



## Tenneco Advanced Clean Air Technologies Provide Fuel-Efficient, Cost-Effective Solutions For Global Automakers

September 11, 2013

### *Company's advanced solutions helping to meet next wave of emissions legislation*

Frankfurt, Germany, September 11, 2013 – Tenneco (NYSE:TEN) today unveiled its latest developments in clean air emissions technologies at the 2013 Frankfurt IAA Motor Show (Hall 5.1, Stand A16). The company is leveraging its expertise in systems integration, thermal management, materials science and predictive tooling to launch a new set of advanced solutions that help global vehicle manufacturers meet future emissions legislation worldwide.

"Tenneco's suite of clean air technologies are specifically designed to enable reduction of NO<sub>x</sub>, particulate matter mass and number, as well as hydrocarbons and CO<sub>2</sub> - all mandates for the next wave of U.S. Tier 3 and EU6 and 7 emissions legislation," said Tim Jackson, executive vice president, technology, strategy and business development, Tenneco. "Combined with our experience in systems integration, engineering and design and expanded global footprint, we're providing customers with solutions that can be implemented anywhere in the world today - without compromising vehicle performance or durability."

**Hydrocarbon Manifold Dosing.** Tenneco is taking its expertise in clean air technology and systems integration to the next level with its hydrocarbon manifold dosing solution, which injects diesel fuel directly into the engine manifold, providing more efficient regeneration of the diesel particulate filter. Today's diesel engines typically conduct late fuel injection, which decreases the overall engine efficiency and creates oil dilution. With Tenneco's hydrocarbon dosing solution, the HC dosing vaporizer and injector are integrated into the engine manifold. The hot environment there helps to evaporate the fuel quickly, which in turn aids in optimizing distribution of hydrocarbon oxidation and mixing performance. Tenneco's manifold dosing solution is also compact, making it easy to integrate and cost-effective. The system is currently being tested with several global OEMs.

**Compact Mixing Zone.** When used with SDPF technology that integrates SCR and DPF functionality in one module, Tenneco's unique compact mixing zone solution helps to ensure efficient conversion of injected urea droplets into the desired ammonia without the formation of deposits, especially in low temperature applications. Further, the compact mixing zone in combination with the SDPF may reduce the overall size of the aftertreatment system, enabling reduced packaging.

**Gasoline Particulate Filter.** Gasoline Particulate Filter (GPF) technology is being developed to help customers meet EU6c emissions regulations for 2017 model year vehicles. Beginning in 2017, EU6c mandates that vehicles must have an emissions particulate number of no more than  $6 \times 10^{11}$  particles/km. While vehicles equipped with GDI engines enable improved fuel economy and emit less CO<sub>2</sub>, they often have higher particulate numbers, due to shorter fuel/air mixing times in the cylinder compared to PFI engines. Tenneco has several concepts on test for its GPF solution, including coated and uncoated filters, which can help improve filtration efficiency and decrease the amount of PN significantly.

**Electrical Valves for Low Pressure EGR.** These fully variable backpressure control valves are designed specifically for low-pressure exhaust gas recirculation (EGR) systems for diesel engines. Controlled by an electric actuator, Tenneco's Electrical Valve expertly and continuously fine-tunes the position of the exhaust flap to help achieve optimal backpressure. When combined with the OEM's low pressure EGR system, the electrical valve can help the EGR system achieve NO<sub>x</sub> emissions reductions of up to 50 percent, with little impact on exhaust system weight or performance.

**Electrical Valves for Cylinder Deactivation and Acoustic Tuning.** Electric valves provide a compact, lightweight and cost-effective solution for precise sound design and noise control in tailpipe applications, as well as adaptive exhaust control in vehicles featuring cylinder deactivation. Tenneco's acoustic valve offers a unique fail-safe functionality feature, where in the event of a power failure, the valve opens automatically via a return spring, mitigating any engine damage. This is the only electric acoustic valve in the market to feature such functionality.

Most recently, Tenneco's electrical valve was launched in an acoustic tuning application on the all-new 2014 Chevrolet Corvette Stingray and will be featured on three additional vehicle platforms by 2014.

**Visit Tenneco in Hall 5.1, Stand A16.**

**About Tenneco**

*Tenneco is a \$7.4 billion global manufacturing company with headquarters in Lake Forest, Illinois and approximately 25,000 employees worldwide. Tenneco is one of the world's largest designers, manufacturers and marketers of clean air and ride performance products and systems for automotive and commercial vehicle original equipment markets and the aftermarket. Tenneco's principal brand names are Monroe®, Walker®, XNOx™ and Clevite®Elastomer.*

*This press release contains forward-looking statements. Words such as "anticipate," "expects," "will", "continue" and similar expressions identify forward-looking statements. These forward-looking statements are based on the current expectations of the company (including its subsidiaries). Because these forward-looking statements involve risks and uncertainties, the company's plans, actions and actual results could differ materially. Among the factors that could cause these plans, actions and results to differ materially from current expectations are: (i) changes in automotive or commercial vehicle manufacturers' production rates and their actual and forecasted requirements for the company's products, including the company's resultant inability to realize the sales represented by its awarded book of business; (ii) any change in customer demand due to delays in the adoption or enforcement of worldwide emissions regulations or any other changes in consumer demand and prices, including decreases in demand for automobiles or commercial vehicles which include the company's products, and the potential negative impact on the company's revenues and margins from such products; (iii) the general political, economic and competitive conditions in markets where the company and its subsidiaries operate; (iv) workforce factors such as strikes or labor interruptions; (v) material substitutions and increases in the costs of raw materials; and (vi) the company's ability to develop and profitably commercialize new products and technologies, and the acceptance of such new products and technologies by the company's customers. The company undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date of this press release. Additional information regarding risk factors and uncertainties is detailed from time to time in the company's SEC filings, including but not limited to its report on Form 10-K for the year ended December 31, 2012.*

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