

# Advanced Braking Systems

## The Great European Poker Run



Dr Elaine Hardy  
Trevor Baird  
Right To Ride Ltd  
Northern Ireland  
[www.righttoride.eu](http://www.righttoride.eu)

15th October 2011

Right To Ride

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Over the last eighteen months we at Right To Ride have reported on the progress of the EU Commission's proposals for the approval and market surveillance of two- or three-wheel vehicles and quadricycles.

Although the proposals were aimed at simplifying legislation, the Commission included so-called safety issues including the mandatory application of Advanced Braking Systems (ABS).

The argument that the Commission, the Rapporteur of the IMCO (Internal Market and Consumer Protection) committee Wim van de Camp and the Department for Transport in the UK have used is that ABS will reduce around 20% of fatalities over the next ten years.

Expert evidence has been put forward to support the Commission's decision which includes research such as:

- A study by Bosch based on data from GIDAS<sup>1</sup> concludes that a quarter of all accidents with injuries and fatalities could be prevented if ABS was standard (although the study was based on ABS systems for cars).
- In 2009, another study was carried out in Sweden by Rizzi M et al.<sup>2</sup>, Based on their analysis the authors of the study recommend the fitment of ABS on all new motorcycles as soon as possible and that customers only purchase motorcycles with ABS.
- In 2010 a study "Motorcycle Safety: The Case for ABS" was presented in the US by Mr Eric Teoh from a US Insurance Institute and Ms K. Stepper from Bosch<sup>3</sup>.

The European Parliament has given the task of vetting the Commission's proposal to the Internal Market and Consumer Protection Committee (IMCO) through their Rapporteur Mr Wim van de Camp, a motorcyclist and according to the IMCO Committee members, "An Expert"<sup>4</sup>.

Mr van de Camp confirmed his belief in the safety values of ABS (though not for 16 year olds as they might kill themselves<sup>5</sup>) as recently as the beginning of September 2011 and in fact referred to a recent accident that he had had on his motorcycle.

He said "If my motorcycle had ABS braking I wouldn't have found myself on the ground last week (...)" See our comments on the IMCO meeting of August 30<sup>th</sup>, 2011<sup>6</sup>

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<sup>1</sup> <http://www-nrd.nhtsa.dot.gov/pdf/esv/esv21/09-0281.pdf>

<sup>2</sup> The study, "The effectiveness of antilock brake systems on motorcycles in reducing real-life crashes and injuries" comprised an analysis of in-depth fatal crash data in Sweden during 2005-2008 to investigate the potential of ABS as well as an estimate of the effectiveness of ABS in crash reduction in Sweden between 2003 and 2008 using "induced exposure methods". Based on these "induced exposure methods" the study showed that the overall effectiveness of ABS was 38 percent on all crashes with injuries and 48 percent on all severe and fatal crashes. <http://www.be-md.ncbi.nlm.nih.gov/pubmed/19746312>

<sup>3</sup> [http://www.smsa.org/events/conferences\\_and\\_meetings/gallery/SMSA\\_CaseForABS.pdf](http://www.smsa.org/events/conferences_and_meetings/gallery/SMSA_CaseForABS.pdf)

<sup>4</sup> Wim van de Camp, MEP from the Netherlands, presented himself as an aficionado of motorcycling, an expert, a friend of bikers (he's a member of MAG Netherlands). He became a patron of the Federation of European Motorcyclists Association (FEMA). <http://www.righttoride.eu/?p=7307>

<sup>5</sup> At the IMCO meeting in July, Mr van de Camp commented "*don't over estimate the advantages of braking systems – you have a young 16 year old boy or girl, they can die on a scooter with a nice ABS system, if they don't know how to operate them (sic). You have that human behaviour is a very important factor – responsible for 75% of accidents*". <http://www.righttoride.eu/documents/BrainwashedinBrusselsv5.pdf> (page 3)

<sup>6</sup> In this meeting Mr van de Camp distanced himself as being referred to as a Biker and explained that he was first and foremost an MEP. <http://www.righttoride.eu/?p=7525>

## Everybody's an Expert

Until now, we have stayed away from the "safety" debate regarding ABS, because there is a general agreement that overall, they do help in certain conditions to stop the motorcycle and help to stop loss of control.

However, there seems to be a belief amongst our friends in Brussels (Commission and MEPs) that ABS is THE panacea and will reduce fatalities by at least 20% over the next ten years.

In our opinion, such a statement is reckless because it may lead motorcyclists and safety organizations to believe that ABS will reduce casualties in all braking scenarios, rather than do what it is intended, which is to stop the motorcycle safely in specific scenarios.

To balance the debate, we have asked the views of two highly respected motorcycle trainers or "Experts" and this is what they said:

### David Hough: U.S. Motorcycle Trainer, writer and journalist<sup>7</sup>

"Antilock Brake Systems are not a bad idea, but they are far from the panacea that bureaucrats and motorcycle manufacturers would wish them to be.

