

GROWING RELEVANCE OF CRAMS IN CEMENT INDUSTRY

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Introduction

CRAMS stands for Contract Research and Manufacturing Services. This is an established and rapidly growing model for outsourcing research, development and manufacturing of non-core products in a range of industries such as pharmaceuticals, biotech, agrochemicals, nutrition, animal health, consumer goods, etc.

The cement manufacturing business typically focusses on cost efficient manufacturing, marketing and delivery of right quality cements targeting a range of applications and customers. The demand and need for a range of high-value, low-volume, and application-driven chemical additives for use in cement manufacturing process has been growing rapidly.

These chemical additives are not core to the cement manufacturing process and therefore, deploying CRAMS could become the most optimum way of developing such non-core additives, customized for the needs of mid-to-large scale cement producers.

This article outlines the relevance of CRAMS for cement industry as well as a framework to pick the right outsourcing partners.

Product and Solutions Through CRAMS

- Cement Grinding Aids, for
 - High cement mill throughput
 - Lower specific power consumption
 - Improved particle size distribution
- Strength Enhancers, for
 - Higher cement strength at early ages
 - Higher cement strength at later ages
 - Lower clinker factor
- Customized quality improvers, for manufacture of
 - Special high performance cements
 - Water repellent cements
 - Greener cements
 - Cements with low-cost alternate gypsums
- Raw mill grinding aids, for
 - Higher raw mill output
 - Lower power consumption
 - Lower free lime in clinker

Advantages of CRAMS

Low Cost Model

CRAMS allows for a significantly lower cost of research, procurement and deployment, due to

- Reduced overheads in research activities due to better spread and faster learning curves
- Enhanced specialization of research skills sets
- Bulk sourcing of ingredients and raw materials
- On-site blending of ingredients leading to lower costs of freight, duties, handling, etc.

Cutting-Edge Products

Enhanced specialization of research, wider knowledge base and global partnerships give CRAMS providers access to cutting-edge work happening across the globe. This in turn allows them to deliver advanced molecules and formulations while catering to the additive needs of cement producers.

More Efficient and Optimized Procurement and Deployment

CRAMS model employs more efficient manufacturing of products through optimized routes such as :

- On-site blending: This involves bringing the chemical ingredients and raw materials used in the final additive formulation in concentrated form to the site. The subsequent mixing and addition of low value, high volume ingredients such as water takes place on site of the cement manufacturer. Blending happens in small mixing tanks and the final solution is stored locally in tank farms.
- Bulk sourcing of ingredients: CRAMS providers can source underlying raw materials and ingredients in bulk quantities from the most efficient global scale manufacturers. This in turn brings economies of scale to the procurement process and pricing.

More Focus on Core Competence

Chemical additives are specialized domains. Once development and manufacturing of chemical additives is outsourced, cement producers can focus on their core competencies such as cost-efficient manufacturing, marketing and delivery of quality cement catering to their target markets.

Sharing of IP

Intellectual Property Rights (IPR) associated with bespoke chemical additives can add significant value in the long term to the cement producers. CRAMS does allow for sharing of IPR between the cement producer and the CRAMS provider, provided the right framework in the contracts is agreed upon at the commencement of such relationship.

