

2021

環境關懷設計競賽

| Caring for the Environment Design Competition

第三名  
3rd place

# 海廢保麗龍回收再製計畫

## STYRO cycle project

作者 Creator

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當我們看著台灣美麗海岸線上的垃圾，除了熟悉的各類塑膠製品之外，我們還看見了甚麼？海廢保麗龍已成為日益嚴重的海廢問題之一，預估每年台灣本島與離島所累積的海廢保麗龍竟已超過了200公噸。保麗龍有高達95%的體積是空氣，意謂著有相當多的空間可以容納雜質，不像海廢塑膠可以清洗去汙進行回收再製，海廢保麗龍無法徹底清除雜質的劣勢，造成了一般回收業者難以處理的窘境。這樣的情形齊輝環保科技看到了，面對難解的髒污問題，我們利用創新專利溶解法將海廢保麗龍溶解並徹底分離雜質，再萃取出可回收利用的PS原料。為了讓PS能有更好的運用管道，我們與全球第一大鍵鼠生產製造商光寶科技合作，將回收後的PS進行改質轉化為HIPS，並導入成為鍵盤滑鼠的生產原料。

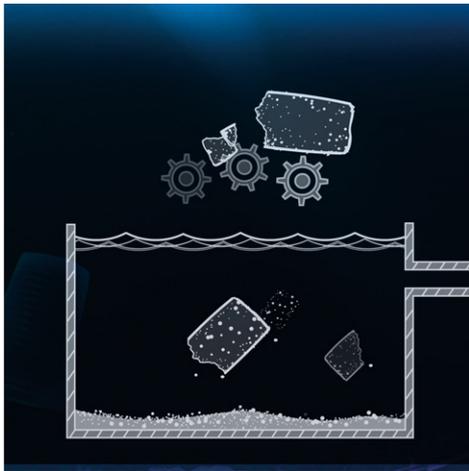
When appreciating the stunning view of the Taiwan coastline, what we'll see is not only the beautiful scenery but also a tons of plastic trashes scattered around the shore, out of those marine debris, a lot of them are Styrofoam wastes. By estimate, the accumulated amount of Styrofoam wastes produced from the main and offshore islands has reached 200 MT and had turned into an issue. Unlike plastic wastes, the trickiest part of Styrofoam recycle is that 95% of Styrofoam's volume is air, which means it got much space to contain impurities that are hard to remove. Therefore, the Styrofoam debris became a trouble to keep away from for most the recycle companies. Fortunately, Qihui Recycle Tech found out the situation and decide to deal with it. By using our innovative patent – the brand new dissolving system, the impurities of the Styrofoam waste can be completely separated and dissolved. Moreover, we cooperate with LITEON GROUP, the biggest mouse manufacture company in the world, and supply them the mouse and keyboard production materials by turning the extracted raw PS materials from the process into HIPS by the modification system.



將回收後的PS進行改質轉化為HIPS，並導入成為鍵盤滑鼠的生產原料。

The mouse and keyboard production materials by turning the extracted raw PS materials from the process into HIPS by the modification system.

## 怎麼做? HOW?

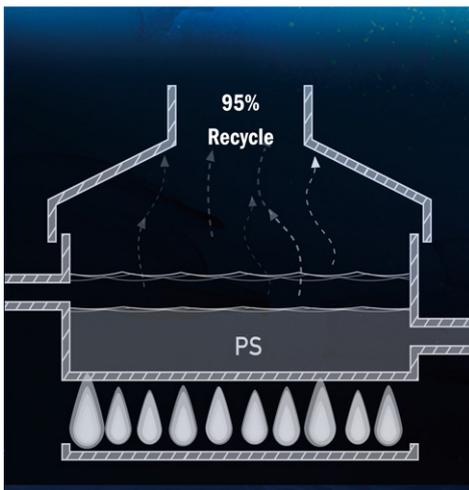


### 溶解去化

我們使用安全無毒的化學溶劑將海廢保麗龍溶解，此時，附著在海廢保麗龍的各種雜質會沉澱至底部，保麗龍則會溶解還原成「聚苯乙烯 ( Polystyrene,PS) 」。

### Dissolution

We use toxic - free chemical solvents to dissolve sea waste Styrofoam . Various impurities attached to the sea waste Styrofoam will settle at the bottom . The Styrofoam will be dissolved and reduced to "polystyrene ( PS )" .

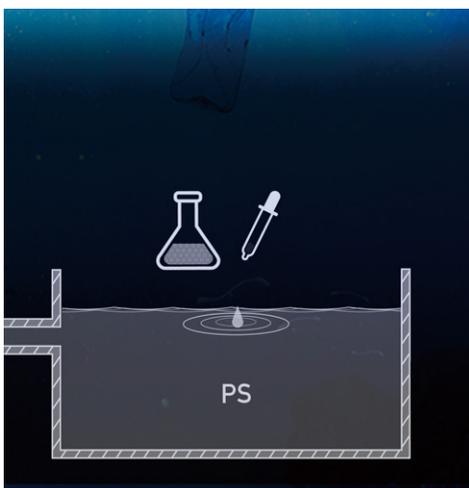


### 蒸餾萃取

透過「蒸餾法」可將溶劑與「PS ( Polystyrene) 」進行分離，萃取後 PS 純度可達 95 %，蒸餾分離後的溶劑 ( 乙酸丁酯 ) 有 95 % 可回收再次使用。

### Distillation

By distillation , the solvent can be separated from the PS ( polystyrene). The purity of PS after extraction can reach 95%. After distillation and separation , 95% of the solvent ( butyl acetate) can be recycled.



### 改質重製

萃取出的PS經過改質強化後可製成「HIPS( Impact-Resistant recycled plastic )」，HIPS經由造粒加工可成為塑膠製品的再生塑料。

### Modification

The extracted PS can be chemically modified and strengthened into " HIPS ( Impact - Resistant recycled plastic )" . Through granulation processing , HIPS will transform into reprocessed plastic for products.