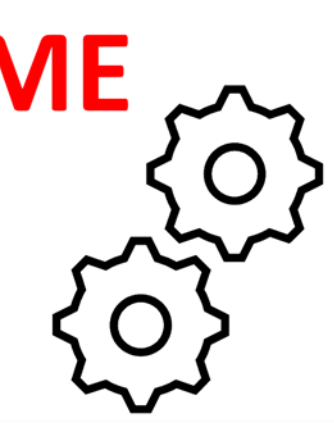


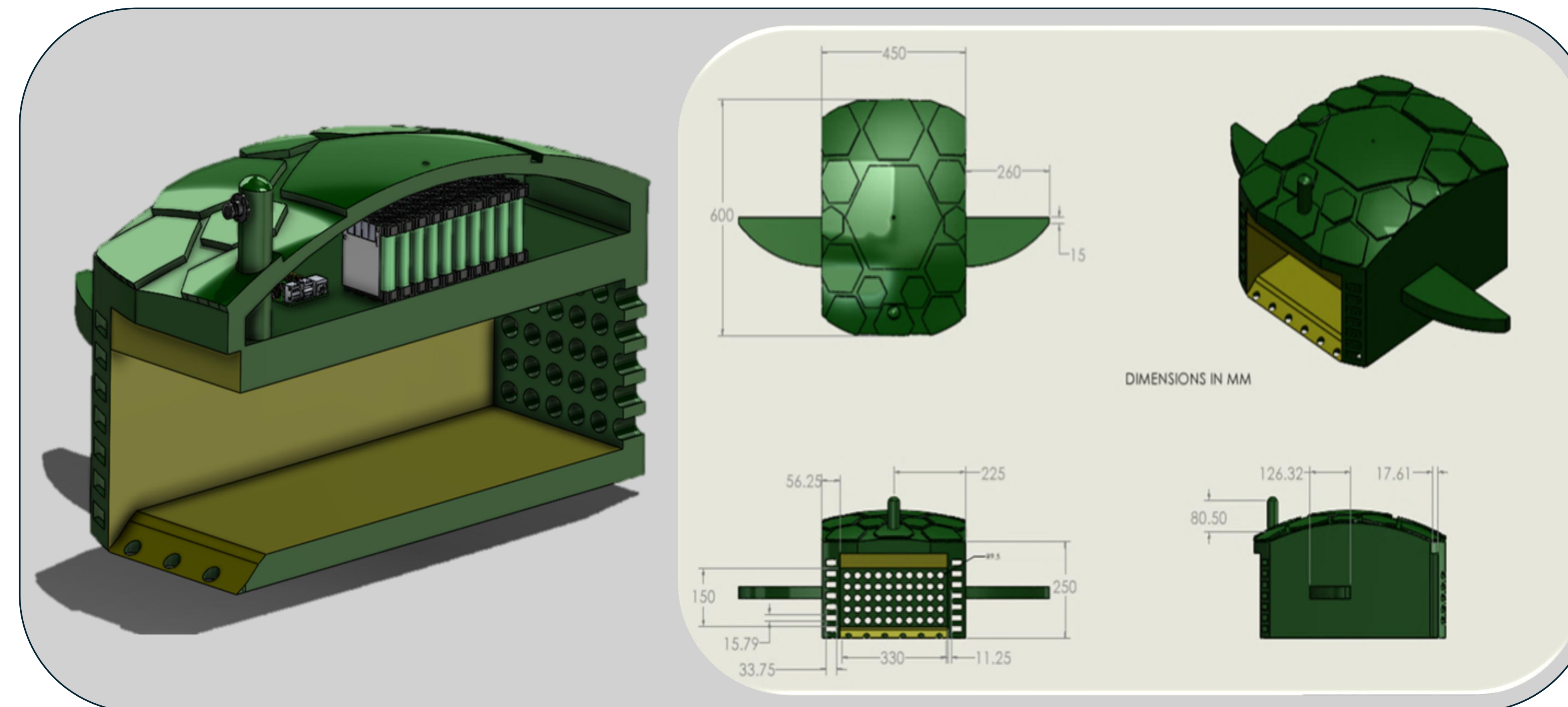
3



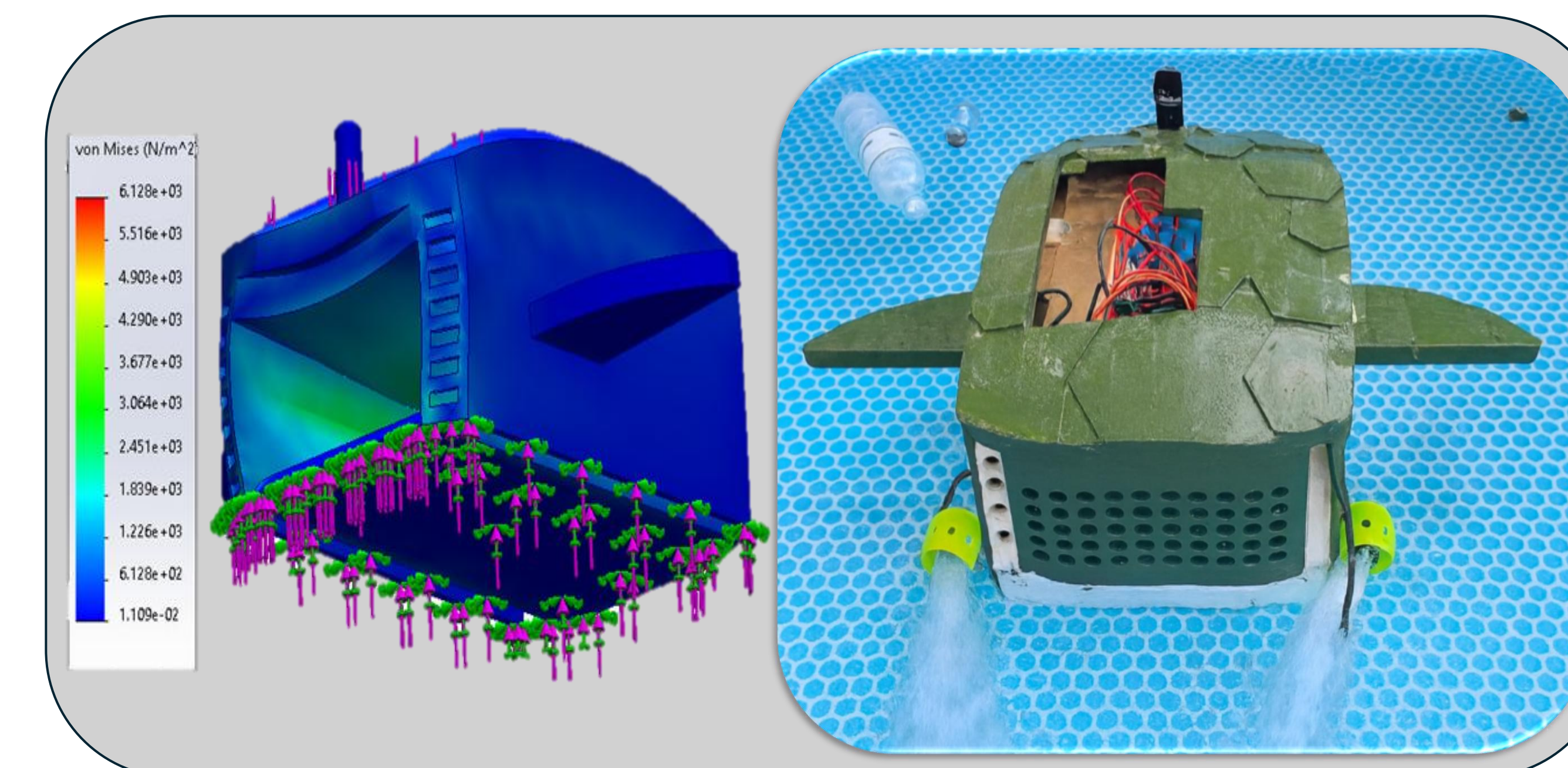
## Objectives

To develop an AI-powered autonomous water vehicle that detects and collects floating plastic waste efficiently, providing cleanup teams with a faster, safer, and more portable alternative to manual collection and existing fixed systems.