Striking Balance: In-House v/s Commercial Proprietary Products

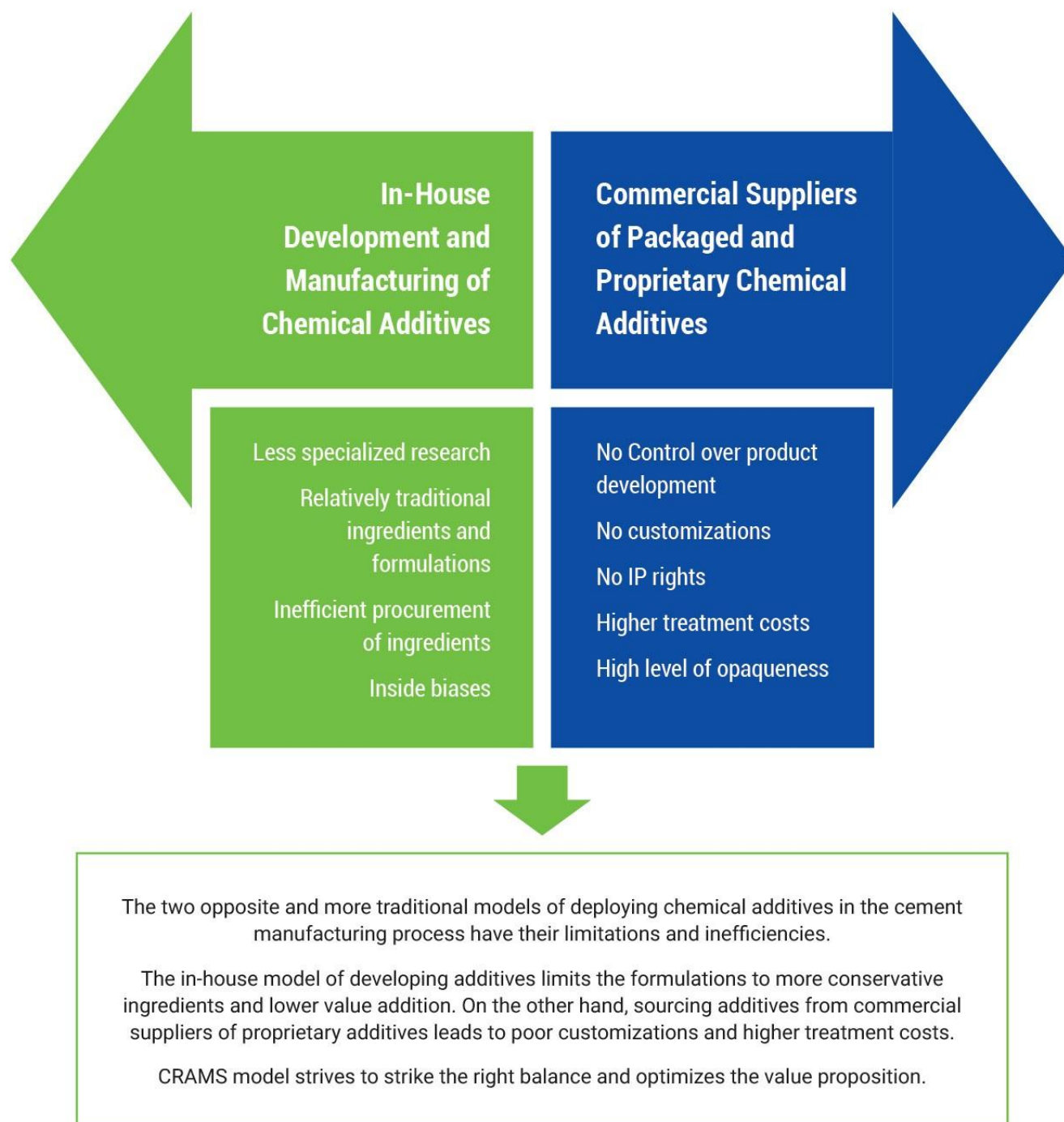
Traditionally cement producers have gone towards either of the following two models of deploying chemical additives in their cement manufacturing process

1. Using in-house research and quality control teams to identify chemical additives and sourcing from the generic chemical suppliers.
2. Sourcing from third-party commercial suppliers of packaged and proprietary chemical additives.

Both these models are quite opposite in their value proposition as well as underlying nature. Both have their limitations and may not be the most optimum models, especially for mid-to-large scale cement producers.

CRAMS model strikes the right balance between these two models and provides cement producers to get “the best of both the worlds”. The following figure (Figure 1) illustrates the opposite forces at play in the two traditional models, while CRAMS providing the optimum trade-off.

