

AutoCRC funded for five further years



By Dr Matthew Cuthbertson, Chief Executive Officer, AutoCRC

It has been an extremely busy year at AutoCRC, with a number of notable research highlights, many of which have been profiled in our recent contributions to *Autoengineer*. The achievements of 2011 were topped off with the announcement in November of a further \$26 million of Commonwealth funding over five years. This will enable AutoCRC to continue acting as a hub of innovation in the automotive industry.

The funding indicates a clear acknowledgement from the government that the outcomes of the current AutoCRC have met expectation and also that the research themes for the new Automotive Australia 2020 CRC are seen to have significant benefits for Australia that are closely aligned with government priorities.

The new funding opens the door for AutoCRC to enable collaboration and to pursue positive outcomes in the following key research areas:

Vehicle Electrification - To position the Australian automotive industry in key elements of the global trend towards electric vehicles, particularly with battery technology and advanced EV and hybrid drive trains.

Gaseous Fuels - To address technological and social barriers to the uptake of gaseous fuels in cars and trucks in the research themes Uptake of Alternative Energy for Transport and Fast-fill High Capacity Storage Solutions.

Clean21 Manufacturing - To make the Australian automotive sector cleaner, more efficient and enable it to produce greener vehicles and components more effectively.

These priorities are based on the findings of the Automotive Australia 2020 Technology Roadmap and outcomes will be achieved by connecting Australian researchers and companies (particularly SMEs) with ambitious international organisations.

This ensures that Australian products and know-how from Automotive Australia 2020 CRC are immediately integrated into high growth supply chains, in turn leading to further investment and jobs for Australia.

The new CRC will have a different participant mix, with an international flavour which combines some of the current participants and a number of newcomers. The industry and research participants are listed below.

In the meantime, as we in AutoCRC gear up for another busy and productive year, it remains only to thank all our existing and new participants, and everyone that has supported us over the last six years. We wish you a prosperous and successful 2012.

View the Automotive Australia 2020 Technology Roadmap: www.autocrc.com/2020.htm

View Automotive Australia 2020 CRC info: www.autocrc.com/AutomotiveAustralia2020CRC.htm

Automotive Australia 2020 CRC Participants

Industry and end users

Advanced Composite Structures Australia
 Bao Iron and Steel Co Ltd (China)
 Blade Electric Vehicles Pty Ltd
 CAP-XX (Australia) Pty Ltd
 Chargepoint Pty Ltd (Australia)
 Cryoquip Pty Ltd (Australia)
 Department of the Premier & Cabinet SA
 DLG Energy Pty Ltd (Australia)
 EDay Life Pty Ltd (Australia)
 Ergon Energy Corporation Ltd (Australia)
 Futuris Automotive Interiors
 GM Holden Ltd
 LPG Australia
 Malaysian Automotive Institute
 Megabond (Huangshan) Adhesive Co Ltd (China)
 Redarc Technologies Pty Ltd (Australia)
 SAMMITR Motor Group (Thailand)
 SMR Automotive Australia Pty Ltd
 Toyota Motor Corporation Australia Ltd
 Victorian Centre for Advanced Materials Manufacturing

Research organisations

Commonwealth Scientific & Industrial Research Organisation
 Deakin University
 Kangan Institute Of TAFE
 Queensland University of Technology
 Royal Melbourne Institute of Technology
 Swinburne University of Technology
 The Australian National University
 The University of South Australia
 University of Technology Sydney
 University of Wollongong
 Victorian Partnership for Advanced Computing Ltd

Reaching down the supply chain

By Linsey Siede, Director, Automotive Supplier Excellence Australia



Round 1 of the Automotive Supply Chain Development Program (ASCDP) finished on 31 December, so it is an excellent time to reflect on the past 20 months.

The ASEA team is completing closeout meetings for the last few remaining projects undertaken since March 2010. As well as completing many internal

projects, participating companies will have completed 152 projects with ASEA, all of which were identified during the company-wide Initial Assessment and were detailed in the Benchmark Report and Improvement Plan Book.

The comprehensive assessment process used by ASEA to identify where improvement opportunities exist for participating organisations is also used to document where there are best practices in place. ASEA greatly appreciates it when those companies agree to share their best practices with their peers. We have been honoured to host Best Practice Visits (BPVs) at Australian Arrow, Bosch - Clayton, Bosch Chassis Systems, Continental, FMP Bendix, and Unidrive in Victoria, and at Hirotec and Toyota Gosei in South Australia.

With funding now approved and announced for Round 2 of the ASCDP (which actually commenced on 1 July 2011), the ASEA team has been doubly busy with not only completing the Round 1 activities and milestones, but with simultaneously ramping-up Round 2.

