



RICOCHET

Executive Summary prepared for the Biomimicry Institute, 11/19/2020

UN SDGs

SDG11: Sustainable cities and communities

SDG12: Responsible consumption and production

NATURE INSPIRATION

Manta ray – highly specialized gill raker

NEEDS

Technical support and funds for physical experiments and initial sample production.

FOUNDING TEAM

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BIOMIMICRY
INSTITUTE

By mimicking manta rays, we developed a unique solution to address pollution in urban centers. With assistance from researchers and industrial personnel, we aim to reduce emissions of PM2.5 and look forward to a sustainable and healthy future.

PROBLEM & OPPORTUNITY

People pay attention to PM2.5 due to its health effects. To meet regulations of PM2.5 emission, manufacturers need to make some improvements. Before electric vehicles take over the market, a solution is needed during the transition period.

SOLUTION

Our design will be installed in the exhaust system of diesel vehicles. Particles will be separated from fluid and collected. Compared with modern filtration system, our product is non-clogging and durable. We provide a bio-inspired filter which can even mitigate pollution and relieve the demand.

BIOMIMICRY IN PRACTICE

The manta ray is a filter-feeding fish. Plankton are concentrated while seawater leaks away, which is called ricochet separation. The filtration displays amazing features such as filtering particles smaller than the pore size, allowing high flow rates, and resisting clogging. Thus, it becomes technically feasible and durable to reduce PM2.5 pollution.

REVENUE MODEL

While cooperating with other factories for production, we will mainly be focus on marketing. We will profit from the sales from car manufacturers and the licensing of our patent.

TRACTION

The feasibility of our design has been confirmed by simulation. We will optimize the filtering efficiency and keep interviewing stakeholders to understand the market needs. Also, we will contact the college's business incubators to obtain entrepreneurial resources.

TEAM

We are a diverse team with members from biology, engineering, management, and liberal arts. We can solve problems and develop our product with a complete perspective. Such a team can lead us to access the market.

NEXT STEPS

We will complete physical experiments, material comparison, and final inspection. Then, we will work on third party validation of the technology and identify manufacturing partners.