

# Australian International Motor Show



# BOSCH

13<sup>th</sup> October, 2005

## Bosch ESP – Technology reduces road trauma

**A growing body of international research continues to prove that fitting vehicles with Electronic Stability Programs (ESP®) will significantly reduce road injuries and deaths. Increasingly, Australian authorities are calling for these sophisticated systems to be fitted to vehicles sold in Australia.**

ESP is an active safety system first supplied to motor vehicle manufacturers by Robert Bosch GmbH in 1995. It incorporates the functions of anti-lock brakes (ABS), traction control and dynamic stability control.

How does ESP reduce road injuries and deaths? ESP is designed to assist the driver in just about every critical driving situation, including emergency braking, sudden manoeuvres to avoid obstacles, and reacting to the early stages of skidding to restore the steered direction of the vehicle. (See Figure 1 – Electronic Stability Program at work).

How do we know ESP reduces road injuries and deaths? Road accident data collated in Europe, USA and Japan over the past decade reveals that this technology reduces road accident trauma and community cost.

International research shows that eliminating skidding is critical to avoiding accidents. The data reveals that up to 25% of vehicle accidents involving personal injury can be attributed to skidding. Studies that have monitored vehicles fitted with ESP show a reduction in all types of accidents of up to 50%. (See Table 1 - Accident Research Data).

This has led to a dramatic growth in support for ESP by international road safety authorities and growing adoption of the technology, particularly in Europe where almost 40% of new vehicles are fitted with dynamic stability control systems.

### **Australia recognises ESP benefits**

In 2004, ESP type systems were fitted to about 4% of Australian made vehicles. Australian road safety stakeholders are now recognising the benefits of ESP and this fitment rate is expected to grow rapidly.

The launch of the Ford Territory in May 2004 marked the first locally manufactured vehicle to be fitted with ESP. Today, an increasing number of Australian vehicle manufacturers are fitting ESP to more mid range vehicles, as well as luxury models.

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The Australian National Road Safety Strategy 2001 to 2010 targets a 40% reduction in the number of road fatalities by promoting a range of road safety improvements, including the sale of safer vehicles.

Victoria's Vehicle Safety Strategy and Action Plan endorses the increased use of active crash avoidance features, such as ESP, and the increased use of passive features, including driver, passenger and curtain side airbags.

In May 2005, the Victorian State Coroner recommended that car makers introduce dynamic stability control (ESP) as standard in passenger cars, in recognition of the potential to significantly reduce fatalities on Australian roads.

At the annual Society of Automotive Engineers – Australasia Safety Seminar held in Melbourne in August 2005, road safety authorities such as Victoria Police, the Department of Transport and Regional Services and VicRoads encouraged the fitment of ESP to vehicles sold in Australia.

In Adelaide in September 2005, Bosch ESP was among the technologies demonstrated to road safety stakeholders at the Intelligent Transport Systems Australia Smart Demo – an international display of state of the art vehicle safety and telematics equipment.

## **Award winning Bosch ESP**

The multiple award winning Bosch ESP system has been recognised by global organisations; including the 2004 Society of Automotive Engineers – Australasia Bronze Award for engineering excellence, and the Allianz Insurance AG Security Prize “Genius 2005,” for the impact ESP has on reducing the number and severity of vehicle accidents.

## **Active safety systems – the future**

Bosch continuously improves ESP with further safety and convenience features, which can be integrated as required by vehicle manufacturers. ESP is designed to integrate with other existing and developing technologies to provide a comprehensive range of active vehicle dynamics packages.

Safety functions such as Electronic Brake Pre-fill and Brake Disc Wiping feature in the Bosch “ESP plus” package to shorten braking distances.

The most highly developed version is ESP Premium. Based on a conventional hydraulic braking system, it performs the additional functions of an electro mechanical braking system, without

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making costly changes to the vehicle's electrical system. By utilising a much more powerful pump, ESP® premium is able to respond very quickly, with the driver barely hearing or sensing anything at all. In critical situations the speed of pressure accumulation is increased by a factor of more than three.

