



PRESS RELEASE

Prestigious Engineering Award presented to CAP-XX at 2016 SAE-A Mobility Engineering Excellence Awards

Last night CAP-XX was recognised for Engineering Excellence at the prestigious Society of Automotive Engineers – Australasia (SAE-A) 2016 Mobility Engineering Excellence Awards. The gala dinner was held at the Arts Centre Melbourne on 17th of November where a series of other awards were also announced.

The presentation of the most prestigious Platinum award, for the overall winner of the professional awards category was made to CAP-XX for their 'Advanced Supercapacitors Make High Performance Modules' project. CAP-XX is an Australian company, involved in manufacturing and selling of super capacitors, used in portable electronic devices and automotive applications, for the global market.

CAP-XX's platinum award winning project concerned the development of supercapacitors suitable for automotive applications, namely their powerModule and truckStart products. The powerModule is designed to work with a hybrid vehicle's 12V Pb-Acid or Li-Ion battery pack, taking advantage of the best attributes of batteries and supercapacitors to optimize a micro-hybrid system. truckStart is a supercapacitor module that replaces one of the batteries on a truck to guarantee truck starting on the coldest North American winter nights.

"The SAE-A's Excellence Awards exist to celebrate the achievements of the mobility industry's finest and emerging talent" said SAE-A CEO Dale Gilson. "Tonight we have witnessed the talents of individual and company efforts towards innovation, diversification and continuous product improvement, across the automotive, rail, manufacturing and caravan & camper sectors, as well as high calibre contributions from our undergraduate and postgraduate students."

"A congratulations to all the winners of tonight's Mobility Engineering Excellence Awards, it is inspiring to see the resilience and commitment of our members and companies who continue to advance the transport mobility engineering sector. I would also like to thank the companies who have supported the Awards tonight, GM Holden, RACV, and the Suncorp Group." said Mr Gilson.

Gold Awards in the Professional Category were presented to the winners in the four categories of Automotive, Manufacturing/Non-OE, Rail and Caravan & Camper.

The Automotive Gold Award was presented to the collaboration between GM Holden, Excellerate Australia and Deakin University, for their Ingress/Egress Ergonomic Assessment Tool for Automotive Design.

The Gold Award for the Manufacturing/Non-OE category was presented to CAP-XX, for their project on Advanced Supercapacitors Make High Performance Modules.



In the Rail category the Gold Award went to Bombardier for their safety focussed project on an Automated Coupler Cover for the Queensland New Generation Rollingstock (QNGR) trains.

The Caravan & Camper Gold Award was presented to Winsig Antenna Systems for their development of a Generation 3 Antenna for the caravan market.

Gold Awards in the Student Category were presented to the winners in the two categories of Undergraduate and Postgraduate categories.

The Undergraduate Category Gold Award went to Terence Chong from the University of New South Wales for his 'Investigation of a Racing Simulator and the Generation of Virtual Formula SAE Environments to Improve Driver Performance'.

The Postgraduate Gold Award was presented to Zhenqing Liu from RMIT University for his 'Prediction of the Acoustic Properties of Vehicle Interior Trims'.

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18 November 2016

Image captions:

[MEEA 2016 CAP-XX Platinum-Award.jpg](#)

The prestigious 2016 Platinum award, for the overall winner of the professional awards category, was awarded to CAP-XX. CEO Anthony Kongats (centre) accepted the award from Michael Sukkar MP - Member for Deakin (left) and David Ford, Chair of Judges (left).

[MEEA 2016 CAP-XX Manufacturing-Gold-Award.jpg](#)

The Gold Award for the Manufacturing/Non-OE category was awarded to supercapacitor manufacturer, CAP-XX, for their project on Advanced Supercapacitors making High Performance Modules for hybrid vehicles and trucks. Suncorp Group were proud to sponsor the award.

[MEEA 2016 Holden-Excellerate-Deakin Automotive-Gold-Award.jpg](#)

Winner of the Automotive Gold Award was presented to GM Holden, Excellerate Australia and Deakin University for their collaborative project on an Ingress/Egress Ergonomic Assessment Tool for Automotive Design. The Award was presented by Rob Bartlett of Suncorp Group (left), sponsor of the award.

