Chemical

How a major European petrochemical firm de-risked its ethylene cracking expansion

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Managing the risk of a major ethylene cracking expansion program is not for the faint-hearted. GleeYM program and risk management consultant Yasir Masood explores the proactive strategies that mitigated a multitude of challenges, from safety to supply chain delays and special permits.

When a major European petrochemical firm embarked on an ambitious ethylene cracking expansion, risk was built into every stage of the project.

Engineering complexities, volatile supply chains and stringent environmental regulations loomed large, threatening delays and cost overruns.

To navigate these challenges, the company adopted a structured program risk management (PRM) approach, ensuring that potential pitfalls were identified and mitigated before they could derail progress.

The expansion was far from a straightforward construction project. Integrating new cracking furnaces into an existing facility required meticulous planning, particularly as any miscalculation could compromise efficiency or safety.

Meanwhile, global supply chain disruptions put crucial materials in short supply, forcing project managers to scramble for alternatives.

COMPLIANCE FEARS

On the regulatory front, tightening environmental standards introduced another layer of complexity, demanding careful compliance measures to avoid delays or penalties.

Financial pressure added to the mix, with rising material costs and fluctuating market conditions threatening to push the budget beyond its limits.

Regulatory compliance and environmental constraints required careful management. Special permitting was needed for certain construction activities, and any compliance violation could have resulted in work stoppages or fines leading to reputation loss.

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Engaging regulatory authorities early and developing a compliance roadmap ensured the project remained within legal and environmental requirements.

To keep the project on track, the firm implemented a dedicated PRM framework. Risk mapping was a critical first step, helping identify interdependencies between different components of the expansion. If one element faltered – such as a delay in furnace installation – how would it impact other timelines?

Scenario planning and contingency measures were put in place to ensure there were alternative pathways when obstacles arose. Real-time monitoring played a crucial role, with digital risk tracking systems providing up-to-date insights that allowed the company to pivot quickly as new threats emerged.

WHEN IT ALL COULD HAVE STALLED

Despite careful planning, supply chain disruptions still threw a spanner into the works.

Midway through construction, critical components were delayed due to manufacturing backlogs and shipping constraints. Without swift intervention, the project could have suffered months of setbacks.

The firm responded by diversifying suppliers, reducing reliance on any single provider to avoid bottlenecks. Construction sequencing was also adjusted, shifting work schedules to minimise downtime while waiting for essential materials. Early and proactive engagement with suppliers proved invaluable, helping to accelerate deliveries and prevent further setbacks.

With millions of dollars at stake, insurance played a vital role in shielding the project from financial exposure. A tailored insurance program included delay in start-up (DSU) coverage, which protected against revenue losses caused by construction delays.

Construction all-risks (CAR) insurance provided a safety net against physical damage, while liability coverage ensured protection against potential third-party claims. Regular communication with insurers was key, allowing coverage terms to be adjusted as the project evolved and new risks surfaced.

A BENCHMARK SET

Despite the challenges, the ethylene cracking expansion was successfully completed. A proactive risk management approach had helped prevent major cost overruns, while early regulatory engagement ensured compliance with evolving environmental standards.

Supply chain resilience strategies had minimised disruptions, keeping the project moving forward even in the face of global uncertainties.

New sustainability initiatives were introduced by the company, emphasising reduced carbon footprint and energy efficiency. These requirements influenced material selection, process optimisation and waste management strategies.

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By proactively integrating these sustainability measures, the project not only met strategic compliance requirements but also positioned itself as a forward-thinking investment in sustainable industrial operations.

In summary, regulatory changes and environmental concerns required a dynamic and adaptive risk management approach. Early regulatory engagement, flexible scheduling and proactive compliance strategies ensured the project remained on track while meeting evolving legal and environmental standards.

This case underscores the importance of an integrated risk management approach for large-scale industrial projects.

Early identification of risks, dynamic mitigation strategies and strong partnerships – whether with suppliers, regulators or insurers – is invaluable. It can mean the difference between a project that stalls and one that stays on course. In an industry where margins are tight and stakes are high, managing risk isn't just an option – it's a necessity.

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