As part of Round 2 of the ASCDP, ASEA has recently undertaken some very interesting work to try and better understand the complex linkages and intricacies of the Australian automotive supply chain, and try to identify potential "key" Tier Two and Three suppliers.

Tier One suppliers were asked to confidentially provide ASEA with the names of and size of purchase from their Top 10 Australian based suppliers, which could be for product, services or tooling.

The thought process was to consolidate the purchase amounts by Tier 2/3 companies and to generate a pareto listing from maximum to minimum dollar amount of product/service supplied to the Tier One companies with those at the top being "key".

Research reveals supplier scenario

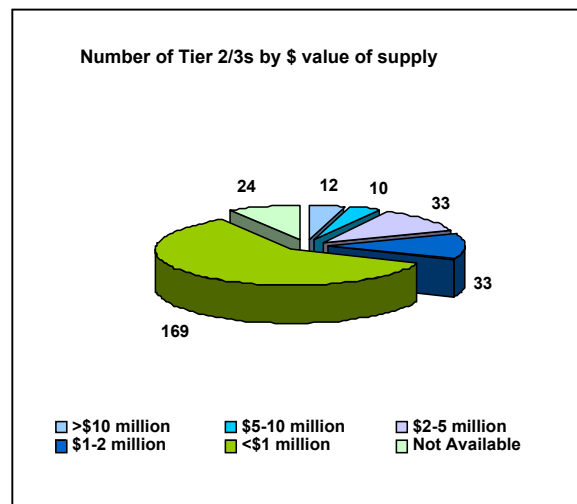
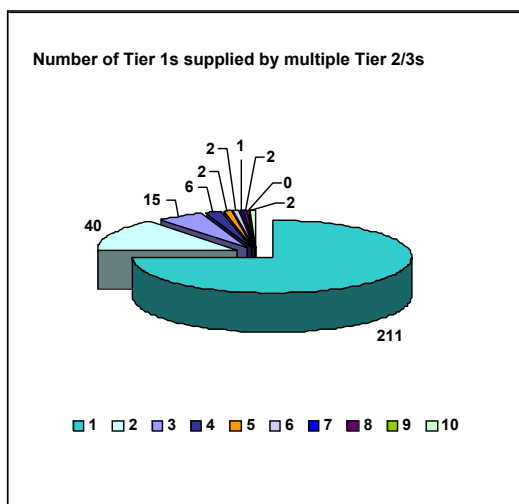
However as the information began flowing in, a second picture began to appear. It became more and more obvious that a small number of Tier 2/3 suppliers were supplying a number of Tier One companies, and were equally (if not more) "key" than those supplying large dollar amounts.

Mapping the connections between companies within the supply chain also identified a considerable overlap between Tier 1 and Tier 2 providers, with many Tier 1 companies also being important Tier 2 suppliers. Due to the confidential nature of the data provided, I cannot share the details, but the consolidated results were too good not to share.

If we examine the data and look at the number of Tier 1 companies supplied by each Tier 2/3 company, the results become even more segmented. A whopping 75% of the Tier 2/3 companies listed supply only one Tier 1 company and an incredible 89% supply two or less Tier 1 companies. Conversely, there are a handful of companies that supply 7 or more Tier 1s, which by default makes them "key" to the industry.

Looking at the consolidated results of the information received in this study by dollar amount, we find that of the 274 different Tier 2/3 suppliers listed, only 12 supply more than \$10 million to the Tier Ones. A huge 163 (59%) supply less than \$1 million. Unfortunately, due to a few Tier Ones that did not provide dollar amounts, there are 24 that we do not know about. However, by far the majority of the Tier 2/3 suppliers (72%) supply less than \$2 million to the Tier 1 companies.

The ASEA Team are looking forward to cascading the Round 2 program further down the supply chain, by working with more Tier 2 and 3 suppliers over the next 18 months.



The new Automotive Australia 2020 CRC

As mentioned in Matthew Cuthbertson's report (see page 16), the AutoCRC team was delighted to receive the news in November that AutoCRC has received \$26 million to fund projects benefiting the Australian automotive industry over another five years.

On a practical level, this means completing the wrap up tasks associated with the current CRC (The Co-operative Research Centre for Advanced Automotive Technology) and also investing significant resources and effort into establishing the new CRC (Automotive Australia 2020 CRC). Important parts of this work are keeping the new participants involved in the set up process and finalising the research and education programs.

The AutoCRC has received a lot of questions regarding the name of the CRC, and can confirm that the short name AutoCRC will be retained. In addition, the new long title Automotive Australia 2020 CRC will be used to ensure the organisation is clearly aligned with the key research priorities identified in the Automotive Australia 2020 Technology Roadmap.

