TECHNICAL ANNEXE

What goes in, what comes out, edition by edition.

Your plant's records already hold the signs of leaks, sticking valves, drifting chillers and wearing machines. This annexe shows the records each edition reads, the findings it returns and the machines it covers.













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THE FAMILY MAP

Which edition covers which machines.

Six editions, one way of working. Find your machine below to see which edition reads its records.



CARI-Pani

Water networks

Page 3

Covers Zones and district inlets; big mains; water-supply pumps; reservoirs and tanks; customer and bulk meters; water quality; pipe networks; supply hours by ward.

Reads Zone inflow and pressure, tank levels, pump logs, meter totals, the pipe list, quality readings.



CARI-Loops

Control loops and valves

Page 4

Covers Control loops in your export: flow, level, pressure, temperature, analysis, density, speed and weight; control valves; transmitters; loops in manual.

Reads The trend export of the unit, as CSV or Excel.



CARI-Tune

Loop settings

Page 5

Covers The controllers that need retuning, with new settings for your engineer to enter, in ten styles of controller block.

Reads The trend export, today's settings, a valve stroke test and a short loop test.



CARI-Chiller

Cooling plant

Page 6

Covers Water-cooled chillers; cooling towers and the condenser-water loop; primary-secondary loop and chilled-water pumps; air handlers and their fans; data-hall cooling units; free cooling.

Reads One export from your BMS or historian.



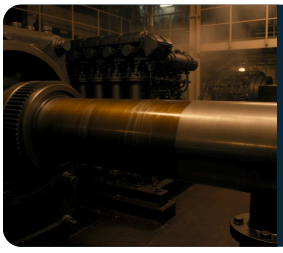
CARI-Gold

Gold floor

Page 7

Covers Cast jobs; induction melter, continuous caster, investment mixer, burnout furnace, vacuum caster, rolling mill, annealing furnace, enamel kiln, CNC engraving, laser marker, diamond laser cutter, electro-polisher, mass finisher, plating bath, gold refining.

Reads Weighings, one line per cast job; each machine's records.



CARI-Navi

Propulsion trains

Page 8

Covers Clutch; reversing gear; gearbox sensors; hydraulic servo and power unit; engine coolers; flexible coupling; shaft bearing.

Reads Your own logs and surveys.

Several editions at one site. They share the same plain words and the same way of working.

EDITION 1 OF 6 · WATER NETWORKS

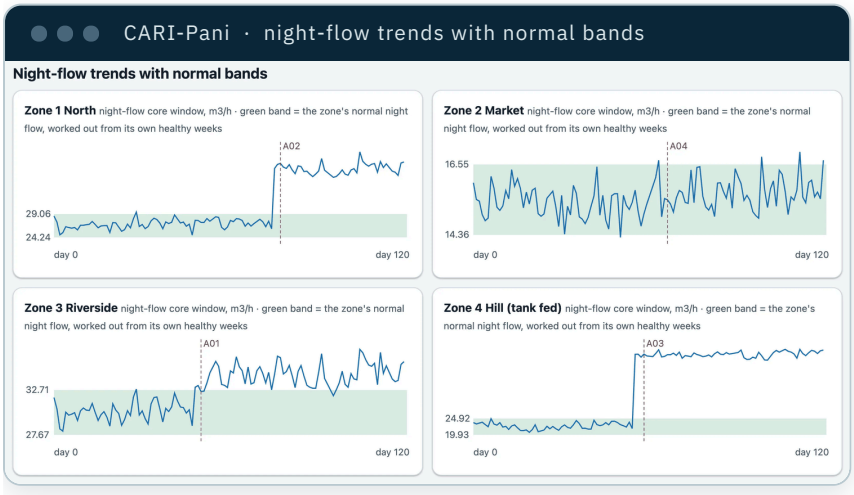
CARI-Pani: what goes in, what comes out.

