CARI-Tune

LOOP TUNING FOR PROCESS PLANTS

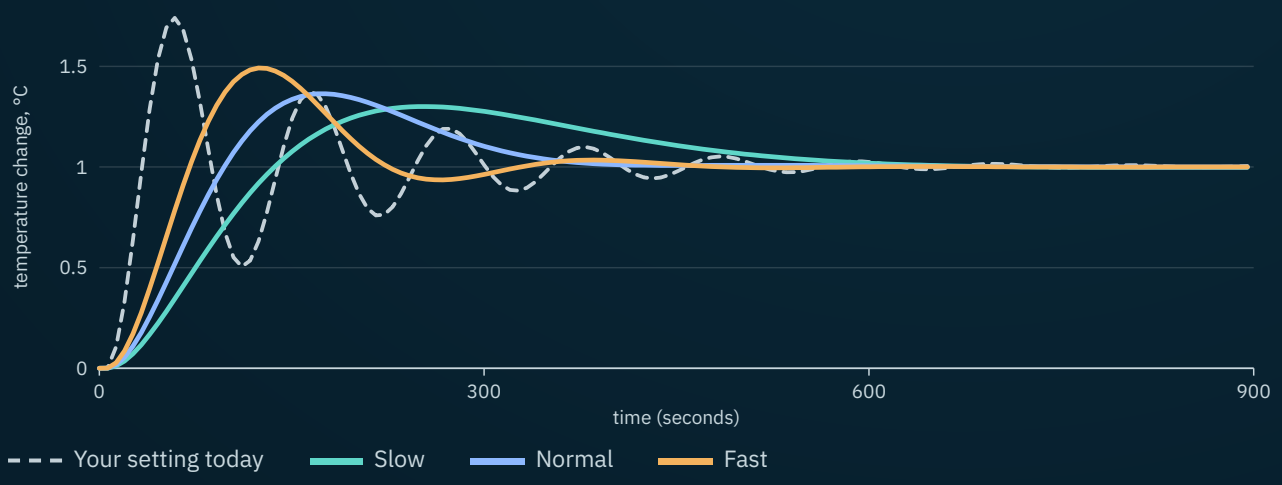
CONTROLLER TUNING · BY CARIMO

Settings your loops can trust.

Choose the balance each loop needs between set-point response, load response and safety margin. CARI-Tune finds the loops that need retuning, puts the valve check first, and gives your engineer three settings with predicted responses and a sheet in your controller block's own words.

CARI-Tune includes everything in CARI-Loops, the health check of every loop and valve, and adds the tuning.

Worked example: reactor temperature loop. Predicted response to a 1 °C set-point step, today and with each new setting



SETTING	GAIN	INTEGRAL TIME	SAFETY MARGIN	SET-POINT PEAK, °C	SETTLES WITHIN ± 5 % OF STEP	LOAD PEAK, °C
Today	−24	450 s	not stated	1.74	497 s	0.07
Slow	−2.57	227 s	at least 3.5×	1.30	529 s	0.32
Normal	−3.90	182 s	at least 2.67×	1.36	340 s	0.23
Fast	−6.02	136 s	at least 2×	1.49	294 s	0.17

Safety margin means gain margin: the factor by which the process gain can rise before the predicted response reaches steady cycling. Example gain units are percentage points of output per °C; a negative gain denotes direct action in CARI-Tune. Peaks are temperature changes in °C, for a 1 °C set-point step and a 1 % load step at the process input. Today's setting gives the smallest predicted load bump but swings after a set-point step.

Valve first

no new settings for a valve that sticks

3 settings

slow, normal, fast, each with its margin

10 sheet styles

own field names, units and action

2 names

proposer and approver, recorded with every change

CARIMO Technologies Pvt. Ltd., Mumbai · Incubated at SINE, IIT Bombay · DPIIT-recognised Tested on our own test plants built to industry practice.

HOW IT WORKS

Find it. Check the valve. Tune. Approve.

1
Find the loop
The built-in CARI-Loops health check names the loops that swing.

2
Check the valve
A valve stroke test by your engineer. A failing valve is fixed first.

3
Short loop test
12 minutes, output moved ± 2 percentage points, in our example.

4
Three settings
Slow, normal, fast, each with its safety margin.

5
Approve and check
Proposer and approver. The engineer enters it, then checks read-back and trend.

CARI-Tune · settings sheet

Settings in your control system's own style

Pick your control system. The settings are shown with its field names and units, ready for your engineer to enter.

Control system: Yokogawa: CENTUM VP PID | Download CSV | Printable page

Loop	Current	Slow	Normal	Fast
TIC-302	4.1667 / 450.0000	38.9494 / 227.0370	25.6561 / 181.6300	16.6209 / 136.2220

Each cell: P (PB %) / I (s). Confirm this block's structure and units against the block's own documentation before entering anything. Your engineer enters the settings; nothing is written to the control system.

Before testing, your engineer and operating team agree the controller mode, the output moves and the test period.

Whole units, ranked
Flow, level, pressure, temperature and more. Worst first, or costliest first with your cost of error.

Compare before entry
Predicted set-point and load responses of each setting, drawn beside today's.

Your block's own words
Gain or band, seconds or minutes, action stated. CSV and a printable page.

Monthly re-check
Each month against the loop's own reference months, with a plain verdict.

SETTINGS SHEETS IN THE STYLE OF

Textbook and reset-rate forms · Emerson · Honeywell · Yokogawa · Siemens · Rockwell · Foxboro (Schneider) · ABB

START WITH ONE LOOP

Show us one loop. See three settings. Start with a CSV of time, measurement, set point, controller output and mode. Write to **contact@carimo.tech** to agree the export and the first-loop test.

WITH YOUR TEAM FIRST

Runs on your own PC; your engineer enters approved settings. Writing settings into the control system and automatic retuning are set up and tested with your team first.