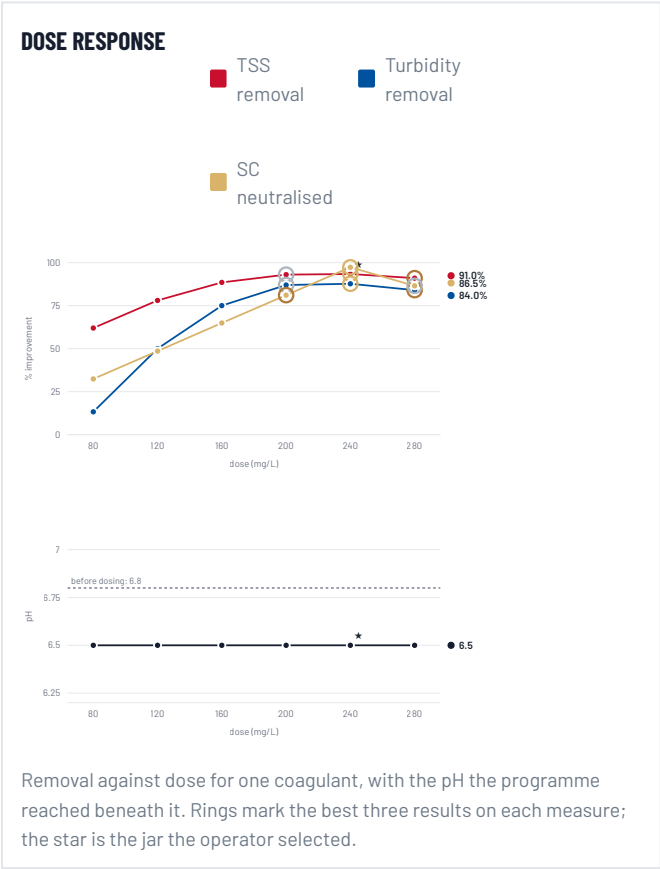
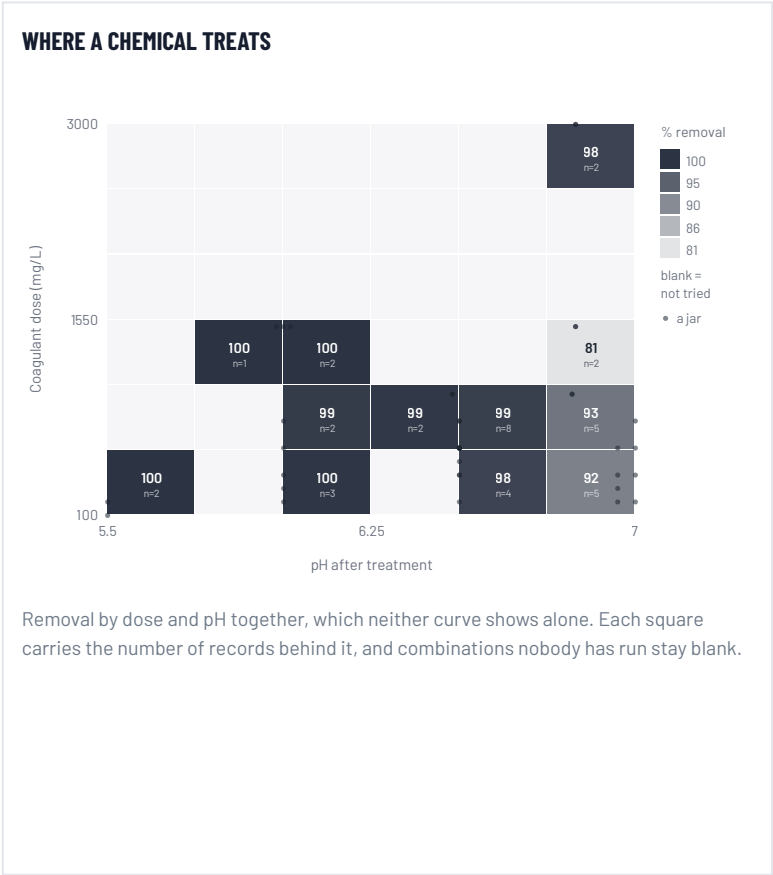
THEN PROVE IT AT THE DISCHARGE POINT

The certificate for the water a jar produced attaches to that jar – the only place a permit's FOG and BOD can be answered. It never enters the lookup: matching a raw water against an effluent would recommend the chemistry that made it.

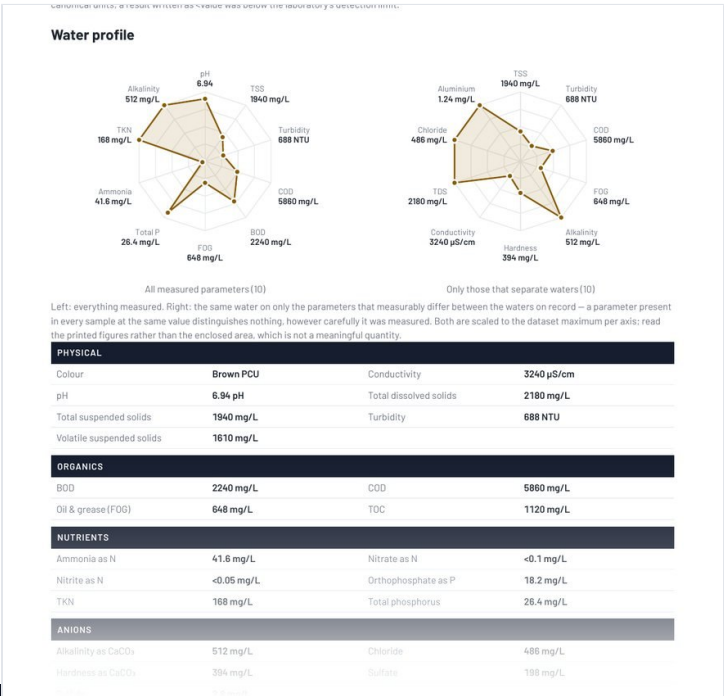
START WITH ONE JAR TEST

Send a recent laboratory certificate. We will return the analysis, a starting programme, and what it costs per cubic metre.

Every figure below is real output from the running system, not an illustration. Each is drawn on the server and lands in the PDF exactly as you see it — no spreadsheet, no screenshot, no re-typing.



THE REPORT ITSELF



Every report is typeset on the server and comes out as a PDF: a jar test like this one, a water analysis, a dossier rolling up a facility's whole history — every chemistry tried as a box with its jars over it — and a two-page treatment recommendation: one programme, one fallback on another chemistry, the misses beside the hits, and the operator's choice with its premium stated.

This page is the appendix — the water's own profile beside the full laboratory certificate. On the left, every parameter measured. On the right, the same water on only the parameters that measurably separate the waters on record: a value present in every sample distinguishes nothing, however carefully it was measured.

Fonts are embedded, so a report renders identically on a bench laptop with no network as it does in the office — fit to send to a client or a regulator without being re-typed into anything.