What goes in

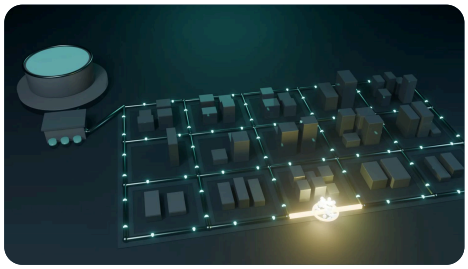
RECORDS	FORM	WHAT YOU GET
Inflow to each zone	Export, one row per time; or typed readings	Zone losses, repair check
Pressure at the zone's far point	Export or typed readings	Stronger leak reasons
Reservoir or tank level, inflow, outflow	Level and flow exports; or daily level and pump notes	Reservoir and tank checks
Pump run state, power, flow	Export; or a pump log of starts, stops, units, hours	Pump checks
Customer and bulk meter totals	Meter export; or a meter reading sheet	Meter checks
Pipe list: year, material, length, breaks	Asset list table or typed table	Replacement order
Water quality readings	Analyser export; or lab or hand-test table	Quality checks
Network model file; listening-logger levels	Your modelling file; logger file	Model check; loggers worth a visit

What comes out

FINDING OR RESULT	WHAT IT TELLS YOU
Zone losses and repair check	Zones ranked by new water lost, the likely causes, what to check first, and whether the repair worked.
Zone against similar days and neighbours	A note when a zone uses more than on similar days, or rises alone.
Big-main burst watch	A plain alarm for a sudden, lasting rise in flow on a main.
Pump run patterns and energy	Pumps that stop early, run long or restart too soon; the pump giving less water; the electricity it wastes.
Pump cost and carbon dioxide	Energy, cost and CO2 per pump at your tariff and factor.
Reservoir and tank balance	Water missing, fill by fill; supply hours by ward.
Water quality	Breaches of your limits; the water changed, or a sensor to check.
Meters and pipes	Meters to visit, water not recorded in an area, pipes in replacement order with a yearly plan.
Reports and alerts	English, Hindi, Marathi and Gujarati; PDF and CSV; alerts by WhatsApp, SMS or e-mail.



Priority on every alert: High, Medium or Low. Each alarm lists the readings behind it. Each check runs on the readings you provide, and the report says which ones it used.



Built for Water utilities, municipal networks and supply managers.

EDITION 2 OF 6 · CONTROL LOOPS AND VALVES

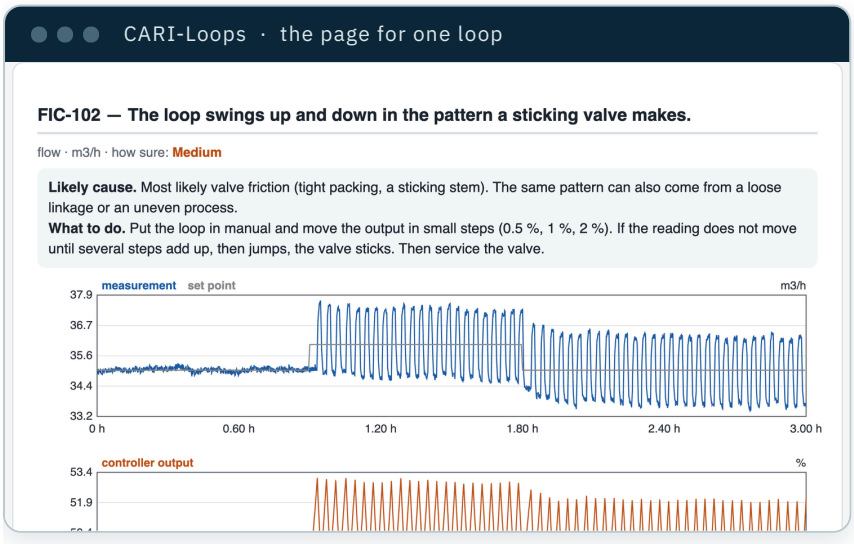
CARI-Loops: what goes in, what comes out.

