



DELIVERING
VALUE THROUGH
TIME AND COST
OPTIMIZATION

OPPORTUNITY



A big pharma customer was seeking opportunities to identify and implement cost optimization of a multi-ton API manufacture. Continuous Cost Reduction was the key to improve their competitiveness and profitability.

HOW PIRAMAL HELPED?

- Customer's original API commercial route was subjected to continuous process improvement without involving any Capex.
- To reduce the cost further, Piramal R&D team has developed a 2nd generation process that
 - Eliminates the biggest cost contributing raw material
 - Decreases no of steps from 4 to 2 steps
 - Applies principles of QbD and green chemistry such as telescoping, reuse & recovery of solvents, etc.

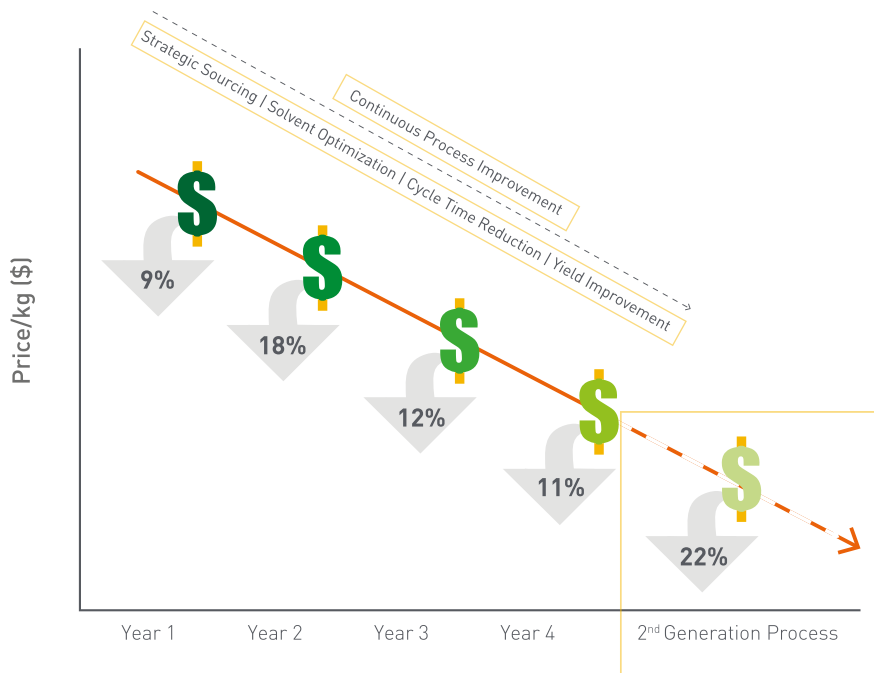
KEY OUTCOMES

- Reduced the API Price/kg by 22% using the 1st generation route; By the end of the year 5, total cost reduction was by 42%
- Improved PMI; Reduced raw material cost; Reduced cycle time; Solvent recovery and reuse

Multi-ton Opportunity

Reduced Client Cost of Goods by 55%

Continuous Process Improvement Activities



What's Next?

We are developing a 2nd generation process that:

- Uses inexpensive raw materials
- Decreases number of steps
- Applies principles of QbD (quality by design)

1st GENERATION PROCESS



2nd GENERATION PROCESS



B is an expensive raw material which was eliminated
 F is the target molecule, a key intermediate that yields the final product G

KEY OUTCOMES



IMPROVED PROCESS MASS INTENSITY (PMI)



REDUCED CYCLE TIME



RAW MATERIAL COST REDUCED



SOLVENT RECOVERY & REUSE



Piramal Pharma Solutions is a contract development and manufacturing organization (CDMO), offering end-to-end development and manufacturing solutions across the drug life cycle. We serve our clients through a globally integrated network of facilities in North America, Europe and Asia. This enables us to offer a comprehensive range of services including Drug Discovery Solutions, Process & Pharmaceutical Development services, Clinical Trial Supplies and Commercial supply of APIs and Finished dosage forms. We also offer specialized services like development and manufacture of Highly Potent APIs, Antibody Drug Conjugation and are well versed in technologies such as Bio-catalysis, Route Scouting etc. Our capability as an integrated service provider & experience with various technologies enables us to serve Innovator and Generic companies worldwide.



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