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AUSTRALIAN ENGINEERS CONTRIBUTE TO COPENHAGEN CLIMATE CHANGE CONFERENCE

The Society of Automotive Engineers – Australasia (SAE-A) provided direct input to the official Federation of International Societies of Automotive Engineers (FISITA) submission to COP-15, the international climate change conference now underway in Copenhagen.

SAE-A is a council member of FISITA, which is the world body linking professional automobile engineering societies in 38 countries. SAE-A senior vice president and former president, Prof Harry Watson of Melbourne University, is the society's FISITA delegate and led the Australasian input to the high-level global policy document.

"Australian automotive engineers are amongst industry leaders in developing and deploying technologies to reduce transport emissions," said Prof Harry Watson.

"Australia is at the forefront of a range of advanced technologies and this expertise was valuable in collating the FISITA Cop-15 Communiqué. This document advocates an integrated approach combining joint action by industry, academia, government and consumers, with particular attention to three key areas – fuels and fuel economy, electric vehicles, and traffic management," he said.

Fuels and fuel economy

The FISITA COP-15 Communiqué said automotive engineers are cutting vehicle energy consumption using a wide range of improvements in engines and vehicle technologies such as direct fuel injection, variable valve timing, downsizing, optimised transmissions, lightweight and low friction materials, stop-start-control, regenerative braking, low-energy lighting and others. At the same time, huge investment is being made in developing alternative fuels like biofuels, natural gas, hydrogen and electricity.

Australian engineering innovations include advanced Liquid Petroleum Gas (LPG) and Compressed Natural Gas (CNG) systems being pioneered on freight and bus fleets. Consistent development of LPG for passenger vehicles in Australia is delivering up to a 20% reduction in greenhouse gas emissions, improved drivability and export sales of LPG components. As Australia has national distribution of LPG fuel, these gains are driving growth of LPG vehicles among both fleets and private owners.

Australia is also pioneering bio-based fuels and ethanol E10 and E5 blends are growing in availability.

Electric vehicles

Electric vehicles (EVs) are a focal point for research and development by automotive engineers in the fight to lower CO2 from road transportation. Start-stop systems on conventional internal combustion engine vehicles, mild and strong hybrids, battery electric vehicles with or without range extenders, and ultimately, hydrogen fuel cell electric vehicles all offer improvements in fuel economy.

Energy from the electricity grid can provide a clean, renewable source motive power and reduce consumption of carbon-based fuels. However, the FISITA submission warned that certain technical and policy challenges remain to be solved before EVs can be considered a mainstream solution.

With the production launch of the Toyota Hybrid Camry last week, Australian automotive engineers have joined an international elite with the expertise to combine electric motors and petrol engines in a commercially

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:: COAG meets, but no truck regulator decision
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:: AFGC Retail Ready Toolkit Roadshow – 17 February 2010, Brisbane and Sydney
:: Lean, green Australian solution wins over US Chambers of Commerce
:: CBFCA NSW Regional Convention 2010 – 26-28 March, Hunter Valley
:: Global economic outlook shaky as world shifts from government to private demand
:: International Materials Handling Exhibition – 16-19 November 2010, UK

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Traffic management

The FISITA COP-15 document said there is great potential for reducing fuel consumption by up to 60% by improving the efficiency of traffic itself. Traffic management can play a complementary role alongside vehicle innovations in the reduction of overall CO2 emissions, while simultaneously helping to improve the mobility, safety, and efficiency of the transportation infrastructure.

Intelligent Transportation Systems (ITS) enable advanced communications between vehicles and infrastructure. They can help reduce CO2 by enabling optimal route planning and timing, smoothing stop-go driving, reducing congestion, enabling pricing and demand management, and encouraging smart multi-mode transportation, such as Park and Ride.

Australian engineers pioneered many ITS technologies and achieved global first E-Tag Electronic Tolling Systems linked between capital cities, world best-practice standard applications of Computer Linked Traffic Signals and Public Transport Priority Networks, Ramp Metering and Dynamic Route Guidance systems.

Deployment of these technologies is dependent on viable business models. As discussed in the submission, there is a "chicken and egg" situation as private investors cannot expect a return on investment from major ITS projects until critical rates of market penetration are reached. This requires close cooperation between ITS bodies, governments, road authorities, telecommunications providers and the automotive industry.

Public policy

Prof Harry Watson said Australian automotive engineers continue to make progress in reducing transport emissions. "SAE-A members are now delivering lower emissions outcomes than ever before and are committed to pursuing the ultimate goal of zero emissions transport," he said.

"We believe that the role of governments is to regulate to mitigate climate change, to set targets and to provide support. Engineers and industry should be left to pursue the most cost effective technologies to meet those targets.

"Consumer acceptance is also critical to the success of any new vehicle and mobility technology. In setting policy, it is vital that the cost of new vehicles remains affordable for consumers and that community education is facilitated. The effectiveness of these strategies was proven in recent years by the increased consumer acceptance of the importance of the Australasian New Car Assessment Program five star safety rating system," said Prof Harry Watson.

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