Case Study.
India.
Petrochemicals.

# Enhancing Operational Discipline and Risk Containment

## Achieving Sustainable Production

**Challenge**

A major petrochemical plant owned by a multinational corporation in India encountered significant operational and safety challenges. The site's safety culture was reactive, driven primarily by production-focused leadership. This created an environment, where employees feared reporting incidents, leading to ineffective incident investigations, delays in implementing corrective actions, and low employee morale.

Additionally, the workforce lacked proper awareness and competency regarding safety protocols, compounded by the absence of visible safety commitment. The plant also lacked robust process safety and asset integrity programs, resulting in frequent operational disruptions, loss of containment, and exposure of personnel to hazardous substances. Turnaround maintenance and associated planning were non-existent, with a run-to-failure approach and quick fixes being the norm to keep the plant running.

These issues posed significant risks not only to the safety and well-being of its workforce but also to its operational efficiency and profitability. Frequent plant trips and loss of containment events disrupted production schedules, leading to increased downtime and maintenance costs. The fear-driven culture impeded the identification and rectification of safety issues, further exacerbating the risk of severe incidents.

These challenges collectively affected the plant's ability to meet production targets and maintain a sustainable and safe operational environment.

**Approach**

To address these critical issues, dss+ collaborated with the plant to drive a comprehensive transformation in safety culture and process safety management (PSM). The key initiatives included:

1. **Culture Survey and Benchmarking:** Conducted an extensive survey to understand the existing safety culture, followed by benchmarking against industry best practices to identify key areas for improvement.

2. **Structured and Focussed Governance through KPIs:** Focussed on trends, actions, recommendations, tracking of progress and outcomes by the site leadership team on a routine basis

3. **High-Risk Containment:** Focused on managing barrier health, developing preventive and mitigation strategies, and enhancing emergency preparedness to effectively manage high-risk areas.

4. **Review and Analysis of Technical Standards:** Upgraded and co-developed technical standards to ensure they met stringent quality and application standards.

5. **Capability Development:** Provided training and coaching for site leadership and frontline managers to build competencies in safety management systems.

6. **Institutionalizing Safety Practices:** Established a structured approach to safety observations, incident investigations, and maintenance inspections to ensure systematic management of safety protocols.

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**Offering**

The transformation program aimed to integrate ORM and PSM practices into a cohesive framework, standardise safe work practices, foster leadership and workforce engagement in safety, and develop a systematic approach to risk mitigation and continuous improvement.

**Conclusion**

This comprehensive safety culture and process safety management transformation not only prevented and mitigated operational risks but also significantly enhanced the plant's performance and employee morale to unprecedented levels.

By fostering a proactive safety culture, the plant achieved sustainable production improvements and established a foundation for ongoing operational excellence.

**Impact**

The implementation of these initiatives had a profound impact on the plant's operations:

- Plant capacity utilisation improved from **61% to 87%**, significantly enhancing production efficiency.
- Basic Process Control System (BPCS) availability increased by **65%**, reducing operational disruptions.
- Nuisance panel alarms decreased by **85%**, minimising interruptions reducing operator fatigue, and improving operational focus.
- Bypassed Safety Instrumented Systems and Interlocks saw a **65%** improvement in status, bolstering safety and productivity of the plant.
- Pressure relief device availability improved to approximately **98%**, ensuring reliable operation of critical safety components.
- For the first time, a turnaround and maintenance calendar was established, complete with a shutdown plan and associated budgeting.
- Senior leadership proactively led safety and risk assurance initiatives, providing ownership and guidance across all departments, moving beyond reliance on the safety department.
- Appreciation received from local authorities and the insurance agency for improved safety and operational standards.

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