What goes in

RECORDS	FORM	WHAT YOU GET
Trend export of the unit	CSV or Excel, wide or long, one file or several: time, measurement, controller output, set point	Loops in your export ranked
Loop mode	Auto or manual, where logged	Loops running in manual named
Valve position	From smart positioners, where logged	Valve dead band sized as a share of travel
Your tag names	Vendor-style or plant-style; you confirm the loops found	Loops and loop types
Your cost rates	Cost per unit away from set point per hour; optional	A cost ranking
Stroke tests	Optional	Dead band followed to your own limit

What comes out

FINDING OR RESULT	WHAT IT TELLS YOU
Instrument frozen	A measurement that stayed unchanged for a long stretch. Check the transmitter and its wiring.
Sticking valve suspected	Agree a small-step test with operations, then the valve inspection.
Valve dead band	Linkage, positioner and actuator for friction or play; positioner calibration.
Output saturated	Operating limits, valve or pump response and duty, before any retune.
Swings with others	Loops swinging at the same rhythm, reviewed as one job.
Loop swinging	Put the loop in manual, then check the valve response, before a retune.
Running in manual	The reason it runs in manual, and whether to return it to automatic.
Export again	How to export it again: rate, compression, missing signal or a fresh record.
No problem found	No action; keep it in next month's check.



Each finding carries a likely cause, a next check, and how sure: high, medium or low. Run again next month and the report shows, loop by loop, what changed.



Built for Process plants: control engineers, instrument and maintenance teams.

EDITION 3 OF 6 · LOOP SETTINGS

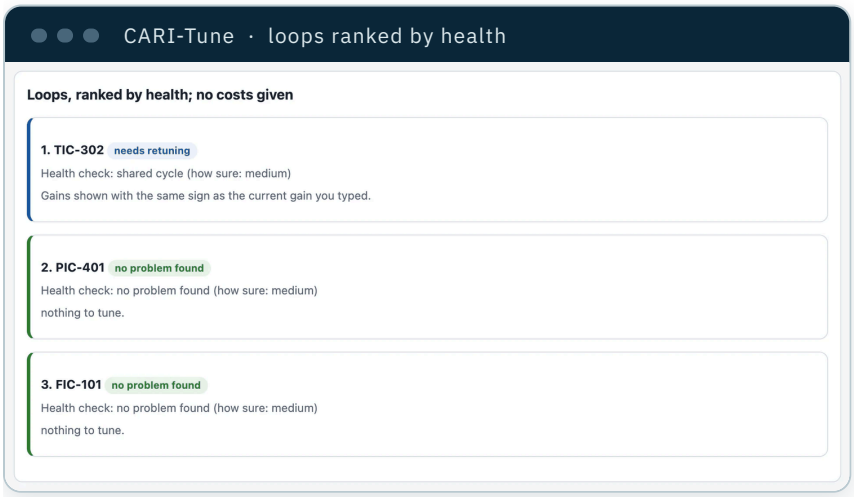
CARI-Tune: what goes in, what comes out.

What goes in

RECORDS	FORM	WHAT YOU GET
Trend export of the unit	CSV: time, measurement, set point, controller output, mode	Every loop graded
Current gain, integral time and action	Entered before approval	Comparison with today; the change record holds the setting replaced
Your cost of error	Per unit of error per hour; optional	Costliest-first order
Valve stroke test result	Passed or not, by your engineer	Settings only where the valve passes
Short loop test file	A short recording by your engineer	Three settings and their predicted responses

What comes out

FINDING OR RESULT	WHAT IT TELLS YOU
Needs retuning	Three settings, two pictures, a settings sheet.
Test the valve	No settings. A valve stroke test to run first.
Instrument first	No settings. The transmitter to check.
No problem found	Left alone. Nothing to tune.
Three settings	Slow, normal, fast: gain, integral time and stated safety margin of each.
Two pictures	A set-point move and a load upset, each setting beside today's.
A plain answer against today	The Normal setting against today's: better, worse or too close to call.
Settings sheet	Your block's own field names, units and action; CSV and a printable page.
Sealed change history	Proposer and approver, old and new settings, date and a record code.
Monthly re-check	Each month against the loop's own reference months, with a plain verdict.



CARI-Tune works from exported files and two tests your own engineer runs. Your engineer enters every setting through your own change procedure.



Built for Process plants: control engineers, who enter every approved setting.