ABS works best in a straight line situation, say when riding straight toward a car turning across the path of the bike, on level pavement. "Works best" means the rider applies the brakes, and the ABS system prevents wheel lockup.

When the brakes are applied in a curve, ABS has trouble, because the typical ABS computer doesn't know whether the bike is leaned, or how far and therefore can't modulate the brakes based on how much traction is being consumed for side loads.

In other words, the wheels can be turning even while sliding sideways, and the ABS might not activate. BMW is now including a gyro to control headlight tilt in corners, and it might be possible to incorporate the gyro angles into the ABS system, but that gets complicated really fast.

There are a couple of other issues with ABS. If the rider snaps the throttle closed, engine compression brakes the rear wheel (unless the machine has a back-torque-limiting clutch).

The result can be the rear end sliding out, not from the rider overbraking, but from engine compression braking--of which the rider may be unaware.

And ABS can't control that--at least not yet. If the rider panics in a curve and slams the throttle closed--or rolls on too much throttle, ABS can't do anything to prevent a slide-out.

Today's "race replica" sport bikes are typically very light in the rear, and have very powerful front brakes.

That means that in an aggressive stop it's very easy to do a "stoppie"--lifting the rear wheel off the pavement. ABS won't work to prevent a stoppie, because the front tire isn't slipping, it's grabbing the pavement, and the brakes are rotating the machine forward around the front wheel.

In other words, ABS isn't equipped to prevent a forward flip caused by applying too much front brake. (as happened to me last year) Let's also note that ABS on the rear wheel is useless when there is little or no traction on the rear.



<sup>7</sup> [http://en.wikipedia.org/wiki/David\\_L.\\_Hough](http://en.wikipedia.org/wiki/David_L._Hough)

So, ABS is better for autos and trucks with more weight on the rear axle, and for heavy motorcycles with long wheelbase and shaft drive (to place more weight on the rear wheel) ABS is probably not very useful for sport bikes or other lightweight PTWs.

We should also note that there are low traction situations where a rider might not want to apply any front brake at all--say when riding off a paved road onto a gravel shoulder, or when negotiating a frosty surface in the shade.

So I suggest that motorcycle brakes should not be linked rear-front, even if equipped with ABS, and that the rider always has the option of switching off the ABS while in motion.

I don't mind ABS, and in some situations ABS might prevent a slideout. But ABS does not stand for "automatic brake system." Rather than attempt to make up for rider lack of braking skill by incorporating "safety" devices into the machine, I suggest training riders to manage the situation, including skilled throttle-to-brake transitions, and independent front-rear braking".

### **David McGuckin: Northern Ireland Motorcycle Training Instructor, IAM and RoSPA qualified<sup>8</sup>**

"I have it (ABS) and it has only been set off a couple of times where I had to stop quicker than I would have liked. In both cases the actual slide was no more than a few inches and probably is not what you are looking for.

One was traffic lights when a car in front did an emergency stop on an amber light and there was gravel in my part of the road.

The other was me just having a little too much back brake. I reckon I could have dealt with both situations without ABS.



In the case of the "panic" situation, many of the slide offs that happen are indeed caused by people over reacting and using too much front brake. I witnessed one where a couple of my club mates had to brake and avoid a car sliding into our side of the road.

One braked over hard and the one behind, perhaps not ready for it, hit the front brake too hard (in my opinion) and slid into the back tyre of the bike in front. ABS may have helped as the bike could have still had some steering. I reckon the bike would have gone down anyway but he may have been able to avoid hitting the other bike.

Without ABS, a front wheel skid is near impossible to deal with. It happens so fast that often the bike is on the way down before the rider can react, especially as the rider is the kind of person who may have hit the front brake too hard in the first place so some skill is lacking.

Does ABS help this? Certainly, if you have the skills to go along with it, the wheel doesn't slide out as quick and there is some small amount of time to try to steer to avoid whatever is causing the braking.

It's important to look at two different types of skid. One that happens going round a bend and the wheel slides out (under braking or not) and one where the bike is more upright and braking to avoid running into something.

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<sup>8</sup> Has contributed to DOE and DVA consultations and stakeholder groups– Member of the Approved Motorcycle Instructor's Association (NI) - Worked with the DOE Road Safety department for many years training teachers to teach pupils practical moped riding skills for the GCSE in Motor vehicles and road user studies – Member of the now defunct Ballymena road safety committee and represented it at the NI road safety congress - Various training qualifications including Btec National Diploma in advanced motorcycle instruction. Member of the BMF (British Motorcyclists Federation) and a life member of the Motorcycle Action Group (MAG UK) – Completed courses including Ron Haslam Race school Premier course - California superbike school cornering course - St. John's Ambulance course Emergency First Aid for Motorcyclists.

ABS doesn't do a lot for the first, although as I said above, with some skill you have more time to try and right the situation, but really not much. In the more upright situation it can help a great deal.

People in panic situations can often over brake and lock up very early and lose almost all grip. ABS means you still have some braking. You also have the ability to steer. Not as effectively as a car with ABS but it does help. Though, again, most people in panic situations wouldn't cope with this.

