Case Study

From product concept to production at SMR Automotive
South Australians, and indeed all Australians, can be justifiably proud of the SMR Automotive thin film coating project.

It is a story of visionary outlook, technical and business acumen, hard work, and a magnificently fruitful partnership between an Australian manufacturer and university, underscored by the funding, facilitation and support role played by AutoCRC.

It is also about bringing a product from concept stage to full production, and producing revenue not just for South Australia but the broader national economy.

The project has, furthermore, seen the conversion of innovative science into a unique, world’s first, high value product.

It will also likely produce spillovers into other sectors, opening the window to wider economic benefits in jobs, sales and broader business opportunities.

Located in Lonsdale, South Australia, SMR is the only Australian manufacturer of rear-view mirror systems.

Employing more than 500 people, it supplies all three domestic car makers and is a major exporter, with some three quarters of its production finding markets in the United States, Asia and Europe.

It is part of the international specialist Smavardhan Motherson Reflectec (SMR) group whose operations span 14 countries, producing a range of sophisticated products including exterior and interior mirrors, lighting and mirror adjustment systems, indicators and blind spot detectors.

The thin film coating project brought into focus the following challenge.

How to design and manufacture a world class, 21st century plastic mirror for motor vehicles which was lightweight and strong, and which could be used in a number of applications.

Cue Australian inventiveness, ingenuity and determination, fostered and enabled by AutoCRC.

As SMR project manager Dr Scott Edwards says, “We saw pretty early on the need for AutoCRC to assist us with our research and development priorities.

“SMR in France had been working on a plastic mirror project but they were having some difficulties in easily accessing the required external - that is to say outside the organisation - technical capabilities to bring this to fruition.

“In all, the product took three years to develop and production of the mirrors commenced in mid 2012,” Dr Edwards says.
Because the reflector is plastic, it can be molded into more complex three dimensional shapes, creating a whole new world of available design formats. As the specially coated mirrors are integrated, they are lighter and mean that the overall unit has fewer parts. Being plastic, they are also safer, for a plastic mirror is shatterproof, except under the most extreme circumstances.

"The mirrors are now being used on the new Ford 250 Super Duty Truck sold in the United States.

"We are making around 50,000 of these mirrors a month and the contract has a life of a further two years.

"AutoCRC played a very important role in providing funding and assisting with the linkages to the UniSA," Dr Edwards says.

He says that development of such a product is a highly technical, time consuming and costly endeavor, requiring very sophisticated research and development input.

"At the time, SMR in Australia didn’t have the coating expertise necessary for this application.

"It was natural that we turned to the University of South Australia’s Mawson Institute to help us develop the new thin film coating technology.

"SMR already had a good relationship with UniSA, through other funding measures and projects.

"One of the best things we did was to put SMR people actually at the university as secondments.

"So, in 2009, we had two engineers take leave from this organisation, to be actually employed by the university, to develop the product out there.

"Not only were we able to embed our people in the project but were also able to get them trained at the same time.

"From a knowledge management viewpoint it was quite fantastic in terms of our people bringing skills back with them into SMR once they finished the project.

"This has been a wonderful transference of knowledge and knowhow from the tertiary sector into industry – and this will be a lasting benefit for us.

"This project with its advanced technology has potentially created more jobs within SMR design and manufacturing. And it is sustainable employment.

"AutoCRC has brought about the circumstances for us to do this. It has been the enabler,” Dr Edwards says.

"The biggest benefit is we’re able to basically access Australian core capability that we didn’t have. We needed coating expertise specifically for this application.

"To bring this coating expertise in-house we would have had to spend many millions of dollars, to acquire the prohibitively expensive equipment and buy in the development staff.

"This is easier said than done, and frankly would have made the project burdened with too many difficulties.

"We were, however, able to go to the university and access their facilities, embed our own people, create our own capability in that area, and, most importantly, create a project at low cost."
“To justify the expense of creating another area of technical expertise outside your own core business, would be a job unto itself.

“This is risk minimisation, when it comes down to it. With the help of AutoCRC, we’ve been to do this research and development at low risk.

“Apart from providing funding, AutoCRC’s role was to monitor and watch over the project, in essence to ensure the ongoing success of the relationship between the two organisations,” Dr Edwards says.

Collaborations between industry and universities can fall apart due to different cultures and operating ethos.

AutoCRC’s CEO Jim Walker explains, “CRC’s not only scout out opportunities, and then seek to create the happy marriage. But they also work to ensure that the marriage doesn’t end in divorce. Because a lot of companies don’t quite fully understand how universities work. And universities, on occasion, don’t quite understand how companies work.”

SMR is now seeking markets for the new innovative film coating technology across new product technologies.

This is where the spillover effect comes in.

“SMR is using the expanded knowledge and intellectual property generated by this project to springboard us into new product opportunities,” Dr Edwards says.

“The focus has been to expand opportunities within the current automotive market.

“The UniSA thin film coating project has further strengthened our capabilities and enhanced our overall strategy. So that we can create even more value for customers, and separate us even further from our competitors.

“Also in the auto industry, the coating technology is being developed for use in prestige car interiors, where a premium is placed on style, aesthetics and new age latest development technology.

“The car industry is always looking for more exciting surfaces and ways to distinguish their vehicle from competitors. Premium cars, of course, have a lot of metal finishes.

“We are now developing, with European car companies, new exciting coatings and finishes for the interior of prestige cars.

“These are highly differentiated premium finishes using metallic surfaces and coatings, like brushed aluminium or steel.

“These products look like metal, but have all the advantages of plastic. Such as light weight, safety enhancements, flexibility in molding design, functionality, etc.

“This is but one example of the spill-over benefits of the development of the film coating technology with UniSA and AutoCRC.

“This light weight plastic mirror project has gifted SMR a core capability in this exciting new coating technology. We now have, in-house, technical people who have spent three years at UniSA. I’ve got two coating engineers I wouldn’t have had three years ago.

“As well, the model for this type of research and development is being repeated, with further secondments of SMR staff to universities occurring, to produce equally successful project outcomes,” Dr Edwards says.