EDITION 4 OF 6 · COOLING PLANT

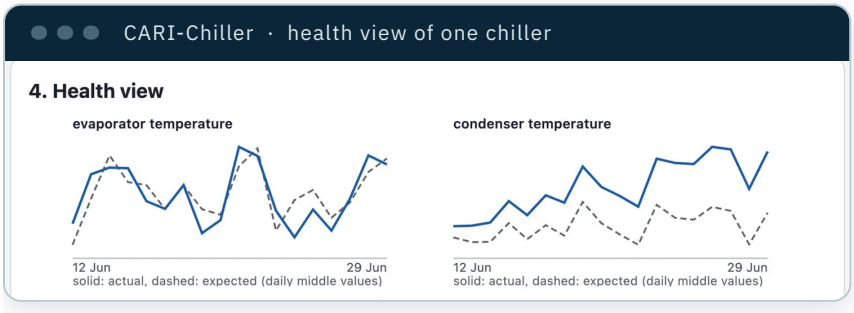
CARI-Chiller: what goes in, what comes out.

What goes in

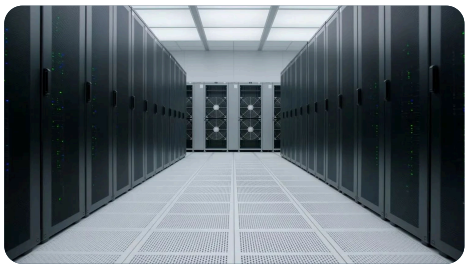
RECORDS	FORM	WHAT YOU GET
One export from your BMS or historian	CSV: one row per time step, one column per point	The plant page
The weeks your team calls normal	Your engineer picks the dates	Each machine judged against its own normal
Plant units by name	Towers, loops, pumps, air handlers, data-hall units, free cooling	Each checked when its points are in the file
Your electricity price and currency	Optional	Extra energy priced
Your chiller maker's cleaning limit	Optional, with where it is printed	Days to the cleaning limit

What comes out

FINDING OR RESULT	WHAT IT TELLS YOU
Chiller alerts	Which readings moved, by how much, from when, and whether it still shows; Keep watching, or Fix at next stop.
Days to the cleaning limit	A band of days, redrawn with every new file.
Extra energy and its cost	Per open chiller alert, in your currency, largest first.
Cooling tower and condenser loop	Weak cell, fan belt slip, fouled condenser, water treatment upset, make-up valve, extra water loss.
Primary-secondary loop and pumps	Deficit flow in the bypass, a weak primary side, a worn secondary pump, pump efficiency loss.
Air handlers and fans	Heating and cooling fighting, low duct pressure at full fan speed, a sensor that reads wrong.
Data-hall units	The unit out of step, valve hunting, a hot spot by rack row.
Free cooling	Economiser valve held part-open, open when too warm, shut when free cooling is available, exchanger losing effectiveness.
Work orders and report	One row per chiller alert; one printable report for the plant.



Each finding names the unit, the finding and its dates, with the usual cause. A chiller alert moves from raised to acknowledged to closed, by two people, and can be reopened with a reason.



Built for Commercial buildings, malls, data centres, hospitals, hotels, airports, IT parks, pharma and district cooling.

EDITION 5 OF 6 · GOLD FLOOR

CARI-Gold: what goes in, what comes out.

What goes in

RECORDS	FORM	WHAT YOU GET
Weighings, one line per cast job	Pasted or chosen as a file: charge, tree, pieces, sprues, button, finished pieces, recovered gold	The gram account
Each machine's records	A good run and the run to review, in the layout listed for that machine	The floor page
Machine name	As your floor names it	A fault shown beside a flagged step
Job date	Optional	Totals by month
Your recipe, if it differs	Zinc share, melt temperature, atmosphere, investment weight	A usual range matched to your recipe
Your gold rate	Typed by you	Values per step, job and month

What comes out

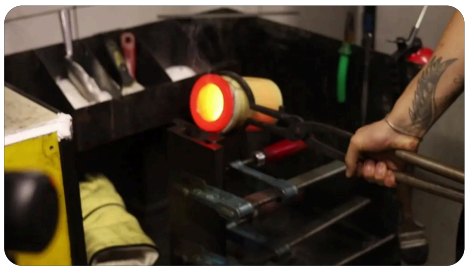
FINDING OR RESULT	WHAT IT TELLS YOU
The gram account	Every cast job in three steps, with the grams not accounted for at each.
Jobs to look at	A banner on every job with a step above its usual range.
Entries to check	Weighings that do not add up are marked apart from steps above range.
A reason to look	A possible fault is named, with where to look. Fix at next stop.
Change seen	A change from the machine's own normal. Keep watching.
Nothing raised	No fault or change was flagged in these records.
Fault next to grams	Machine findings placed beside the gram account for that step.
Pages and files	Pages to print; two spreadsheet files for the accounts desk.