I have seen two BMW test riders do some impressive stuff with ABS on wet roads. Real scary braking conditions and them looking for all the world like they were skidding and going to fall but with ABS still managing to correct the bike.

I've seen it and I therefore know it can really help. But I don't think I could have done it. Not without training. But then if everybody did that level of training, including car drivers, we wouldn't need ABS!

My firm opinion is that mandatory ABS is going to do very little for accident reduction unless very expensive training is also mandatory.

It's strange that we can force everybody to pay more for expensive technology but not to be able to train people to use what we already have properly!"

## **Advanced Braking Systems – A Virtue or a Vice?**

The virtue of Advanced Braking Systems is that they offer the motorcyclist another means to enable him or her to stop the motorcycle in certain conditions, which our two "Experts" have identified principally as being able to stop in a straight line.

But more to the point, both "Experts" have identified first and foremost the need for training. After all, ABS is a tool and with all tools, people need to understand how to use them.

The Directorate of Industry and Enterprise within the European Commission, the EU Parliament's Internal Market and Consumer Protection Committee (IMCO) both exist – as we understand it – to improve competition.

Within the European Parliament other Committees have commented on the proposals, including the Committee for Transport and Tourism which appears to agree with the IMCO, although mentions the importance of training<sup>9</sup> and the European Economic and Social Committee.

This latter Committee highlights the economic conditions of the motorcycling industry and in reference to ABS, comments: "On the safety side, the EESC welcomes the legislative approach to advanced

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<sup>9</sup> The Committee on Transport and Tourism published its Opinion in relation to the Commission's proposals in May 2011 and with regards to ABS, made the following comments: 2.1.1 Anti-lock breaking systems: The Commission proposes the mandatory fitting of anti-lock breaking systems for certain categories of motorcycles. The positive safety impacts of anti-lock braking systems (ABS) for PTWs are well documented in several studies. It is estimated that between 20 and 35% of all accidents could be prevented and that the severity of impacts of many other accidents could be significantly reduced through the use of an ABS.

The Rapporteur fully supports this approach. But the mandatory fitting should be extended to the sub-category L3e-A1 (low performance motorcycles). For this category, the Commission proposal leaves it up to the manufacturers to equip them with either an anti-lock or a less performing combined brake system. Anti-lock breaking systems for low performance motorcycles seem even more necessary as many young drivers start with motorcycles of this category.

**The Transport Committee also included in Recital 9 (a) in their amendments the following "The efficiency of the chosen safety measures, which should be complemented by better training and education for riders of L-category vehicles and adapted road infrastructure, is well tested and proven by research and studies".**

braking systems on motorcycles, but it reiterates the need to properly evaluate the cost-effectiveness of the different systems, depending on the different products and their usage patterns.

The EESC supports a technology-neutral approach in the area of advanced braking systems, in order to provide manufacturers with the necessary flexibility and stimulate innovation, in the interest of the consumer<sup>10</sup>.

This mirrors the recommendations from the CARS21 High Group report, which the Commission had signed up to and suggests that both the Commission and the Rapporteur for the IMCO Committee have gone beyond their remit in proposing regulations in relation to technological issues including Advanced Braking Systems, specifically:

“Principles concerning the quality of legislation”:

- *“All automotive legislation should be performance-oriented, technology-neutral, and over-prescriptive regulations should be avoided.*
- *The principle that regulations should only fix objectives in terms of measurable performances, not solutions, should be strictly respected. If there are exceptions, the criteria to accept them should be given”.*

Motorcycle training is not part of this proposal. However, this important aspect (training) appears to have been sidelined as the most appropriate and effective means of reducing casualties on our roads.

In our opinion, statements that ABS will reduce casualties by 20% over the next 10 years is reckless because it may lead motorcyclists and safety organizations to believe that ABS will reduce casualties in ALL braking situations, rather than stop the motorcycle safely in specific scenarios. Along with David Hough and David McGuckin, our opinion is that ABS is not THE panacea to reduce motorcycle casualties that our friends in Brussels would have us believe.

In reference to the title of this article: “The Great European Poker Run”. A Poker Run is an event frequently held by motorcycle clubs to raise money for charities, whereby motorcyclists go to different points to collect their cards – typically five different cards (equal to a poker hand) and at the end, come back to see who has the best hand.

Prizes are awarded.

It is a gamble.

We suggest that this proposal by the Commission and IMCO Committee to mandate ABS brakes to reduce casualties is also a gamble, only they are playing with lives, not cards.

Elaine Hardy, PhD  
Trevor Baird

Right To Ride Ltd

15<sup>th</sup> October, 2011

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<sup>10</sup> General Comments Item 4.5 from “OPINION of the European Economic and Social Committee on the Proposal for a European Parliament and Council Regulation - Regulation (EU) No .../2010 of the European Parliament and of the Council on the approval and market surveillance of two- or three-wheel vehicles and quadricycles”. <http://www.righttoride.eu/documents/EESCreportonframeworkregs.pdf>