



Swann Insurance Motorcycle of the Future

For more than 40 years Swann Insurance has been one of Australia's leading providers of motorcycle-related insurance products. Swann distributes its motorcycle insurance product range Australia-wide through more than 300 motorcycle dealers under its own brand and the brands of its long-standing leading motorcycle industry alliance partners Yamaha, Honda and Suzuki.

Swann sold over 75,000 insurance policies in the motorcycle channel in 2006/2007, a 23% increase on the prior year. Motorcycles continue to rapidly grow as a proportion of road users on the back of comparatively low running costs and in response to increasing traffic congestion, growth in inner city living and environmental concerns.

Swann is committed to being a leading advocate for motorcycle safety by leveraging its significant knowledge, claims data, industry relationships and research capabilities. Through exposure to motorcycle insurance claims, covering motorcycle property and motorcycle rider personal accident/death cover, Swann is all too well aware of the human toll and financial cost of motorcycle accidents in the Australian community.

Swann Insurance has undertaken an assessment of what motorcycle designers and engineers can do to improve rider safety and to keep insurance affordable in the future. Numerous opportunities have been identified to reduce the likelihood of accidents through thoughtful design and engineering enhancements.

1. Opportunities to Improve Motorcycle Rider Safety through Dynamic Control Technology

Dynamic control technology can considerably enhance stability and increase safety in unexpected circumstances of sudden danger. Data management features will also become more common on motorcycles as new designs adopt multiplexed electrical wiring harnesses.



The Swann Insurance concept design shows how a motorcycle of the future might utilise electronic features to improve motorcycle rider safety through enhanced control and functionality:

1.1 low tyre pressure indicators compare the front and rear tyre rotation speeds and detect any change which could be attributed to loss of air. (illustrated)

1.2 rider-controlled speed limiter function enables the rider to temporarily preset a speed which cannot be exceeded inadvertently. This is a licence-saver when riding in areas with low speed limits. When the preset speed is reached, engine rpms are automatically regulated so that the motorcycle's speed will not increase any further. The limiter can be overridden in any emergency by twisting the throttle grip to its maximum opening, whereupon normal engine control is resumed. (illustrated)

1.3 blind spot warning sensors indicate to the rider whether there is likely to be unsighted nearby traffic, by using side-looking proximity sensors linked to warning lights adjacent to each of the rider's rear view mirrors. (illustrated)

1.4 traction control ensures that power can be applied without tyre slip, particularly on wet or greasy surfaces. (illustrated)

1.5 anti-lock braking compares wheel rotation speeds and regulates braking pressure. This ensures steering stability by preventing front wheel lock-up under panic braking. (illustrated)

1.6 emergency brake assistance is able to sense the rate at which the brakes are applied and then increase the brake line pressure if emergency stopping is required. (not illustrated)

1.7 electronic brake force distribution reduces stopping distances by directing brake line pressure to the tyre which has the most traction. (not illustrated)

1.8 automatic brake drying picks up input from a rainfall sensor and occasionally applies gentle pressure to the brake pads to keep the discs dry and ready for an emergency. (not illustrated)



1.9 self-cancelling turn signal indicators measure distance travelled and time elapsed.
(not illustrated)

2. Opportunities to Reduce the Cost of Motorcycle Insurance through Ablative Design & Dynamic Control Technology

Many insurance claims for motorcycles involve low-speed tip-overs, where costly parts are damaged. Motorcycles with exposed polished frames, unprotected mufflers, vulnerable cooling systems and one-piece upper fairing designs are easy to damage, expensive to repair and therefore costly to insure.

Incredibly, most motorcycles are designed with little consideration given to the frequency of accidents, the cost of repairs and the chance of theft. Smarter design and the adoption of readily available technology could make motorcycles cheaper to insure by making them safer to ride, cheaper to repair and easier to secure.

In conjunction with Tim Cameron, one of Australia's leading independent motorcycle design consultants, Swann Insurance has developed the Motorcycle of the Future concept which shows how a motorcycle might be designed and engineered.

The Ablative Design concept was developed by Tim Cameron. Ablative Design is all about protecting expensive or essential components on a motorcycle with ones that can be sacrificed in a low-speed tip-over without too much cost and inconvenience. Ablative Design identifies the parts which are most likely to touch down in a low-speed fall and configures them so that they protect critical or high-value parts.

Ablative Design can involve reinforcing key parts of the motorcycle so that impact energy is absorbed rather than transferred straight to the frame, forks and engine. For instance: a liquid-cooled bike should not have its radiator as a first point of contact with the ground in an accidental fall.



Not only is the radiator expensive to replace, but the motorcycle cannot be ridden home if it is leaking coolant. Swann's Motorcycle of the Future incorporates Ablative Design concepts in subtle ways. The key features are:

2.1 frame rail cover. (illustrated)

2.2 two-piece detachable engine cover. (illustrated)

2.3 muffler heat shield doubles as a sacrificial cover. (illustrated)

2.4 lower fork cover & axle cap. (illustrated)

2.5 handlebar end cap. (illustrated)

2.6 two-piece mudguard with sacrificial leading edge. (illustrated)

2.7 radiator protective cover and segmented fairing elements with cut lines in strategic positions to minimise replacement requirements. (illustrated)

Motorcycle tip-over crash tests conducted at the Swann Insurance Research Centre in Sydney have revealed that design features which prevent damage to expensive or essential components can reduce the total cost of repairs by as much as 40% compared to an unprotected motorcycle.

Good design can also ensure that a motorcycle is still rideable after a low-speed tip-over, which is not the case with many motorcycles at the moment.

The Swann Insurance concept design also shows how a motorcycle of the future might utilise dynamic control technology to reduce the incidence rate of motorcycle insurance claim events.

2.8 sidestand angle warning device can prevent accidental tip-overs by indicating to the rider whether the motorcycle is positioned at a stable angle. (illustrated)

2.9 proximity sensor alarm can prevent parking accidents by warning drivers of other vehicles that a motorcycle is close by. (illustrated)



2.10 automatic hill start assistance applies brake pressure when required to prevent the motorcycle from rolling backwards down a slope prior to starting off. (not illustrated)

2.11 keyless start & stop improves security and amenity using a proximity sensor that senses a pass card in the rider's wallet or pocket. (not illustrated)

2.12 ignition immobiliser prevents ride-away thefts by disabling the ignition and fuel systems. (not illustrated)

2.13 self-voiding labels and microdots carrying the vehicle identification number identify the component parts of the motorcycle, helping to prevent theft and rebirthing. (not illustrated)

Tim Cameron is one of Australia's leading independent motorcycle design consultants.

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