

Case Study

RMIT: Designing new products using waste materials Designing recycled products for a sustainable future

August 2020

In partnership with MWRRG, RMIT set up the Recycling Incubator to provide design expertise for organisations seeking to make recovered waste a key material in new product designs.



AT A GLANCE:

Innovative design incubator

Industry and academia developing new products together.

New partnerships

Companies partnering with RMIT to recycle waste into new products.

Shifting thinking

From designing for product types to a process of material and process experimentation.

WHY?

Victorians' annual kerbside rubbish and recycling collection could fill three quarters of the MCG. Combine this with changed market conditions for sending recyclables overseas and it is clear we need to reuse as much waste as possible.

RMIT University wanted to explore strategies to increase the use of waste materials in designs for new consumer and industrial products. Academics from the university partnered with Metropolitan Waste Resource Recovery Group (MWRRG) on "Design with Waste Outreach Platform", a landmark project geared towards finding and testing waste recovery applications for product, service and enterprise development.

The project led to the emergence of RMIT's Recycling Incubator, which brings together students and industry partners to support the development of new design led recycled products and enterprises.

HOW?

RMIT established two industrial design studios, with each engaging 20 students in real world design and enterprise projects focused on waste recovery. Studio one looked at reusing materials commonly recovered through kerbside recycling. The second studio focused on business waste which established new partnerships with Taxibox to explore end of life options for PVC tarpaulin; and clothing retailers Macpac and Obus to explore designs featuring single use packaging.

Together, these two studios and the collaboration they facilitate is known as the Recycling Incubator. It built on RMIT's research track record in sustainability and linked to the Melbourne Innovation District initiative. This resulted in an innovative waste recovery to production model combining design consultancy, research and design education projects. The model uses a unique rapid triage process, co-design activities, and an accelerated matching tool that helps identify key parameters for research into any new design.

Engaging students and industry partners in repurposing waste was complex because industry often uses highly specific materials. Students had to shift from designing for product types to a process involving significant material and process experimentation. It also took a while for students to grasp the technical, economic, environmental, regulatory and social systems that underpin both recycling and waste practices.



These barriers were, however, overcome, and students produced high quality product designs and reuse/recycling solutions. These included recycling soft plastic materials for use in backpacks, 100% recycled plastic frames for eyeglasses and replacing surf boards' foam cores with recycled cardboard.

A website profiles the project's designs and educational activities, and to house a directory of local and international organisations using strategies to reduce or redirect landfill waste. Two showcase events and a workshop series were also held as part of Melbourne Knowledge Week, engaging academics, students and the public with the project.

The Design with Waste Outreach Platform project engaged numerous academics, students and industry partners in a range of discussions, activities and events. This new network facilitated the development of what is now called RMIT's Recycling Incubator.

Now that RMIT's Recycling Incubator is open for future collaborations and partnerships, the sky—or perhaps the bottom of the bin—is the limit for the sustainable solutions that can be achieved.

WHAT WAS THE RESULT?

- The project provided tangible industry engagement and development, **with new partnerships formed with Taxibox, Obus and Macpac, new research contracts under development** and young, recycling focused designers supported to convert design ideas into real world enterprises.
- The project's educational dimension—and the academic exercises undertaken—helped **create a learning and teaching framework that will be instrumental for future projects**. It will introduce into RMIT's design education a range of sustainability principles based on waste recovery.

ABOUT MWRRG'S COMMERCIAL AND INDUSTRIAL WASTE PARTNERSHIP PROJECT

This pilot commercial and industrial (C&I) waste partnership project is a result of MWRRG research which found food and plastic waste represent two of the three highest volume C&I waste streams, have significant environmental impacts and offer the greatest potential for additional resource recovery. The project helps deliver our strategic objective of reducing waste sent to landfill as outlined in the Metropolitan Waste and Resource Recovery Implementation Plan 2016.

[Download the Metropolitan Implementation Plan snapshot.](#)