[MEEA 2016 Winsig Caravan-Gold-Award.jpg](#)

Winsig Antenna Systems received the Gold award in Caravan & Camper section for their development of an innovative new generation antenna for the caravan market. Rob Bartlett (left) from award sponsor Suncorp Group presented the award to Andrew Holmes from Winsig Antenna Systems (right).

[MEEA 2016 Bombardier Rail-Gold-Award.jpg](#)

The Gold Award in the Rail category was presented to Bombardier Transportation for their



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innovative Automated Coupler Cover for the Queensland New Generation Rollingstock trains. Rob Bartlett (left) was proud to present the award on behalf of award sponsor Suncorp Group.

[MEEA 2016 Zhenqing-Liu Postgraduate-Gold-Award.jpg](#)

The Postgraduate Gold Award was presented to Zhenqing Liu from RMIT University (right) for his 'Prediction of the Acoustic Properties of Vehicle Interior Trims'. Brett Vivian Executive Director of Engineering at Holden (left) presented the award. GM Holden was the sponsor of the Postgraduate Gold Award.

[MEEA 2016 Gala-Awards-Dinner.jpg](#)

The 2016 Mobility Engineering Excellence Awards was held at the prestigious Arts Centre Melbourne on the 17th of November. With a great attendance from representatives from all over the mobility industry, the Gala Awards dinner lived up to its title of being the industry's Night of Nights.

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More information about the specifics of the awards on the following pages.



Winners Board

2016 Platinum Award for Overall Engineering Excellence		CAP-XX
Professional Award	Automotive Category	GM Holden Excellerate Australia Deakin University
	Manufacturing/Non-OE Category	CAP-XX
	Rail Category	Bombardier Transportation
	Caravan & Camper Category	Winsig Antenna Systems
Student Award	Undergraduate Category	Terence Chong University of New South Wales
	Postgraduate Category	Zhenqing Liu RMIT University

Overall Winner

2016 Platinum Award for Overall Engineering Excellence

CAP-XX – Advanced Supercapacitors Make High Performance Modules

CAP-XX has developed supercapacitors suitable for automotive applications. These supercapacitors' unique characteristics are their extremely low Equivalent Series Resistance (ESR), from -40°C to +65°C, enabling very high power delivery and acceptance in a thin prismatic form-factor suitable for efficient and convenient packaging. These have been used in two automotive applications: powerModule and truckStart.

Judges' Comments

Cap-XX have developed super capacitors for applications in both hybrid vehicles and, in a different mode, Heavy Trucks. The Super Capacitors will enable a broader range of small hybrids to utilise stop/start technology, with a beneficial effect on emissions and fuel economy.

The Super Capacitors provided extremely low series resistance over a wide temperature range making them superior to storage batteries for many high power vehicle functions – in particular for numerous Stop/Start situations and where it enables heavy trucks to readily restart in very cold conditions and where batteries suffer from degraded performance. These Capacitors have almost unlimited cycle life and do not have the variable dynamic charging issues typical of batteries.

The Cap-XX design utilises thin prismatic elements, with very low Equivalent Series Resistance, providing high power capability in a smaller package size and thus higher power density.



Professional Award Gold Award – Automotive Category

GM Holden, Excellerate Australia & Deakin University – Ingress/Egress Ergonomic Assessment Tool for Automotive Design

GM Holden, in collaboration with Deakin University's Institute for Intelligent Systems Research and Innovation and Excellerate Australia (AutoCRC), has developed a virtual design tool to quantify the difficulty in entry and exit of a vehicle. The Ingress/Egress Ergonomic Assessment Tool employs motion capture, signal processing and advanced modelling to allow GM to evaluate designs prior to production.

Judges' Comments

The development of a Tool and Process for the Assessment of the ergonomics in the Ingress to and Egress from a vehicle in the early design stages is believed to be a unique new innovation developed by Holden Engineers and Designers which will have world wide application for future GM products.

This 3D and CAD driven approach is not dependent on, or related to, any specific model and can be applied across a range of vehicle types (Cars; SUV's and Trucks) and a spectrum of people sizes.