## Prototype Development



## Testing/Validation

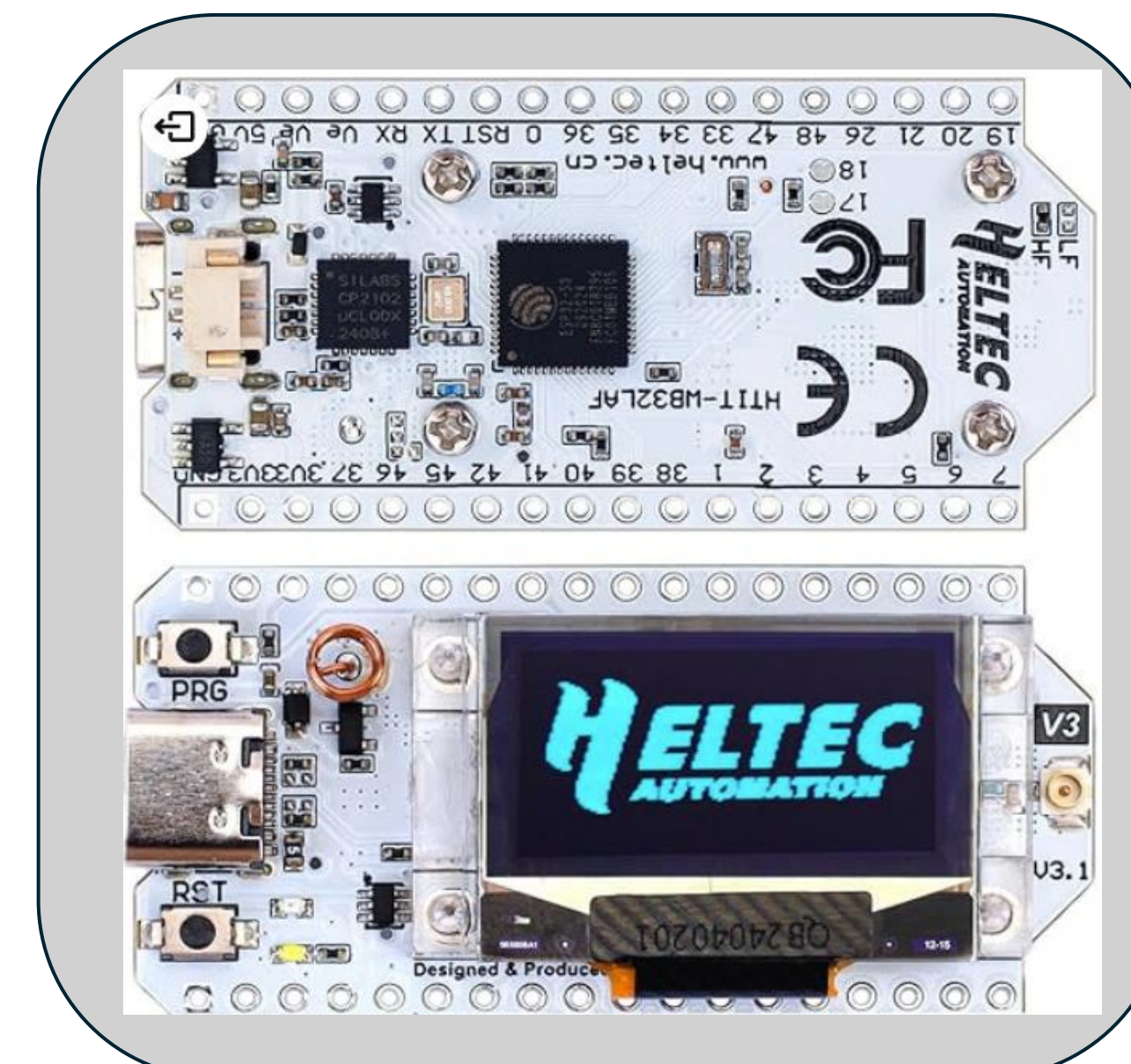
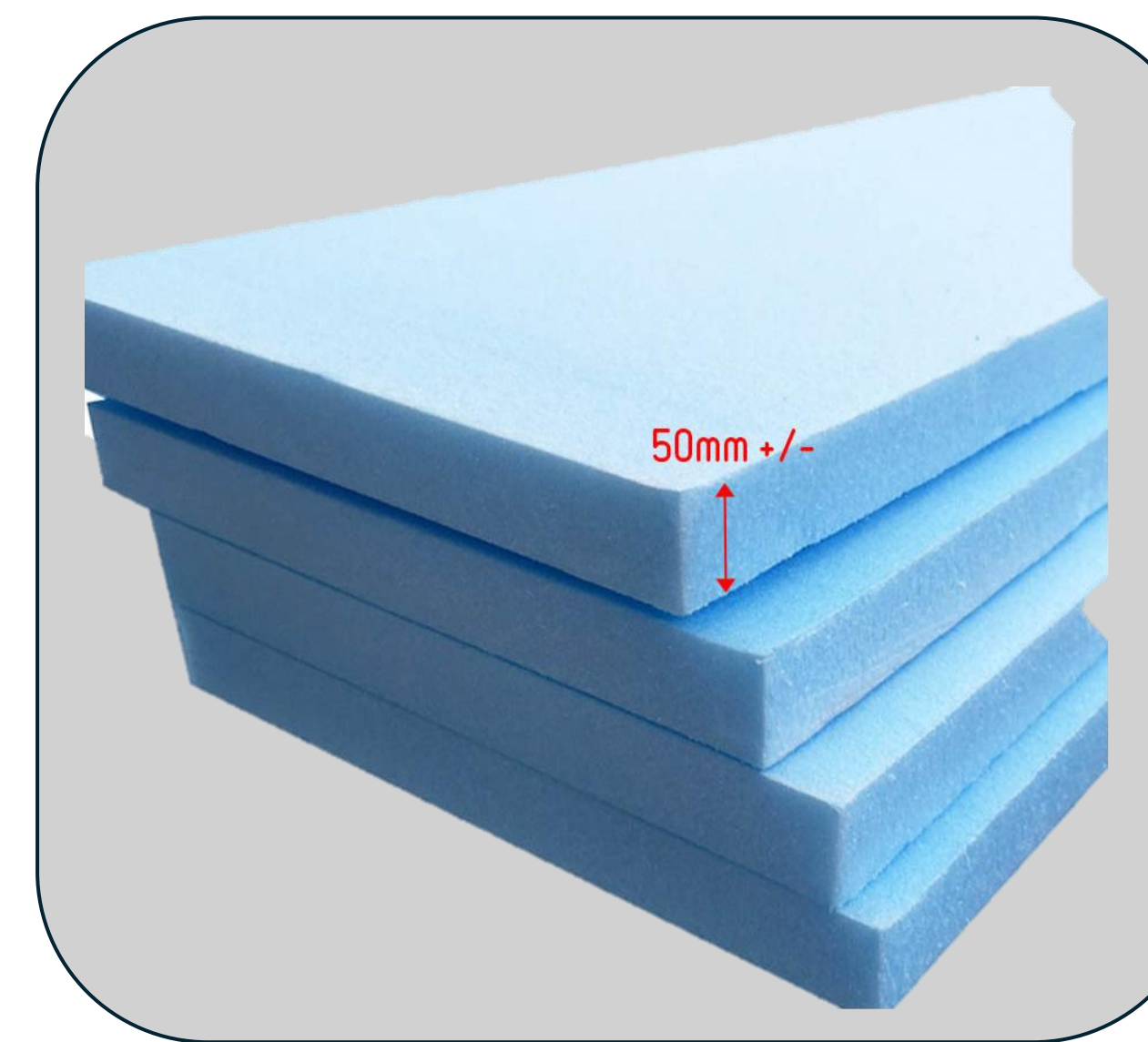


## Constraints & Specifications

- 1- operate in still water (Waves length < 0.005 m)
- 2-60% wireless communication uptime
- 3-Realtime AI decision (250 ms latency)
- 4- minimum use of metallic material (25% or less of the structure)



- 1- Operate at Speed of 0.1 m/s minimum.
- 2- Max weight of 30 Kg.
- 3- Afford waste size up to 0.015 m3
- 4- Navigate through object in 5s.
- 5-Power of min capacity 12V and 10A to operate at least 20 min.
- 6- Reliable one-way link of >250m LOS.
- 7- Telemetry rate of 5s.
- 8- Navigation Algorithm, with 10 - 15 cm tolerance.
- 9- camera & ML model (YOLO) with total reaction time of 200 ms.



<b>COST</b>	<b>6,405.05 SAR (tools included)</b>
<b>WEIGHT</b>	<b>11.7 Kg</b>
<b>POWER</b>	<b>15Ah 6P4S 14.8V operating &gt;0.5h</b>

## Conclusion

The Waste Turtle provides a compact, autonomous, and efficient solution for removing floating plastic waste, enabling safer, cleaner coastal waters with minimal human involvement.