

by empauer | 8 Jun 2021

Shaping the future of industrial design Ecodex LCA informs product development best practices



Situation

RMIT is a Melbourne-based university specializing in technology, design, and enterprise.

A core element of the curriculum for industrial design students at RMIT University is to teach tomorrow's designers of the important engineering tools industry professionals use to help improve their design work.

Within one such course at RMIT, through practical instruction and the hands-on experience of reimagining an electrical appliance design, students are able to explore and apply industry tools to gain valuable first-hand knowledge of real-world design challenges.

LifeCycle Assessment (LCA) is one of the key methodologies industrial designers leverage to measure the environmental impact of their creations.

Ecodex is the tool selected by RMIT to teach students the importance of LCA methodology and at a practical level, how to build a baseline product model to design a scenario that improves the environmental impacts of the product.

By the end of the course, students present a compelling case to redesign their products including an LCA analysis from Ecodex.



Solution

Committed to finding solutions to our global environmental challenges, we help companies and organizations embrace best practices with Ecodex, our ISO-certified LCA tool.

Our collaboration with RMIT and the support of the university's industrial design program is part of our commitment to sustainable development and support the next generation of entrepreneurs, developers and designers.

Ecodex is cloud-based, providing convenient instant access to the tool from anywhere, which is invaluable when working remotely.

Created to be used by non-experts, Ecodex provides a seamless and intuitive user experience, making it the ideal learning platform for those new to LCA analysis.

Life Cycle Assessment (LCA) methodology evaluates environmental impacts over the entire lifecycle of a product, from mineral extraction to materials processing, manufacture, distribution, and product use, through to end of life. It considers impacts such as freshwater use, land use, energy, and GHG emissions generated or used at each stage of producing a product or delivering a service. The methodology for conducting LCAs are governed by ISO standards 14040 and 14044.

Solution Scope

- ✓ Ecodex is used by RMIT students for analysis and redesign of common electrical appliances.
- ✓ Students invest approximately 10 hours of working with Ecodex during the course: preparing a baseline model, then modeling various scenarios of the product which improves the environmental impacts.
- ✓ Students use the Ecodex LCA tool in combination with other industrial design tools to make a final product redesign proposition.



Students apply a first-principles model in other areas of study, making Ecodex one of the most sophisticated tools they use, but the tool's ease of use paired with instructional videos and User Guides ensures students are successfully onboarded in under an hour.

Solution Process

A core component for students studying industrial design at RMIT is to complete a life cycle mapping exercise for an electrical appliance – a discovery process where they trace the supply chain and operating conditions of their chosen appliance:

- manufacturing location
- power consumption
- water consumption
- other key data across the product lifecycle in production, use, and end of life phases

With raw data in hand, an LCA can commence. Students use Ecodex to develop an LCA model for their product and identify the environmental impact.

As part of this, the students are then challenged by lecturers to apply the Ecodex LCA insights to refine their product and improve the design.

‘Do I need a lower energy consumption technology like a digital motor rather than a brushed motor?’

‘Can I use a more efficient way of heating the wires?’

Using Ecodex, students can iterate upon their product and quickly discover the environmental impacts of product design changes after material, manufacturing, or sourcing refinements.



“The results of a lot of known LCA tools are just really hard to decipher, while Ecodex lays it out in a clear and visual way”

DR. Simon Lockrey

This powerful and instructive learning approach is made possible by the speed and simplicity of Ecodex.

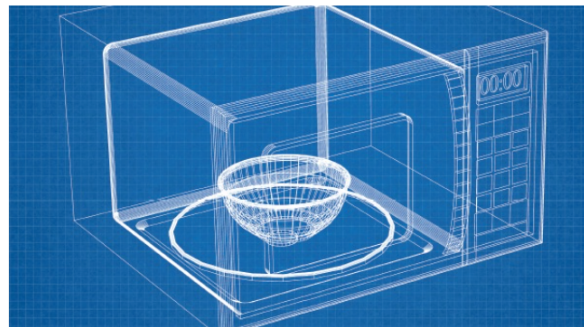
Results

Ecodex delivers RMIT students a robust set of LCA data and methodology based on ISO standards.

Using Ecodex enables students to immediately discover the impact of design decisions on the environment.

Results are delivered in a clear and actionable form which makes informed decisions easy.

The ability to compare the models in Ecodex provides the students a consistent framework to make informed decisions about product changes.



This case study was compiled with the help of Dr. Simon Lockery, who is a Senior Lecturer within the School of Design at RMIT University. Dr. Lockery is a leading sustainability and design innovation researcher and entrepreneur, having been at RMIT for over 10 years.