

K K Nag Limited – Low Cost Sanitation Solutions

- **Background**

The Company's trust with providing engineered, low-cost sanitation solutions began with revulsion to the sight of open defecation. Over time it was realised that it must be completely dehumanizing to those who had no other choice but to indulge in it.

Investigating numerous methods of off-site and on-site sewage treatment and disposal (many of which emanated from the West and were thus culturally unsuitable or much too expensive) and finally came to the conclusion that on-site methods were best suited for a geographically spread out country like India. But there were several on-site options available; some using aerobic digestion and others using anaerobic digestion, and each had a place in a given circumstance.

Given their experience as a plastic processing company, instead of spreading too thin by working on all aspects of sanitation, they focused efforts on that area which was common to all sanitation systems and where one could possibly add the most value, namely the Pans and Traps.

- **Location, Date**

Not available

- **Areas**

Rural

- **Stage/Scale**

Not available

- **Objective of the assignment**

The objective was to operate on a no - profit, no-loss basis, and thus price the Pans and Traps so reasonably that no one could say that he could not afford to install one.

- **What was done**

- The first product was made of Fibreglass but soon found to be inappropriate because these were cumbersome to transport and fairly expensive.
- The company next tried rotationally molding them in LLDPE as a one piece construction (which made them very bulky to transport because they could not be nested) and, in the next stage, these were rotationally molded, the Pans and Traps separately. This solved the transportability problem but the cost was still not low enough due to the low productivity of the rotational molding process and the amount of raw material that was used.
- The company believed that they had an ideal solution in the fourth generation of their product offering which consists of an injection moulded PP Pan and a blow moulded HMHDPE Trap. By using plastics as the material of construction, the company ensured that their sanitation products were easy to handle (because of their light-weight), easy

to maintain and clean, highly abrasion and chemical resistant and virtually unbreakable when compared to similar ceramic products (which means that they can be transported to the interiors of India, on very primitive roads, without suffering any damage).

- The Pans were completely nestable and snugly fit one into the other, so 3,300 sets can be accommodated in a truck (compared to about 800 ceramic Pans of a similar size) drastically reducing the transportation costs. The front of the Pan has also been provided with additional depth to avoid spillage of urine and the Traps are sized to fit with all standard 4" sanitary pipes. And, because of the plastic molding processes that have been selected, the quantities that can be produced are highly scalable.

• **Challenges and Issues**

To create Pans and Traps so reasonably that no one could say that he could not afford to install one.

• **Innovation**

But the most unique advantages of these Pans and Traps stem from their engineering and design. Very little water is required for flushing because of the combination of a 20 mm water seal and a 350 slope (which is the maximum slope that can be achieved while maintaining the recommended assembly height of 11/2 ft and is a good 100 more than what is possible in ceramics, due to the thinner wall sections in plastics).

• **Lessons learnt**

One could not consider the project of sanitation completed unless and until every inhabitant of the village had access to, and actually used, a toilet, as otherwise those who did not use toilets would continue to spread diseases even to those who had gone through the trouble and expense of installing toilets themselves.

• **Financials**

The company sold Pans and Traps on a no-profit, no-loss basis-the basic, ex-factory price was INR 125 per set.

• **Implementer Contact Persons**

- **Rural Development Cell**
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• **Sources and References**

- Corporate sector involvement in Sanitation by Confederation of Indian Industry (CII), 2013