



Getting shutdowns and turnarounds right in the Middle East's chemical industry

EBOOK

Introduction

Across the global chemical and petrochemical industry, shutdowns, turnarounds and outages (STOs) are some of the highest-stakes events a plant runs. According to [BCG's analysis of the sector](#), a turnaround can account for 10 to 20 percent of a plant's annual non-feedstock spend and consume up to half of its total annual maintenance budget, while also producing a 5 to 10 percent swing in uptime and product quality the following year. At peak, a single event can mobilize several hundred employees and contractors.

For all that importance, STOs are notoriously hard to get right. About 70 percent of turnarounds finish over budget or over schedule, a figure [Global Shutdown's industry summit](#) puts down to compressed timelines and high activity density. BCG's own benchmarking lands in the same range from a different angle: only around 32 percent of turnarounds are completed on time, on budget, with the planned scope intact.

For the majority of plants where a STO is not delivered as expected, the costs and challenges rarely stop when the unit restarts. A turnaround that is rushed, under-resourced or executed against an incomplete scope leaves equipment in worse shape than planned, which can shorten the interval before the next outage is needed.



A high-stakes event, more often than not mishandled

There are many reasons for this pattern: one of the clearest analyses comes from [AFRY's review of shutdowns at several industrial plants](#). AFRY found that most companies manage their annual shutdown as a set of independent subprojects rather than one process, with each department running its own plan and the handovers between planning, procurement, execution and start-up falling through the cracks.

As a result, even where a critical path schedule exists, no entity or platform manages the shutdown end-to-end. In that regard, an STO is the moment a plant's technology and organizational silos all get exposed at once: scheduling lives in one system, materials in another, contractor management in a third, and no one owns the full picture.

What makes this lack of visibility particularly detrimental is that, even with the best planning in place, STOs are dynamic events prone to two phenomena: discovery scope — where previously hidden damage or failures are uncovered once equipment is opened — and scope creep, where unplanned tasks are added without proper approval or impact assessment. On average, large downstream turnarounds [see scope growth of around 19% of direct labour and material costs](#) after the scope freeze date, with high-complexity events carrying a still greater risk of cost and schedule overrun.



Why this hits the Middle East harder right now

These dynamics matter more in the Middle East's process industries than almost anywhere else, for reasons rooted in how the region's chemical industry is built.

The Gulf's mega-complexes exist because of cheap, abundant feedstock, which lets national oil companies build refining and petrochemical units at a scale most of the world cannot match. A turnaround on a unit of that size is correspondingly enormous: contractors working on the region's largest plants in recent years have mobilized up to 5,000 people for a single event, making the challenges of planning and coordination even more acute.

And scale is only part of it. These complexes are typically owned through joint ventures, with the national oil company holding a majority stake alongside international partners. A turnaround scope has to be agreed across all of these stakeholders before it can be agreed with the contractors, which adds a layer of governance most single-owner plants in Europe or North America don't have to navigate. In addition, the execution workforce itself is almost entirely imported for the duration of the event: the region depends on specialist shutdown contractors who mobilize thousands of welders, scaffolders and inspectors from South Asia on short notice, then demobilize them just as fast once the unit restarts.

That model worked well enough in normal times. It is far more fragile when travel, insurance and shipping are all under strain at once, as they have been since the conflict escalated. The same was true, on a smaller scale, during COVID-19, when several GCC turnarounds had to be re-sequenced because crews simply could not get to site. The current environment is testing the same dependency again, at a moment when several of the region's refineries are also absorbing real damage and competing for the same pool of contractors to fix it.

What it takes to be ready

Given all this, operators in the region have a strong reason to close the planning and coordination gaps before the next wave of turnarounds arrives, and five things matter most.

The foundation: solid plan, full visibility

The first, and most important, is a platform that can coordinate the work across the whole lifecycle while keeping project controls, cost management and resource planning in one place. [Octave Sequence](#) is built for this: it lists turnaround management alongside cost management, earned value management and portfolio planning within a single system. One plan, owned by one process, replaces a set of subprojects that only line up on paper, and across a multi-partner joint venture, a shared system that every stakeholder works from is worth even more than it would be at a single-owner plant.

Second, a platform is only as good as the information feeding it. Plants need a clear, real-time view of the asset itself: what work is ready, what has changed, and what is still outstanding. [Octave InConcert](#) is positioned for exactly this, centralizing engineering, operations and maintenance data into a single source and supporting digital work packaging and document control so planners and field teams are working from the same picture.

The execution layer: keeping every moving piece in check

Third, that shared picture only creates value if it translates into field-ready work packages. Octave OnSite Visualize (formerly iConstruct) structures deliverables into Construction Work Packages and Installation Work Packages aligned with STO timelines, ensuring that drawings, tags, inspection records and materials are validated and sequenced before execution begins. In a region where mobilization is expensive and compressed, sending crews to the field against incomplete or mis-sequenced documentation is one of the fastest ways to destroy a schedule. OnSite Visualize removes that risk: work packages are only released when the documentation behind them is confirmed ready, reducing rework and improving field.

Fourth, materials management deserves specific attention, because it is one of the most common ways a well-planned schedule can fall apart. A typical turnaround involves [thousands of work packages](#), each tied to its own materials, and a crew standing idle because a gasket, valve or heat exchanger bundle has not arrived is one of the most preventable causes of delay. Long-lead items need to be locked in during the planning phase, not discovered once the unit is already down, and that matters even more when shipping routes through the region are themselves part of the disruption.

Fifth, and finally, execution depends on more than a plan and ready materials: it depends on the operational layer holding together in real time. That is where the integration between Octave InConcert and Octave Tempo can work wonders: InConcert acts as the digital backbone connecting engineering data to Tempo's permit management, isolation procedures, safety workflows and operational logs. During a shutdown, when dozens of work fronts are moving simultaneously and a missed permit or incorrect isolation can stop work, that connection gives supervisors and control-room teams real-time visibility and enforces procedural compliance without adding administrative burden.

Taken together, these five capabilities address the complexity of a shutdown at every layer. Sequence and InConcert form the foundation: one controls the plan and the budget; the other ensures the underlying asset data is clean, current and connected. On top of that sits the execution layer: OnSite Visualize translating engineering information into field-ready work packages, Tempo keeping permits, isolations and safety procedures in lockstep with what is happening on the ground and materials management closing the loop between what is planned and what is physically available. A Middle East turnaround at scale can involve thousands of work packages, hundreds of contractors and dozens of simultaneous work fronts, all moving against a schedule that has no room for the miscommunications that siloed systems produce. What this stack provides is a connected workflow where each layer feeds the next, so that when complexity peaks, the information does not form bottlenecks and black boxes.

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property, and assets – for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency, and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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