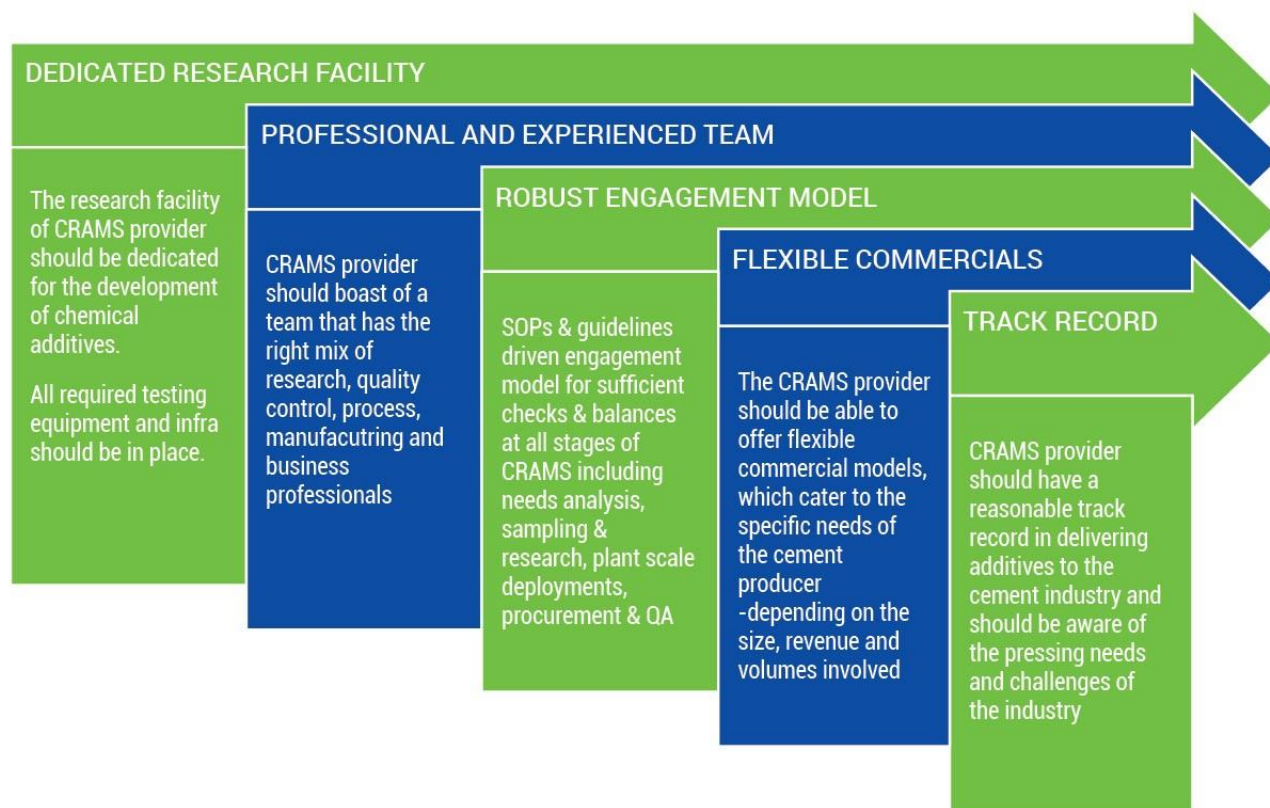
Figure 1: CRAMS Striking the Right Balance between the Two Traditional Models



Proposed Framework For Choosing CRAMS Partner

The following figure (Figure 2) illustrates a framework that the cement producers could use while identifying the right CRAMS partner for outsourcing their research, development, procurement and manufacturing requirements with regards to chemical additives used at various stages of cement manufacturing.

Figure 2: Framework for Choosing CRAMS Partner



Cost Advantage over Proprietary Products of Commercial GA Suppliers

CRAMS providers need to be flexible in their commercial arrangement with the cement manufacturer. The following table (Table 1) provides a sample illustration on the cost advantage that CRAMS model could possibly offer under different models, as compared with directly procuring proprietary products from commercial grinding aid suppliers.

The values taken in the table below are purely illustrative in nature. The actual figures and savings will vary depending on the total cement production by the cement producer that uses grinding aid, the final commercial arrangement with CRAMS supplier, the relevant grinding aids tested and deployed, existing treatment costs, etc.

Table 1: Illustrative Comparison for Cost Savings in CRAMS Models

	Proprietary Products from Commercial GA Suppliers	CRAMS Model		
		Cost Plus Model	Fixed Fee Model	Hybrid Model
Total Production Capacity of the Cement Producer at Group Level	10 Millions Tons			
Penetration of Grinding Aid within the Cement Group	0.5			
Total Cement Production Using Grinding Aids	5 Millions Tons			
Fixed Charges Paid to CRAMS Prodvider (Illustrative Figures)	NA	NIL	Rs 1 CR per Annum	Rs 50 Lakh per Annum
Average Treatment Cost of Grinding Aids (Illustrative Figures)	Rs 16 per Ton of Cement	Rs 13 per Ton of Cement	Rs 10 per Ton of Cement	Rs 11.5 per Ton of Cement
Total Cost Associated with Grinding Aids for the Cement Producer	Rs 8 CR per Annum	Rs 6.5 CR per Annum	Rs 6 CR per Annum	Rs 6.25 CR per Annum
Gross Savings due to CRAMS Model	NA	Rs 1.5 CR per Annum	Rs 2 CR per Annum	Rs 1.75 CR per Annum

Conclusion

Beyond the distinct cost advantage that CRAMS has to offer for cement manufacturers, the other benefits include customization, cutting-edge formulations, speed of turnaround and frequent realignments of products.

CRAMS for chemical additives is still in nascent stages in India. However, we expect that the next few years will witness many cement manufacturers looking towards CRAMS for catering to their requirements of value addition through chemical additives.