

Challenge name	Ocean bound plastics
Challenge owner	Archwey – Bluewave Foundation
	<input checked="" type="checkbox"/> Company <input type="checkbox"/> Research <input type="checkbox"/> Student team
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Email challenge owner	
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Preferred way to contact	<input checked="" type="checkbox"/> email <input type="checkbox"/> Phone call <input checked="" type="checkbox"/> SMS / what's app <input type="checkbox"/> Other; ...
Brief summary	Eradicate the use of virgin plastics by designing the complete process of a fully sustainable and circular value chain for ocean bound plastic (BLUEWAVE®)! This project entails diligently selecting a suitable and innovative product (one with big impact and which can be made truly circular) and completely investigating its surrounding value chain. This entails aspects such as design, transport, production, legislation, waste management, etc. Do all this while keeping the complete life-cycle of the product in mind, from cradle to cradle!

### About the challenge owner

Archwey is the sustainable materials engineering group, dedicated to ensuring circularity, eradicating plastic pollution, and protecting life. We are on a mission to reshape the world's building blocks and believe that the best moment to change the way we use materials was 25 years ago. The last best moment is now. We essentially aim to rid the world of virgin plastics – full stop – this goal will be achieved through its GRS-certified plastic solution BLUEWAVE®: a thermoplastic material made from 100% upcycled ocean-bound plastic, marine plastic and recycled post-plastic, collected predominantly from four of the most polluted rivers on earth.

## Challenge description

The overall goal is to eradicate the use of virgin plastics! For this specific project that would entail getting innovative insights for the circular use of (BLUEWAVE®) plastics which eventually would translate to a well-designed and thought through circular value-chain based on ocean bound plastics. In other words, identifying every aspect within the process of a circular value chain.

This means students would on the one hand be working on aspects such as matching the material properties of the plastic to the application of the product, but on the other hand designing a business model and/or go-to-market strategy for the product itself. And/or an environmental impact report to showcase the potential benefits the product offers compared to its competition. It essentially entails a lot of different aspects of designing a new innovative sustainable product and its surrounding value chain. The students will have the freedom and flexibility to, with our guidance, research what is most relevant and where their interests lay. Students could potentially look at some of Archwey's own products for examples.

Another direction this project could potentially take is modelling an application or script which filters products where ocean bound plastics could potentially be a good application for.

Some general things to think about are:

- How, do you ensure that ocean bound plastic can properly be utilized while continuously maintaining its value by being circular?
- Which stakeholders are needed to make it a success?
- Is there need for any certification?
- What is the eventual environmental impact?
- How do you bring your idea successfully to the market?



## Input and involvement of challenge owner

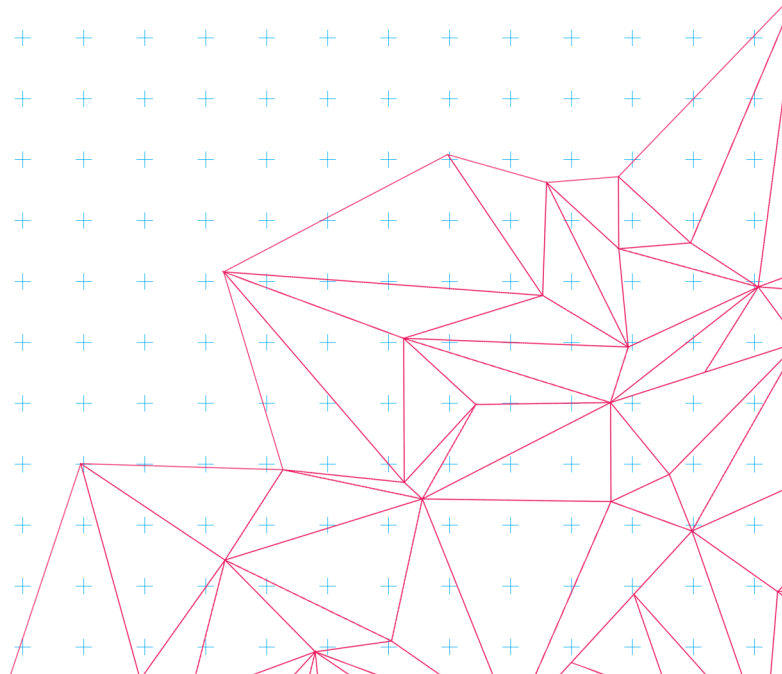
We would happily be involved as active as possible by helping students with their questions, providing relevant data, and give feedback where needed. Having on site meetings or discussions could also be a possibility. It all essentially is about offering a nice involvement which fits the need of the students.

Solving this challenge would help us by finding a fitting and impactful application for our BLUEWAVE® plastics. Which would potentially lead to further developing the project idea (with, if wanted, further development and involvement options for the students) and eventually reducing the use of virgin plastics.

## Resources

We offer

- *Expertise*; in innovation management, plastics, relevant stakeholder, material engineering, and product development.
- *Materials*; if required types of ocean-bound plastics can be used.
- *Workplace*; [tbd]



## Roles of different disciplines (only for ISBEP)

Automotive Technology	Creating a product from ocean bound plastics needs to be done through a process in which knowledge of thermodynamics and/or control systems is needed.
Biomedical Engineering	
Architecture, Urbanism and Building Sciences	When thinking about applications of new products, knowledge about which elements of urban environments could make use of a new product is needed.
Computer Science and Engineering	
Data Science	
Electrical Engineering	Creating a product from ocean bound plastics needs to be done through a process in which knowledge of thermodynamics and/or control systems is needed.
Industrial Design	Creating a value chain starts with correctly designing a product, additionally circularity is only made possible if it is kept in mind within the designing phase.
Medical Sciences and Technology	
Psychology and Technology	PT students could research the effect that a sustainable option has on the behavior of people.
Chemical Engineering and Chemistry	Look at the process of using ocean bound plastics and whether the material property of the BLUEWAVE® plastics is suitable for certain applications. Additionally, looking at how it is affected on a chemical level when used within a certain product, or what happens to it when it's eventually recycled.
Sustainable Innovation	Help design the circular but economic viable value chain, do an analysis on the innovation integration, or research what the effect of using ocean-bound plastics has on the environment by executing an environmental impact analysis.
Industrial Engineering	IE are able to contribute to this project on multiple aspects, they could help by mapping the circular production process, find a fitting product, design the value chain, create a go to market plan, make a business case/model, help with introducing a new product innovation and more!
Applied Physics	Investigate the application of ocean bound plastics by looking at its physical properties. Model a product application list on the basis of its physic characteristics.
Applied Mathematics	
Mechanical Engineering	ME students could potentially find application of reusable ocean-bound plastics within relevant engineering fields on the basis of its material properties.