KNAG

#KKraftingPolymerPossibilities

CASE STUDY

From Burden to Breakthrough: A Case Study on Squatting Slab Transformation

Introduction

In an exhibition on sanitation products organised by Red-R India, Oxfam International showcased a squatting slab with a steel structure and a plastic sheet bolted on top. Weighing 20 kg and measuring 1,200 x 800 x 100 mm, the slab required on-site assembly with nuts and bolts, making it cumbersome to transport and install, especially in emergency situations and challenging terrains like Africa. Recognising these limitations, our team set out to develop a lighter, more user-friendly alternative.

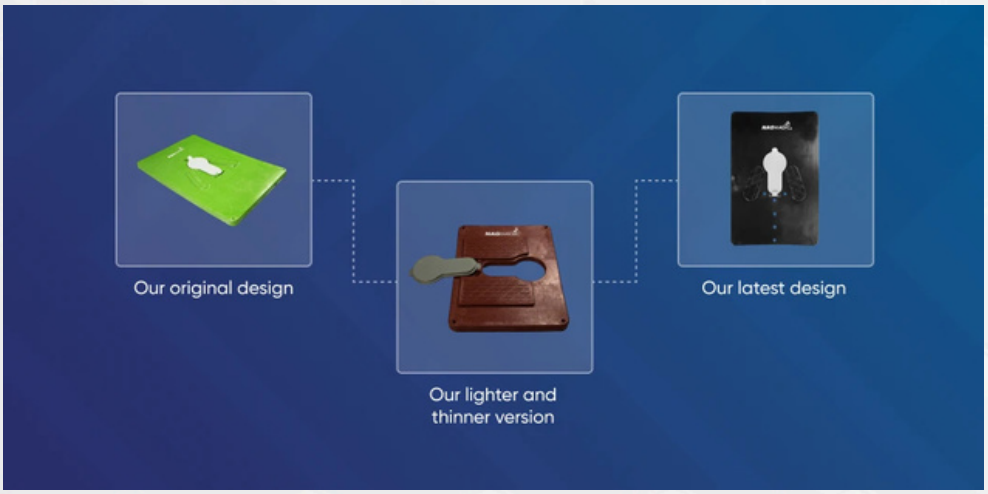
Key Challenges

1. The existing slab was too heavy, making transportation difficult.
2. The assembly process was time-consuming and prone to parts falling off in the field.
3. A lack of design versatility meant separate models were needed for different regions.
4. The product was neither sustainable nor visually appealing.

Solutions

We developed a new squatting plate using rotational moulding technology. The first prototype was vibrant green, 55 mm thick and weighed only 11.50 kg. Key improvements included:

- Made entirely of plastic with a hidden steel reinforcement, **eliminating loose parts**.
- **50% weight reduction** compared to the previous model.
- A ready-to-use model requiring **no on-site assembly**.
- Two region-specific designs (Asian and African) were combined into a **universal model** by redesigning the pan fitting.
- A more **visually appealing** crimson granite colour.



Results

Our innovative squatting plates gained global recognition, especially after their deployment in Pakistan after the 2008 earthquake. Further refinements led to:

- Reduced thickness to 40 mm, increasing shipping efficiency from 840 to 1,200 plates per 40-foot container.
- Weight reduction to 9.50 kg for easier handling.
- Introduced 30% recycled content, later increased to 50%, enhancing sustainability.
- Addition of white surface bumps for visually impaired users.

Quantifying Our Success

Reduction in Weight: 50% weight reduction (from 20 kg to 9.50 kg) made transportation easier.

Increased Shipping Capacity: 43% more units per container (from 840 to 1,200).

Sustainability Impact: Increased recycled content to 50%, reducing environmental footprint.

Improved Deployment Speed: Eliminated on-site assembly, leading to zero installation time in the field.

Through continuous innovation and dedication, K. K. Nag Private Limited transformed a sanitation product into a versatile, sustainable and user-friendly solution, making a meaningful impact on global sanitation efforts. That's ***making the impossible, possible!***