The clear direction for future development lies in the linking of ESP with other active systems in the vehicle to create Vehicle Dynamics Management. A network consisting of ESP, active steering, active chassis and drive train will be created to improve driving dynamics.

Further safety gains can be achieved through networking ESP with passive safety and driver assistance systems. Bosch is developing systems in this field as part of their Combined Active and Passive Safety (CAPS) concept.

The challenges are to reduce the complexity of the networks on one hand, while on the other, increase the already high standard of reliability and availability of the technology. The solution to increasing the fitment of ESP technology lies in standardised basic software, including standard interfaces for systems to communicate with each other.

On this basis, vehicle manufacturers and their components suppliers can continue to work closely together, developing powerful and effective mechatronic solutions.

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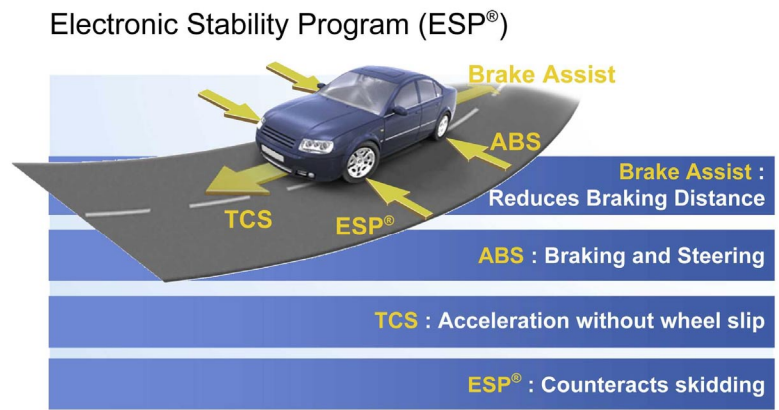
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**Figure 1 – Electronic Stability Program (ESP) at work**



**Table 1 – Accident Research Data**

A 1998 General Association of German Insurance Companies study revealed that:

- 28% of accidents are “driving” accidents – where the driver loses control without the influence of others
- 25% of accidents with severe injury are caused by skidding
- 60% of accidents with fatal injuries happen through side impacts, caused mainly by skidding

Among the international research studies highlighting the benefits of dynamic stability control systems are a number of investigations completed by road, safety and vehicle manufacturers, including:

- In Japan – Toyota study showed severe accidents reduced 50%
- In Europe –
  - Swedish National Road Administration – accidents reduced 22%
  - Daimler Chrysler – single vehicle accidents reduced 42%
  - Volkswagen – fatalities reduced 35%
  - Ford – accidents reduced 35%
- In USA –
  - National Highway Traffic Safety Administration – reduced single vehicle accidents for:
    - Passenger cars 35%
    - Sports Utility Vehicles 67%
  - Insurance Institute for Highway Safety – reduced single vehicle:
    - Passenger car accidents 41%
    - Passenger car fatal accidents 56%
  - University of Iowa – number of drivers keeping control of vehicle increased 34%

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## **Further ESP information, high resolution images and international research data**

For further information about ESP and its impact on road safety, please see additional information provided on the CD Rom, or contact Robert Bosch (Australia) Pty. Ltd.:

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## **About the Bosch Group**

*The Bosch Group is a leading global manufacturer of automotive and industrial technology, consumer goods, and building technology. In fiscal 2004, some 242 000 employees generated sales of 40 billion euros. Set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as "Workshop for Precision Mechanics and Electrical Engineering," the Bosch Group today comprises a manufacturing, sales, and after-sales service network of some 260 subsidiaries and more than 10 000 service centres in over 130 countries.*

*The special ownership structure of the Bosch Group guarantees its financial independence and entrepreneurial freedom. It makes it possible for the company to undertake significant up-front investments in the safeguarding of its future, as well as to do justice to its social responsibility in a manner reflective of the spirit and will of its founder. 92 % of the shares of Robert Bosch GmbH are held by the charitable foundation Robert Bosch Stiftung. The entrepreneurial ownership functions are carried out by Robert Bosch Industrietreuhand KG.*

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