TENNECO

Brian Kesseler

Chief Executive Officer

Tenneco at a Glance

TENNECO

TWO PRODUCT LINES

71% Clean Air

29% Ride Performance

2016 REVENUE

$8.6 Billion

75% Light Vehicle

11% Commercial Truck & Off-Highway

14% Aftermarket

STRONG GLOBAL PRESENCE

BALANCED CUSTOMER MIX:

We supply more than 435 OE platforms globally with no customer exceeding more than 17% of revenue

BMW, CATERPILLAR, GM, FAW, TOYOTA, JAGUAR, LAND ROVER, NAPA, FCA FIAT CHRYSLER AUTOMOBILES, Auto Value BUMPER TO BUMPER Auto Parts and Service, JOHN DEERE, Ford, VOLVO, NISSAN, VOLKSWAGEN AKTIENGESELLSCHAFT, BAIC, SAIC 上汽集团 SAIC MOTOR, O'Reilly AUTO PARTS, PSA PEUGEOT CITROËN, DAIMLER, Advance Auto Parts, CHANGAN

Global Manufacturing and Engineering Footprint

TENNECO

- **91 manufacturing facilities**
- **15 engineering & technical centers**
- **31,000 team members – powered by people**

Serving our customers with a global network of strong capabilities

Regulations and Market Trends Driving Growth Opportunities

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Driver	System Solution	Technologies and Products	
Reduce Criteria Pollutants	**Advanced Aftertreatment**	High-efficiency SCR Advanced Mixing, Thermal management	
Improve Fuel Economy	**Waste Heat Recovery**	Rankine Cycle Power Pack, Thermo-electric Generator, Lightweight Aftertreatment	
China and India growth	**Market-specific solutions**	Innovative approaches, Adaptable system designs	

Commercial Truck and Off-Highway Diesel Aftertreatment Customers

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North America

Truck
- Chrysler (LV 3/4 ton +)
- GM (LV 3/4 ton +)
- Ford (LV 3/4 ton +, CTrk Med-duty)
- Customer A (CTrk)

Off-Highway
- Caterpillar / Perkins
- Deere

Brazil

Commercial Truck
- Daimler Trucks
- IVECO
- MAN
- MWM
- Scania

Europe

Commercial Truck
- Daimler Trucks
- Scania
- Customer B

Off-Highway
- AGCO
- Caterpillar / Perkins
- Deere
- Deutz
- MAN
- Scania

China

Commercial Truck
- China National Heavy-Duty Truck Co.
- Dalian Diesel Engine Co.
- FAW
- JND
- Shanghai Diesel Engine Co.
- Weichai
- YuChai

India

Commercial Truck
- Daimler Trucks
- Mahindra
- MAN Trucks India (MTI)
- Tata Motors
- VE Commercial Vehicles
- Volvo Trucks

Japan

Off-Highway
- Caterpillar / Perkins – Exported from N. America
- Kubota

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Dr. Ben Patel

Chief Technology Officer

Beyond Euro VI Concept

Complete Solution from Manifold to Tailpipe

Beyond Euro VI Concept complete with all required aftertreatment components:

- DOC, DPF, SCR and proprietary mixing technologies
- Optimized packaging and weight savings
- Rankine evaporator incorporated into ATS
- Highly integrated system enables direct waste heat recovery optimized for weight at lowest cost

Thermal Management Solutions

Efficiency improvements and new Low-NOx standards will drive need for ultra-high efficiency SCR

Cold Start Thermal Unit

- Active heat management
- Rapid catalyst light-off in cold conditions
- Enables NOx emissions compliance through full range of operating conditions

Fabricated air-gapped exhaust manifold

- Faster light-off due to air gap insulation
- Lower surface temperature requires no heat shields
- Standard modules shorten development time and reduces cost of tooling and testing

Rankine Power Unit Concept

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Technology for improving fuel economy through waste heat recovery

- Lower overall system weight and cost compared to typical distributed system
- Tenneco's innovation: reduced complexity and improved packaging optimization

XNOx™ NOx Abatement Technology

XNOx™ SCR System

Turnkey dosing system injects precise amounts of urea into the exhaust stream of diesel engines, which decomposes to ammonia to reduce NOx emissions.

XNOx™ SCR Components

1. DEF injector
2. Integrated mixer
3. Adaptable ACU controller
4. Fluid Delivery System (FDS)
   - Pump, filter, pressure sensor, wiring harness, enclosure

Latest Generation Urea Dosing System Concept

Innovative new concept includes integrated pump, motor, injector, controller, sensors, wire harness, water cooling and control software in a single device

- Designed for HD, MD, LD and off-road applications
- Meets CN VI/6, US Tier 4 final requirements
- Compact size, easy integration
- High dosing accuracy and spray uniformity
- CAN communication with DCU or ECU

Compact, cost-effective solution ideal for Asia Pacific markets

Leading Ride Performance Technologies and Aftermarket Brands

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MONROE®
INTELLIGENT SUSPENSION

WALKER®
COMMERCIAL VEHICLE

CLEVITE®
ELASTOMERS

MONROE®

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Questions

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Welcome Reception in
Media Center Begins Now