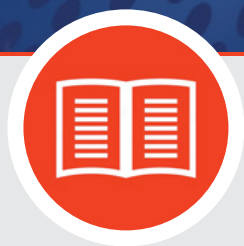


CASE STUDY: SOLVENT EFFICIENCY IMPROVEMENT INITIATIVE

**Client:**

Piramal Pharma Solutions
(Internal): Process Improvement

Project Name:

Solvent Efficiency Improvement
Initiative

Time Period – Start to Delivery:

June 2020 - June 2023

Piramal Pharma Solutions Site:

Digwal API Development &
Manufacturing

Project Overview:

The Solvent Efficiency Improvement Initiative at the Piramal Pharma Solutions (PPS) Digwal site, India was part of a larger program called 'Project Phoenix', a site-wide initiative aimed at transforming the use and handling of solvents. The active pharmaceutical ingredients (API) manufacturing plant uses a significant quantity of solvents and plays a critical role in the production of pharmaceutical products, but excessive consumption and low recoveries can pose multiple challenges, including the generation of waste and impacts on the environment.

Digwal site analyzed current methods and designed new, more efficient solvent management strategies to support employees, optimize resource utilization, increase process efficiency, and reduce waste.

The Solution:

The Digwal site was able to improve solvent efficiency by deploying the solvent efficiency improvement framework covering key indicators for monitoring with a variety of initiatives, including:

- Analysis of solvents based on their value and further classification into categories in accordance with their potential for recovery and reuse to guide appropriate next steps
- Introduction of solvent management practices, such as solvent recovery and recycling
- New standards to reduce risks and costs by minimizing solvent consumption and generation of waste
- Research and development initiatives to analyze and establish the most efficient recovery methods for various products with a focus on high-value and high-volume solvents
- Infrastructure upgrades to optimize current processes and support future endeavors in cutting-edge engineering, distillation, and purification techniques
- Conversations with clients at the proposal stage to incorporate sustainability practices, such as solvent recovery into the validation process

These innovations were completed with no additional risk to the manufacturing process and no impact on the quality of the batches manufactured.

The Benefits/Key Outcome(s):

- Improvement in identifying top products of solvent recovery by 21%
- Reduction in carbon emissions by 7%
- Reduction of stored inventory
- Lessened the impact of price fluctuation on raw materials
- Reduced incoming and outgoing freight for both fresh and spent solvents
- Enhanced safety and continuity of facility operations
- Overall improvement in compliance

These innovations also reduced the handling risk of solvent for employees and facilitated an overall reduction in carbon footprint for the Digwal site.

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Patient Centricity

The Solvent Efficiency Improvement Initiative aimed to minimize solvent consumption and waste impacts on employees, the environment, and, ultimately, our patients. These updated, sustainable approaches to solvent use and recycling economy circular economy model, where valuable resources are conserved, costs are lowered, and environmental harm is mitigated. These innovations can also set a precedent for other organizations to follow PPS in driving efficiency and excellence in the manufacturing process. Doing so will produce benefits for employees, larger sites, and the organization as a whole. This project demonstrates PPS's commitment to corporate social responsibility and encourages our employees as industry leaders to value global health and sustainability.



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