CARI-Gold · the machine floor

Machine floor

machine	result
Annealing furnace 1 Annealing furnace	**a reason to look**: work thermocouple drifting from the reference (check or replace it) Fix at next stop Plan the repair for the next planned stop.
Burnout furnace 1 Burnout furnace	**a reason to look**: heat loss high (insulation or door seal) Fix at next stop Plan the repair for the next planned stop.
Polisher 1 Electro-polisher	**a reason to look**: voltage set low: the piece etches instead of polishing Fix at next stop Plan the repair for the next planned stop.
Laser marker 1 Laser marker	nothing raised in this record

Fifteen kinds of machine: induction melter, continuous caster, investment mixer, burnout furnace, vacuum caster, rolling mill, annealing furnace, enamel kiln, CNC engraving, laser marker, diamond laser cutter, electro-polisher, mass finisher, plating bath, gold refining.



Built for Jewellery workshops and factories, casting houses, refineries, bullion and mints, chain makers.

EDITION 6 OF 6 · PROPULSION TRAINS

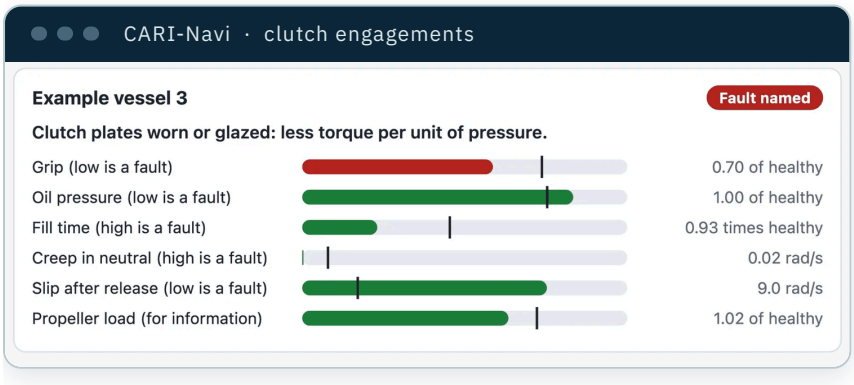
CARI-Navi: what goes in, what comes out.

What goes in

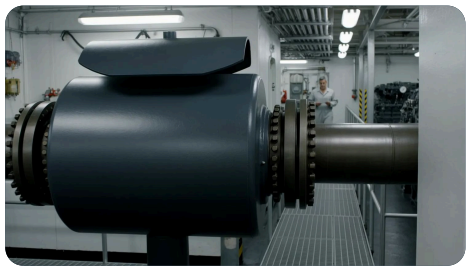
RECORDS	FORM	WHAT YOU GET
Clutch log	CSV engagement log, about 50 readings a second	Clutch verdict
Reversing gear logs	Both packs, or the monitoring system's engagement and running logs	Pack and fault named
Gearbox slow readings	About one a second, with each transmitter's range	Sensor problems named
Servo, fin stabiliser, pitch and power unit logs	Test-move and minute logs	Named hydraulic faults
One log per engine cooler	Hourly or per watch, with nameplate figures and the days to the planned stop	Cooler verdict at the stop
Stern-tube and coupling surveys	Survey readings; your shaft line entered once	Years left, as a range

What comes out

FINDING OR RESULT	WHAT IT TELLS YOU
Clutch	Worn plates, low pressure, slow fill, drag, will not release; a heavier propeller named apart.
Reversing gear	The pack and the fault, from a fast log or the monitoring logs.
Gearbox sensors	Stuck, flattened or failed readings called out as sensor problems.
Hydraulics	Weak pump, cylinder friction, worn lands, leaks, silted valve, hot oil, filter, cooler, gas charge.
Engine coolers	Enough at the stop, may fall short, or falls short.
Shaft life	Stern-tube bearing and coupling: years left as a range and a best estimate.
Findings	One list per vessel and date, named faults first.
Report	One page per machine, headed with the vessel and the date.



