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### **Antonov showcases its performance enhancing transmission technologies at Engine Expo**

Antonov Automotive Technologies, the UK-based transmission research and development company, is showcasing its design and technical capabilities this week at the Engine Expo exhibition being held at Stuttgart in Germany. The 3-day exhibition is one of the world's leading annual events for the vehicle powertrain and driveline engineering community.

Antonov's wide ranging transmission technologies include the world's first 2-speed supercharger drive system to enter series production. This technology, which has recently made the transition from technical concept to initial low volume manufacture, is currently being demonstrated to prospective customers in the tuner and OEM market in a Chevrolet Lacetti, Ford Mustang and Hummer H3.

Figures released at the show provide further evidence of the dramatic enhancement in the performance of vehicles equipped with an Antonov 2-speed supercharger. Since announcing its latest Hummer H3 demonstrator at the SEMA show last year, Antonov has obtained measurements for the vehicle's 0-100kph time, which has been virtually halved from 13.6 to 7.3 seconds compared with the base vehicle. On/off road performance, which is a particularly important characteristic for this class of vehicle, shows an equally impressive reduction in the time required for a hill climb, which has been reduced from 15 to 10 seconds. The difference in the Hummer's terminal speed at the hill summit has increased from 52 to 82 kph when comparing the base vehicle with the 2-speed supercharger.

"There is a dramatic improvement in the driveability of the Hummer when equipped with a 2-speed supercharger with little effect on fuel economy," said Antonov chief executive John Moore. "This results from the significantly improved low speed engine torque, which we have similarly demonstrated in our Chevrolet Lacetti and Ford Mustang demonstrators."

The commercial potential of an Antonov step-up drive applied to a centrifugal pump supercharger lies in its ability to increase the power and torque of an engine at low engine revs. The application of a 2-speed drive - which is based on the Antonov Mechanical Module (AMM) - enables a supercharger to be better matched to the engine. By driving the pump faster at low engine speeds, a higher boost ratio can be obtained to provide additional low speed engine torque. As engine speed rises the unit automatically changes up to enable the supercharger to continue to operate effectively at higher engine speeds. The ability of the mechanism to operate as a passive mechanical device without the need for electronic control systems or hydraulic actuators means low cost, high efficiency and simplicity of application.

Antonov anticipates demand for its supercharger drive system will come from carmakers needing to downsize engines in pursuit of better fuel efficiency and

reduced CO<sub>2</sub> emissions. Smaller displacement engines have less torque at low engine speeds, which adversely affects the driveability of the vehicle and its engine performance characteristics. Hence the need to compensate with forced induction systems. The benefit of the Antonov 2-speed supercharger is that the torque curve of a small displacement engine can be tuned so that it matches the performance of a much larger naturally aspirated unit. This is equally applicable to diesel and gasoline engines.

At the show Moore was also able to report on the company's progress with its TX6 6-speed transmission system, which is currently being prepared for high volume manufacture by the Chinese carmaker Geely.

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