The cut off point for the current CRC is the 30 June 2012 and the team is working to ensure that all the necessary tasks are completed to hand over project management responsibilities and intellectual property to existing participants.

Although 1 July marks the start of a separate funding period, there have been some massive breakthroughs and achievements in the current CRC. These will be built on in new projects, along with some new research directions.

Watch this space for more information over the coming year and keep up to date on new developments by visiting www.autocrc.com, or the AutoCRC Facebook page (see link on the website homepage).

The AutoCRC team thanks everyone for the massive amount of support received to get this far. The team is excited about the opportunities the new funding presents and looks forward to working closely with many of you *Autoengineer* readers

Undergraduate program student research awards

The AutoCRC undergraduate program completed the year recently with a poster and presentation session at Toyota head quarters in Port Melbourne. About 40 students took part in the program this year, which aims to provide a link to industry and produce employment ready graduates with the relevant skills to pursue a successful career in the automotive or related industries.

Students were asked to produce a poster for the final session and our panel of three judges from AutoCRC, GM Holden and Swinburne University elected four project groups to give final presentations.

Michelle Ng of Monash University particularly impressed judges with her professionalism and oral presentation on research with GM Holden "Seamless Integration of Electrical Aftermarket Accessories into a Vehicle". Her enthusiasm and commitment was rewarded with first place in the awards.

The AutoCRC congratulates her and all students who participated in this innovative program, which produces practical learning outcomes for them and for the industry.



Michelle Ng of Monash University received first prize in the AutoCRC Undergraduate program from judges Ian Christensen, General Manager, AutoCRC and Steve Curtis, Vehicle Structure and Safety Integration Manager, GM Holden.

Using waste heat to generate new power

By Jacqueline King, Knowledge Manager, AutoCRC

As we move towards an increasingly electric automotive future, the hunt is on to find efficient ways of producing clean electricity to power our vehicles and more. A creative solution from AutoCRC researchers allows companies to generate their own clean source of electricity at a significant cost savings – an attractive proposition given sharply rising electricity prices.

Many companies produce heat in the process of manufacture. A large percentage of this heat is usually allowed to escape through chimneys, which is both wasteful and expensive. Due to rising energy prices and the growing concern over climate change, many companies are now seeking new ways to reduce their costs.

An AutoCRC project involving the collaboration of RMIT University and Air International Thermal Systems has developed a way to capture waste heat and use it to generate usable electricity.

The system uses a method similar to a refrigerator in reverse. It turns liquid into steam, which in turn drives a turbine and then cools the steam back into a liquid before going around the circuit again. The turbine is the only moving part, and the generator requires no power other than the waste heat itself. As no new electricity or fuel is required, the electricity made using the waste heat is emissions-free.

The idea of capturing wastage energy is not new. However this new technology has been designed to work at lower temperatures - less than 100°C. This has been a huge advancement over previous generators, which needed temperatures of 300°C or more to operate, thereby making the new technology accessible to a much larger range of industrial plants.

A prototype was developed to encourage development of this new generator of zero-emissions electricity. Market research funded by the AutoCRC showed that the potential market for the new generator was very large and spread across a range of sectors, such as cement-makers and paper manufacturers.

As a result of this research and development work, the new company g-T Energy Technologies (gTET) was formed to take the technology to a commercial level by producing a range of efficient and cost effective generators for industrial use. gTET has already engineered generators to produce 25kW and 150kW and has almost finished development of a 500kWh unit due for release in July 2012.

The first gTET generators have also been designed so that the smaller-capacity units can be contained inside a standard shipping container making transportation much easier. Installation then involves a simple turn-key process, making the generators ideal for applications such as sawmills and other remote industrial sites. The larger generators under development can be integrated into a permanent industrial plant.

One of the most important advances made by gTET lies in the combined turbine/generator unit that incorporates a unique form of gas bearing, which uses an ultra thin cushion of high pressure air between the rotating shaft and the metal carrier on which it spins. Unlike earlier gas bearings, the gTET version does not need an air pump. This reduces the complexity and therefore cost of the generator.

As a young company still raising capital to fund its operations, the company's directors decided not to build a factory. Instead, the company has contracted an existing heavy manufacturer to produce the units, thereby creating new jobs and helping to use some of the excess capacity in the local engineering industry.

gTET estimates that a commercial customer paying 10c/kWh for electricity can expect to recover the cost of the gTET generator within three years. With the introduction of carbon pricing and Australian Government offering support and incentives for industry to move to more energy efficient technologies, these generators are a timely invention that will deliver economic and environmental benefits to Australia.

Visit www.g-tet.com for more information.



Prototype generator built by RMIT University and Air International - an AutoCRC collaboration