Every finding says what was seen, how large it is and where to look first. Enter your class society's figure and it replaces the default, named as yours.



Built for Ship operators and their engineers.

WHAT EVERY EDITION GIVES YOU

The same way of working, edition by edition.

Every edition reads exported records and changes nothing in your plant. A tick marks what each edition returns.

WHAT YOU GET	PANI	LOOPS	TUNE	CHILLER	GOLD	NAVI
Named findings in plain words	✓	✓	✓	✓	✓	✓
Ranked list, urgency grade or named faults first	✓	✓	✓	✓	✓	✓
Pages to print or save as PDF	✓	✓	✓	✓	✓	✓
Alerts or work-order files	✓	–	–	✓	–	–
Two-person sign-off and sealed history	–	–	✓	✓	–	–
Files for other desks (CSV, spreadsheets, settings sheets)	✓	✓	✓	✓	✓	–
Month-by-month comparison or totals	–	✓	✓	–	✓	–
Your own limits, rates or names used	✓	✓	✓	✓	✓	✓
Reports in four languages	✓	–	–	–	–	–

Named
Plain words, never codes.

Where first
Where to look, or what to check.

What first
What needs attention first.

Your PC
Records stay with you.

Reads only
Nothing written to the plant.

No new sensors
Works from your records.

What each edition hands to your team

CARI-Pani
Alerts by WhatsApp, SMS or e-mail; PDF and CSV reports in four languages.

CARI-Loops
Findings as CSV; a page for each loop with a finding; print or PDF.

CARI-Tune
A settings sheet in your controller block's own field names; the change history.

CARI-Chiller
A work-order file, one row per chiller alert; the alert history.

CARI-Gold
Pages to print; two spreadsheet files for the accounts desk.

CARI-Navi
A printed report, one page per machine.







Start with one edition. Add another when it covers other equipment at your site: they all work the same way.

SECTORS AND DEPLOYMENT

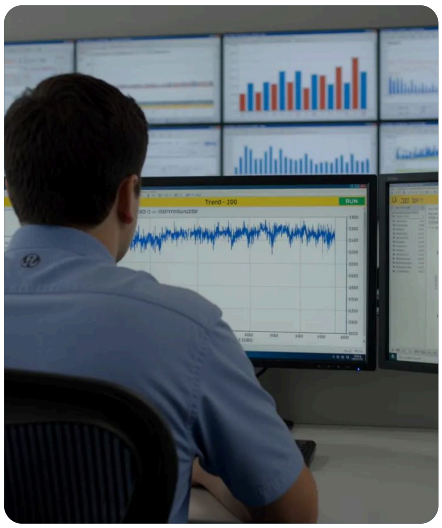
Where it works, and how it runs.

Choose the row that matches your plant. Start with one edition; add another when it covers other equipment at your site.

SECTOR	EDITION
Water utilities and networks	CARI-Pani
Process plants: loops and valves	CARI-Loops
Process plants: loop settings	CARI-Tune
Commercial buildings, malls, data centres, hospitals, hotels, airports, IT parks, pharma and process cooling, district cooling	CARI-Chiller
Jewellery workshops and factories, casting houses, refineries, bullion and mints, chain makers	CARI-Gold
Propulsion trains	CARI-Navi

HOW IT RUNS	IN PRACTICE
Where	On your own PC, opened in your web browser.
What it reads	Exported records: CSV, Excel, log sheets, weighings and survey files.
What it changes	Nothing in your plant. Where an edition gives settings, your engineer enters them.
Set-up	With your team: names and units confirmed together.
Output	Findings in plain words, and pages to print.
Start	A walkthrough on your own PC.







1

Load your records

A routine export from your control system, BMS, historian or log sheets: files you already keep.

2

Check names and units

Your engineer confirms them on screen.

3

Read the findings

Named findings or settings in plain words, with where to look first.

4

Print and plan

Print the pages and use the files your edition gives: alerts, work orders, settings sheets or accounts files.

START WITH ONE PLANT

Email contact@carimo.tech for a walkthrough on your own PC. We set CAPMAC up with your team and read the first findings together.

WRITE TO US

contact@carimo.tech
carimotech.com