

Global Sustainability Challenge – TRITATVA

(Atmospheric Water Generator)

The Challenge

The Global Sustainability Challenge is an international inter-university competition that invites student teams to develop innovative solutions to the world's most pressing climate and environmental problems. Our team entered under the Adaptation and Resilience theme, addressing one of the most critical challenges facing arid and water-stressed regions: access to safe drinking water.

I progressed through multiple stages of the competition, beginning with clearing the initial round, followed by qualification for the Regional Finale held at the Indian Institute of Technology Bombay. Our performance at that stage earned us a place in the Global Finale at the Technical University of Munich, Germany, where we will pitch TRITATVA on an international platform.

The Project: TRITATVA

TRITATVA is a bio-mimetic atmospheric water generator that produces potable water from humidity using corona discharge and electric-field-assisted condensation—eliminating the need for compressors. Inspired by the Namib Desert beetle, which harvests water through micro-textured surfaces, the design translates this natural principle into an engineered solution. The result is a low-energy, solar-compatible system tailored for arid regions where conventional water sources are scarce or unreliable.

The project has been recognised as one of the Top 5 teams from South Asia and among the Top 20 teams globally in the competition, reflecting both the scientific rigour and the real-world relevance of the solution to climate-related water scarcity.

My Role in the Team

TRITATVA was developed by a four-member inter-university team: Anneasa Manna from the Footwear Design and Development Institute (FDDI), Arnav Varshney from Manipal Institute of Technology, Kush Kapoor from Delhi Technological University, and Kriti Puri from Chitkara University. As the Structural and Product Designer, the focus was on form development and structural feasibility.

Bridging engineering with design, the role ensured that TRITATVA is not only technically sound but also manufacturable, resilient in harsh arid conditions, and cohesive as a product. Here, design was not an afterthought, it was infrastructure.

– Ms. Anneasa Manna

School of Footwear Design & Production, 2023-27
Structural and Product Designer
FDDI Kolkata



Team TRITATVA at the Global Sustainability Challenge Regional Finale, IIT Bombay, 2025-26

"Top 5 in South Asia. Top 20 globally.
A design born from the logic of nature."

What Comes Next

Qualifying for the *Global Finale at the Technical University of Munich* marks an opportunity to present TRITATVA to a global audience of researchers, policymakers, and sustainability practitioners. For me, this project has demonstrated that design thinking, when applied to urgent global problems, is capable of producing solutions that cross disciplinary boundaries and earn recognition at the highest levels of international competition.



Ms. Anneasa presenting TRITATVA at the competition stall.

A Father, A Toy, A Patent: The Story Behind "Toy Robo"



Dr. Rambabu Muppidi marks a significant milestone with his 25th design patent in India for an innovative children's toy, Toy Robo, published in the Indian Patent Office Journal in February 2026. The achievement underscores his continued contribution to design innovation across toys, handicrafts, and sustainable products.

Inspired by a simple yet heartfelt request from his daughter, Sri Ananya, the concept evolved through careful research, observing children's play behaviour and engaging with parents to ensure safety, usability, and engagement. Crafted from traditional Etikoppaka wood and finished with child-safe natural colours, the toy seamlessly blends heritage craftsmanship with modern design, refined through CAD modelling.

Developed in collaboration with IPR advocate Subhajith Saha, Toy Robo reflects a thoughtful convergence of sustainability, cultural value, and innovation demonstrating how meaningful ideas can transform into impactful, nationally recognised designs.



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