Media Release

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Trials underway on new 3D Printing Material & Mobile App for the Auto Repair Industry

Swinburne University of Technology started testing its newly formulated 3D printing polypropylene-based material this week. The world-first development is a collaboration with industry partner Tradiebot Industries and with co-investment from the Innovative Manufacturing CRC (IMCRC), the material will be used in the automotive collision repair industry to 3D print replacement plastic bumper bar tabs and headlight lugs.

A mobile app is currently also being developed by Tradiebot, using state of the art **Augmented Reality** (AR)**,** that will enable collision repair technicians to perform quality control on repairs by overlaying an original CAD using the application via a smart phone, tablet or smart glasses. The application will have the ability to scan broken plastic parts, generate a 3D model of the part and then enable the user to create, or select from a library, the required missing component. This missing component will then be 3D printed using the new automotive compatible material. The developed replacement parts will be stored in a digital library of pre-designed parts, ready for download and 3D printing.

The advanced plastic material is compatible with automotive grade injection moulded plastic and will increase the number of parts being repaired and reused during the collision repair process, rather than these parts being sent to landfill or waste, due to missing tabs and lugs.

When ready for industry use, the solution will offer technicians a path to up-skill through learning to repair these parts and designing new replacement components for parts that would have previously required a brand-new replacement.

The creation is the brainchild of Mario Dimovski, CEO of Tradiebot, who started his career as a 16-year-old plastic repair technician and has been involved with automotive plastic repair for the past 28 years. Mr Dimovski has been relentless in his quest to deliver not just this digital innovation, but also several other Industry 4.0 solutions in the fields of robotics, augmented reality and virtual reality. Forming close working relations with leading universities, government bodies and key industry collaboration partners over the last few years has been the key to Tradiebot's success in leading innovation in the automotive repair industry.

Mr Dimovski said:
"The new 3D printing material and the mobile app development marks a significant step towards the utilisation of new digital tools, additive manufacturing / 3D printing and advanced materials in the collision repair industry. Tradiebot has been leading the way in 3D printing innovations in the collision repair industry for the past 4 years and is very excited to bring to market such an innovative solution."

The in-house formulated polypropylene composite material developed by Swinburne materials scientist Dr Mostafa Nikzad and his team, will allow on demand replacement tabs to be printed and fuse welded by repair technicians on plastic car parts, enabling these broken parts to be reused.

Dr Nikzad and his team had to create a material with the right bonding properties, strength and toughness required to meet automotive quality standards, that also possesses the necessary characteristics to be 3D printed. All while guaranteeing the compatibility with automotive grade injection moulded plastics.

The material choices were restricted to Polypropylene based (PP) composites to enable direct welding onto bumpers or headlight bases, as most of these are made from PP based composites.

Dr Nikzad who has been leading advanced material projects for the last 15 years said that this is a ground-breaking development and he is very proud of the work his team has achieved.

Dr Nikzad said:
"It has been great working alongside an innovative project partner like Tradiebot. The initial idea to develop the material and how best to provide access to it for the industry is really exciting. I like the idea of using a mobile scanning app and creating your own replacement parts for printing. We are also now planning a second phase of this project that involves embedding self-healing capabilities into the material in a world-first."

IMCRC functions as a catalyst in this research collaboration, co-investing in 3D printing and material innovation that creates opportunities not just for Tradiebot and the automotive collision repair industry but for Australia's broader manufacturing sector.

David Chuter, CEO and Managing Director at IMCRC, sees the progress of the research collaboration as an indication of the things to come.

David Chuter said:
"From day one Tradiebot and Swinburne University have been working hand-in-hand, embracing opportunities as well as challenges to drive progress and get the job done. Seeing them test new 3D printing materials that did not exist two years ago and explore digital technology to enhance the user experience is very rewarding."

Tradiebot aims to have the material and mobile application available to the market in early 2020 as the project moves into its final stage of commercialisation.

Reference 1*: Material being tested in the form of a headlight base bracket*

Reference 2: *Mobile application showing the use of Augmented Reality to perform QC on a headlight to check positioning of the brackets.*

For all Media Enquiries contact:

Tradiebot Industries:
Tamara Lepar- Business Support Executive
tamara.lepar@tradiebot.com

Swinburne University
Lea Kivivali - Senior Media and Communications Adviser
lkivivali@swin.edu.au

IMCRC
Jana Kuthe - Communications, Marketing and Events Manager
jana.kuthe@imcrc.org