Cars, planes... partners in advanced manufacturing

Australian and American researchers and businesses are partnering to bring new manufacturing technologies to market

Paint fit for a Dreamliner

Next time you board a new Boeing Dreamliner, take note of its Australian paint. Developed by researchers at CSIRO, Australia’s national science agency, ‘Paintbond’ has now been adopted across the entire Boeing aircraft fleet, and more than 1,000 aircraft have been re-coated using the technology so far.

Why is it better? The new spray-on topcoat paint technology saves time, reduces the impact on the environment, and is safer to use. The polyurethane topcoat paint traditionally used on commercial aircraft protects them from rain, hail, sand, and dust. But the paint needs regular re-coating and that’s a time-consuming process. Before Paintbond, this involved sanding down the old coat of paint before applying a new top coat—a slow process that has a high injury rate for workers, produces harmful particles, and has the potential to damage the aircraft. Paintbond can be sprayed on and followed by a fresh coat of paint just 30 minutes later.

The technology doesn’t interfere with the durability of the materials it’s applied to, and can be used on a large scale over a range of materials on an aircraft. It led to CSIRO receiving a Silver Suppliers Excellence Award from Boeing. “We’ve been partners with Boeing since 1989,” says Dr Keith McLean, CSIRO’s manufacturing director. “And we’ve jointly invested over $130 million in a wide range of innovations including sustainable aviation fuels, fire retardants, advanced manufacturing, and airspace management.”

Revolutionary Aussie mirrors, on trucks across America

Ford trucks across America are using plastic wing mirrors developed in Adelaide, Australia. The mirrors have been proven to be robust enough to survive an Alaskan winter, and a Death Valley summer. And that’s special. Car makers have long wanted to replace shiny but heavy metal and glass components with plastic. But until now plastics weren’t up to the job.

University of South Australia researchers created multi-layered thin film reflective plastic components that are light and long-lasting. Then they worked with Adelaide company SMR Automotive to bring the technology to market. The plastic car wing mirror was their first commercial success. It was picked up by Ford Motor Company for use in their F-Series trucks—to date they’ve purchased more than 1.6 million mirror assemblies.

The thin film design is composed of multiple layers that coat the plastic and remove imperfections in the moulding, reduce temperature stress and abrasion, reflect UV, and repel water for easy cleaning and defrosting. Altogether, the layers are less than one tenth the thickness of a human hair.

By switching to plastic, these new mirror assemblies are 15 per cent lighter than older metal and glass versions, increasing driving efficiency, saving fuel, and reducing carbon emissions. They can survive harsh winters and hot summers, and they’re also shatterproof. Car mirrors are just the beginning. The technology has potential for use in aircraft, spacecraft, and even whitegoods. The researchers are already working with industry on using the technology in large-scale concentrated solar thermal power generation.

Also...

In-car technology to help address dangerous driving behaviours is being developed by Queensland University of Technology and the Honda Research Institute USA.

Environmentally friendly car paints and advanced materials for photo imaging are among the results of 50 patents for plastics generated by CSIRO and DuPont.

Brisbane’s Ferra Engineering will be manufacturing titanium components for Lockheed Martin’s F-35 Joint Strike Fighter, supported by the CAST Cooperative Research Centre.

The US government’s Oak Ridge National Laboratory is working with CSIRO on ways to enhance the production of titanium products.

Read about these, and other Australia-US partnerships in energy, food, mining, biomedicine, cyber security, and more at www.usa.embassy.gov.au
Australian paint technology is improving the safety and efficiency of aircraft maintenance across America. It’s now being used by American Airlines, United, and most US-based airlines.