Mats Isaksson next to a cell designed at Swinburne to scan and fix the headlight inside.

> “The vision is an automatic repair cell that uses 3D printing to automatically repair the broken part.”

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Print a part

Industry is investing in robots to cheaply fix car headlight housings using blueprints from the cloud and 3D printing.

A fender-bender could soon mean a quick trip to a robot for a cheap same-day fix thanks to a new project driven by robotics expert Dr Mats Isaksson, a senior Research Fellow at Swinburne's Department of Mechanical Engineering and Product Design Engineering at its Manufacturing Futures Research Institute.

Isaksson has been given government funding to lead Repair Bot, a $1.2 million industry project that will harness 3D scanning, 3D printing, and robotics to automate headlight repairs.

Minor damage to the plastic lugs and brackets in a headlight assembly can cost between $200–$14,000 for parts alone, said Isaksson, and the headlight, which is still functional, will end up in landfill.

"The vision is an automatic repair cell that scans the broken plastic part, compares the scanned damaged part to an original part blueprint in the cloud, and employs 3D printing to automatically repair the broken part," he said.

Automation is predicted to add $2.2 trillion to the Australian economy by 2030. Isaksson, who spent 10 years as an R&D engineer at European automation giant, ABB Robotics, thinks the automatic repair of just about anything "is becoming a real possibility".

Consumers, insurance companies and repair shops who lack skilled plastic technicians will all stand to benefit from lower costs associated with the technology his team are developing. And, if successful, these advances could also address the concerns of a 2017 Australian Competition and Consumer Commission report that suggested widespread public dissatisfaction with rising parts costs within Australia's $24.8 billion car repair and servicing industry.

To do this, Isaksson's team are partnering with Sydney-based manufacturing innovation firm, Tradiebot Industries, and accessing federal funding from the Innovative Manufacturing Cooperative Research Centre (IMCRC).

At the moment, the researchers are busy creating a demonstrator system and looking at substances that can be 3D printed to fill breaks in polypropylene, a common plastic material used in headlight housings, while meeting strength requirements. The plan, said Isaksson, "is for the Repair Bot system to also work as a knowledge database, continuously gathering information on collision damage for future research".

In the next phase, the Swinburne project will focus on commercialisation, including the deployment of a cloud-based software solution for headlight blueprints and a purpose-built robotic system for fixing parts.