It enables early evaluation of bio-mechanics in new vehicle proposals without waiting for the construction of 3 dimensional prototypes or seating bucks. It should thus save time and lead to higher customer satisfaction and minimising of styling driven compromises for vehicle occupants.

Professional Award Gold Award – Manufacturing/Non-OE Category

CAP-XX – Advanced Supercapacitors Make High Performance Modules

Professional Award Gold Award – Rail Category

Bombardier Transportation - QNGR Automated Coupler Cover

Bombardier Transportation has produced a 100% in- house Automated Coupler Cover which has been utilised on the 75 Queensland New Generation Rollingstock (QNGR) trains. The Coupler Cover System is a pneumatically-powered retractable hatch that prevents outriding on the Auto-coupler. The main requirement of this design is to prevent "train surfing" while reducing the amount of components that would require maintenance.

Judges' Comments

The Bombardier Automated Cover is designed to increase transport safety by eliminating the ability for "train surfing" by illegally riding on the exposed couplings between train carriage sets. It also has



the advantage of creating an aesthetically more pleasing appearance to the front and rear of a train by concealing the couplings when they are not in use.

The unique local design includes fail-safeguard to enable operation where a train may have lost electrical power and lockouts for maintenance and operational staff. Lightweight design enable the new safety cover to be contained within the overall target mass for the new train and Design for Maintainability was also a strong focus in the design approach.

Professional Award Gold Award – Caravan & Camper Category

Winsig Antenna Systems – Winsig Generation 3 Antenna

The Winsig Antenna Systems generation 3 Antenna is based around a new design for the caravan market – Dual Plane Hybrid Log Periodic Array. The new modular concept uses a mathematically derived array to cover a very wide band of frequencies, and services VHF/UHF transmission in both the vertical and horizontal planes, providing superior TV reception for caravans and RVs throughout Australia.

Judges' Comments

The Winsig Antenna Systems antenna uses a mathematically derived dipole array design to meet a market need for improved quality reception across a wider range of frequencies and is able to cover both Vertical and Horizontal signal transmission. Unlike the majority of existing caravan antennae, it is locally manufactured. It is also robust to alignment direction and will not require realignment at each new destination.

The judges particularly also liked the symmetrical and modular approach to reduce tooling cost and unique parts count, with ability to reuse components to create scalable products in the antenna array. These concepts are applicable to local manufacture in other industries.

Student Award Gold Award – Undergraduate Category

Terence Chong – Investigation of a Racing Simulator and the Generation of Virtual Formula SAE Environments to Improve Driver Performance

The UNSW's Formula SAE-A team developed a racing simulator to improve driver performance. A method was created to scan and implement race tracks into a simulator. The method was mostly successful with some issues with accuracy. Drivers using the simulator showed significant improvements in lap times.

Judges' Comments

In order to improve driver performance on a track that the driver had not yet driven, Terence Chong's research focussed on the establishment of a virtual model of the desired track, including the positioning of turns and cones. He then established a driving simulator using a vehicle chassis to



drive the virtual track and thirdly to use the outputs to evaluate driver performance and train drivers in advance of arriving to compete at the real world track. His work was summarised in a very clearly written and detailed technical paper.

Student Award Gold Award – Postgraduate Category

Zhengqing Liu – Prediction of the Acoustic Properties of Vehicle Interior Trims

An appropriate acoustic model was developed for predicting the effect of the interior trim material on the noise propagation inside a car cabin. It was numerically and experimentally confirmed that using porous trim material effectively reduced propagating noise in the frequency range of 500-1000Hz. The results are useful for enhancing vehicle interior trim design and refining vehicle cabin acoustic quality in future vehicles.

Judges' Comments

Zhengqing Liu has developed a method to characterise the acoustic properties of the interior trim components of a vehicle using numerical simulation for the structure and vehicle interior space and equivalent model for the trim material. This has been developed in correlation with experimental tests of a vehicle model to predict NVH performance of a vehicle interior. When fully developed, the approach can be used across a wide range of vehicles and is not restricted to a particular vehicle design.

2016 Mobility Engineering Excellence Awards Judging Panel

David Ford – Chair, Mobility Engineering Excellence Awards

Andrew George

William Malkoutzis

Bernard Quinn

Dr Clint Steele

Prof. Simon Watkins

Andrea Winkelmann