CAPABILITY PAPER 01 / MIDSTREAM GAS GATHERING

The compressor station that never sleeps

24/7 monitoring and notification across the assets that keep gas moving.

A midstream operator runs twelve compressor stations with a small central engineering team. Every station has its own trends and alarms. The operational question is larger: which developing condition needs attention first, and what does it mean for gas delivery?

At one station, a cooling problem develops during the night shift. Compressor discharge temperature rises while throughput remains steady. Cooling-fan demand increases, but the cooling response weakens. Each reading tells only part of the story; together they point to a condition worth investigating before the station loses capacity.

THE VALAK APPROACH

Continuous watch. Prioritized attention. A response that stays connected to the evidence.

Powered inside the operation

A fleet of AI agents works across live signals, operating history and plant context. Valak's specialized models run on-premises, keeping the intelligence close to the operation with no external AI API fees.

Inside this paper: operating context, agent workflow, a sample deliverable and a worked value model.

MIDSTREAM GAS GATHERING / OPERATING CONTEXT

Start with the operating question

Which station needs attention now, and what should the operator check first?

Operating scope	Connected context
Critical assets	Compressor C-204, its cooling package, suction scrubber and station discharge header.
Live signals	Load, throughput, suction/discharge pressure and temperature, cooling demand, fan status, equipment state and alarms.
Supporting records	Equipment relationships, operating limits, previous episodes, maintenance notes and on-call ownership.

Connect the systems already in use

Use the existing automation and historian connections as the live-data foundation. Add equipment relationships and relevant operational records so each agent can relate a change in one asset to the process around it. Read-only connections leave the control system in charge of the process.

Give every finding an operating context

Equipment identity, units, timestamps and operating state travel with the evidence. Comparable running conditions matter: an intentional rate change, a startup and a steady production run tell different stories. The agent follows the asset in its process context, while the team receives the evidence needed to act.

MIDSTREAM GAS GATHERING / WORKFLOW

A coordinated fleet of agents

The monitoring agent compares behavior within similar load and running conditions. The context agent checks whether throughput, inlet conditions or a commanded operating change explains the trend. The investigation agent brings the evidence together. The notification agent routes a concise finding to the responsible team and follows acknowledgment.

Time	Agent activity and operational response
01:40	Establish the running context: steady station throughput and comparable compressor load.
01:52	Identify a sustained rise in discharge temperature alongside rising cooling demand.
01:55	Review connected cooling signals and previous maintenance context; open a developing-condition case.
01:58	Notify the on-call operator with the trend, affected asset and inspection priorities.
02:10	Operator checks the cooling package and records findings in the case.
02:35	Track temperature recovery and stable operation after the intervention.

Specialized models, continuous responsibility

The models power the reasoning and tool use; the agents carry the workflow across the event. They retrieve data, connect context, maintain the case and prepare the next useful output. On-premises execution supports continuous coverage without external AI API charges.

MIDSTREAM GAS GATHERING / DELIVERABLE

What the team receives

PRIORITY WATCH / C-204 COOLING RESPONSE

C-204 discharge temperature is increasing under comparable load. Cooling demand is elevated, while throughput is stable. Review cooling-package performance first. The connected trends and event window are attached to this case.

Case field	What the team receives
Observed change	A developing temperature trend connected to cooling demand and compressor load.
Production exposure	The affected station, its delivery contribution and available operating alternatives.
Next checks	Inspect cooling response, confirm fan operation and compare local indications with the recorded signals.
Ownership	Named on-call role, acknowledgment state and a persistent case across shift handover.
Follow-through	Updated trend, operator findings and a recovery check under comparable operating conditions.

The case stays with the work

As the condition develops, the case updates rather than generating a separate message for every sample. A shift change transfers the same evidence and outstanding checks. After intervention, the agent continues watching the original symptoms so the team can see whether the response holds.

MIDSTREAM GAS GATHERING / VALUE MODEL

Make the value visible

Use the operating inputs below to translate the workflow into engineering capacity or production opportunity. Substitute the site's own volumes, time and economics when applying the model.

Calculation input	Worked operating example
Manual review workload	12 stations x 15 minutes per station x 2 reviews per day = 6 hours/day.
Exception review workload	4 prioritized cases per day x 15 minutes = 1 hour/day.
Engineering capacity released	6 - 1 = 5 hours/day; at 250 staffed days, 1,250 hours/year.
Capacity value	1,250 hours x $80/hour = $100,000/year of engineering capacity.

Reading the calculation

This calculation values time redirected from routine review to operational work. It does not add an assumed avoided shutdown. Downtime value is calculated separately from the actual interruption duration, recovered throughput and contribution margin.

Put the workflow to work

Start with the stations whose loss most constrains delivery. Give the agents the operating context and notification ownership for each one. The result is continuous fleet coverage with a short, prioritized queue for the people who can act.

See this workflow on your plant data.
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Valak | 24/7 critical-asset monitoring. Automatic investigation packages. Pattern rules. OEE and Bad Actors.