



**PRESS RELEASE:**

**ACTIVRAK™ – THE STEERING RACK FOR AN ACTIVE STEERING FEEL  
Bishop Steering Technology awarded “Innovation of the Year 2008”**

MAGDEBURG, (Germany), 8 January 2009 – The Australian steering specialist Bishop Steering Technology has developed a steering rack with an extreme form of variable ratio (VR): the ActivRak™ VR steering rack. Through the use of ActivRak™ one can achieve a steering characteristic that is comparable to that of active steering using an angle overlay system, but at a much lower cost. ActivRak™ offers the same advantages as a conventional VR steering rack but enables a faster response to steering manoeuvres, thereby achieving measurable advantages in vehicle dynamics. One of the UK's leading technical trade magazines “Vehicle Dynamics International” has awarded Bishop with its inaugural “Innovation of the Year” in 2008 for this development. Bishop had already gained the “BorgWarner Louis Schwitzer Award 2008” in May 2008 for the application of ActivRak™ as “most exceptional racing technology advancement” (introduced into the IndyCar® Series). Daimler is the first OEM to use ActivRak™ in mass production, applying it in its new “Direct Steering” option.

David James, Global Product Manager for steering racks within the Bishop Group, commented: “In order to offer a steering ratio with speed dependant functionality, active steering systems use an angle overlay concept. This presents an elegant but somewhat complicated and expensive solution. ActivRak™ can achieve the functionality of a steering system using angle overlay but without requiring any additional components. The cost is therefore considerably less and there are no additional mechanisms that encroach on the driver's feel for the road. ActivRak™ is also well suited to electric steering applications, whereby it is possible to offer a higher level of functionality than that offered by a system utilising the angle overlay principle.”

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ActivRak™ from Bishop is a special type of VR steering rack where the rack gain is chosen in such a way that a desired yaw gain rate can be achieved. By utilising this yaw gain target it is possible to achieve a similar steering characteristic as a steering system with angle overlay. To achieve this Bishop uses a steering ratio that is at least 25% more direct. This increase in rack gain is achieved within a small amount of pinion rotation for the on-centre position – often within 90 degrees or less.

In order to achieve an effective speed dependant steering ratio, ActivRak™ uses an angle dependant kinematic relationship between rack and pinion, thereby eliminating the need for an additional complex and expensive servo drive system.

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### **Background**

#### **Bishop Steering Technology**

Bishop Steering Technology is a subsidiary of the Bishop Technology Group based in Sydney (Australia) and a world leader in the development of automotive steering systems and their production techniques. They support the market through offices in Germany, Australia and the USA.

Arthur Bishop, the founder of Bishop Steering Technology, invented the variable ratio steering system. Over 23 per cent of all vehicles produced globally each year contain components based on Bishop technology. The company holds over 350 Patents and Patent Applications worldwide.

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