

LOOP PERFORMANCE MONITORING

Transforming PID Health Into Acid Gas Removal Profit

Tuning PIDs associated with just eight control valves at a 120,000 barrel/day NGL processing plant reduced valve output travel by an average of 66%. That cut the five-year downtime exposure for servicing those same valves from \$1.8 million to \$600K - a \$1.2 million savings over five years.

THE CHALLENGE

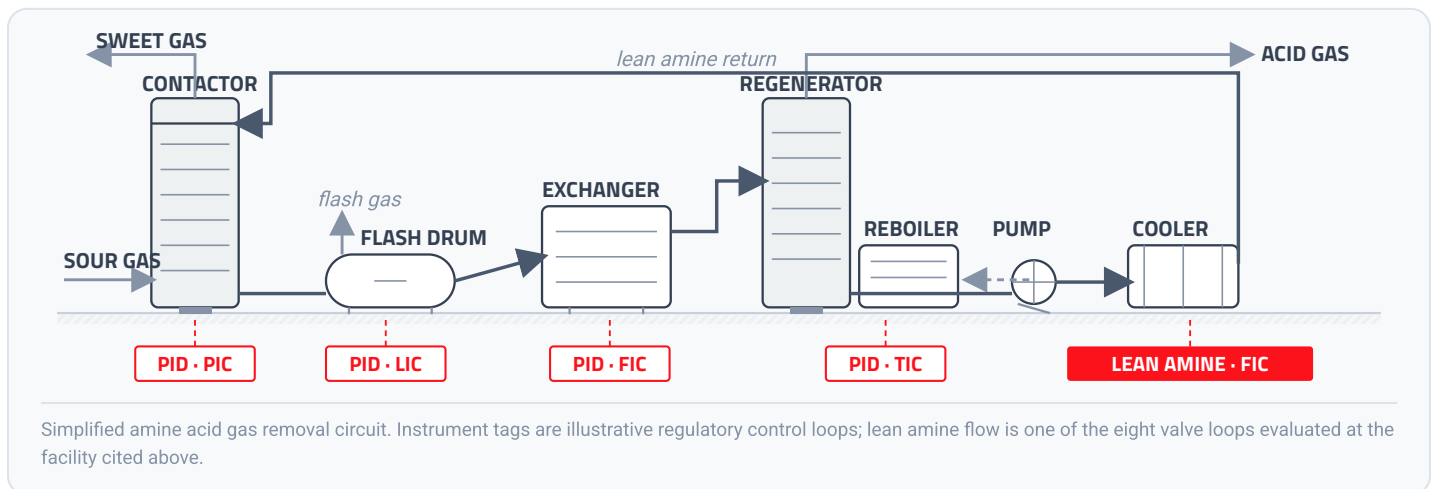
Less Valve Travel, More Plant Profit

Acid gas removal sits directly upstream of every dollar an NGL plant earns. The amine circuit that strips CO₂ and H₂S from inlet gas is a tightly interactive unit operation - contactor pressure, lean amine flow, reboiler duty, and flash and reflux levels all pull on one another, and each is regulated by a PID loop driving a control valve. Left untuned, that interaction quietly erodes plant economics loop by loop.

Valve reliability alone puts a hard number on that erosion: reducing a handful of control valves' Output Travel through tuning can save roughly \$240,000 a year in avoided repacking, replacement, and downtime. That's just one line item. Lift a sweetening unit's overall OCE score by just 10 points and the combined savings from valve life, reduced reprocessing, and energy and chemical use can reach \$500,000 a year.

~\$500K

ANNUAL GAIN PER MACHINE
FROM A 10-POINT OCE
RECOVERY



Service downtime

Excess valve Output Travel drives repacking, replacement, and the outages that come with them.

Off-spec product

CO₂ and H₂S carryover forces reprocessing or sale at a discount.

Energy waste

Reboiler steam is the unit's largest variable cost; loose control overheats the still.

Water & chemicals

Wash water and makeup chemical consumption climb as circulation destabilizes.

Amine loss

Foaming and carryover send costly amine out of the circuit with the treated gas.

Measurable, Loop by Loop

The connection between PID performance and the economics of NGL processing is not theoretical. **PlantESP™** is the leading control loop performance monitoring (CLPM) solution. PlantESP actively monitors PID performance on a plant-wide basis, and it has been successfully deployed on dozens of paper machines.

Among its metrics, PlantESP scores every loop using Overall Controller Effectiveness (OCE). Like OEE, OCE is a composite KPI that assesses three operating attributes — Availability, Performance, Quality — and facilitates the benchmarking of individual PID loops, unit operations, and entire facilities.

≥ 95% **AVAILABILITY**
Time in Normal —
auto/cascade

≥ 90% **PERFORMANCE**
Time Not Saturated —
off limits

≥ 85% **QUALITY**
% Good Error within
tolerance

Overall Controller Effectiveness =
Time in Normal × Time Not Saturated × % Good Error

A loop meeting all three thresholds scores at **72.7%** — the threshold for world-class control. In contrast, because the terms multiply a loop running 80/80/80 falls to **51.2%**. OCE highlights weakness in any one dimension — which is why it gauges control quality and financial exposure alike.

**FRAMING POOR
PERFORMANCE AS LOST
PROFIT**

66%
Avg reduction in
valve Output Travel

\$90.5K
Lost revenue/hour of
downtime at max capacity

\$1.8M → \$600K
Five-year downtime
exposure for valve service

\$1.2M
Five-year savings from
eight loops alone

DIGITAL LIFECYCLE SOLUTIONS

A project-based, control-strategy-improvement offering purpose-built for interactive, multi-loop unit operations like a amine sweetening train — engage to find and fix the losses, then sustain the gains.

ENGAGE 01 — 04

01 KICK-OFF

Prioritize by Strategy

Rank loops, units, and areas against the plant's own goals — spec, energy, throughput.

02 MONTHLY

Identify Bad Actors

Control Station engineers pinpoint that scope's top 10 bad-actor loops every month.

03 MONTHLY

Tune the Loops

Four hours per month of direct, hands-on tuning support to resolve those loops.

04 AS NEEDED

Strategy Change

When tuning cannot close the gap, escalate to a more strategic assessment and action plan.

SUSTAIN ONGOING

QUARTERLY

Assess the Value

Financial impact of the 10–20% typical PGE gain from resolved bad-actor tuning.

MONTHLY

Track OCE Live

Unit Operation Performance Indicators in PlantESP keep the OCE trend visible.

QUARTERLY

Report to Stakeholders

Benchmark against industry peers for sponsors and non-technical stakeholders.

ANNUAL

Plan the Roadmap

Update a one-to-three year plan for closing whatever performance gap remains.

DECADES OF DOMAIN EXPERTISE

Control Station is the process industry's leading provider of controller performance monitoring and analytics. PlantESP™ supports hundreds of facilities worldwide, backed by an engineering team focused solely on process control.

Next Step: See What OCE Reveals About Your Sweetening Unit

Contact us for a no-obligation loop performance assessment and a plant-specific estimate of the opportunity hidden in your regulatory controls.

[REQUEST AN ASSESSMENT](#)