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CleanDrive Technologies.

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Daimler Trucks North America HTUF Product Update



Atlanta, October 27, 2009

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Freightliner Trucks Ranks Highest for Vocational Products in the J.D. Power and Associates 2009 Heavy Duty Truck Customer Satisfaction Study







Key Specs (342-1RX)

- M2-106 straight truck, GVW up to 33K (40K upon approval)
- Cummins ISB - 200 to 325hp / 520 to 660 ft-lb
- Eaton Parallel Electric Hybrid Drive - 60hp/310 lb-ft peak
- Air or Hydraulic Brakes
- Day Cab, Extended Cab, and Crew Cab Configurations
- Manual PTO only



Key Specs (342-1U3)

- Same as above but compatible with APG
- 5kW/110V or 7kW/208V APG
- Charges through regenerative braking
- Limited stationary (parked) capability

Performance

- **Fuel Economy Improved 20% - 40%**
- CO2 Output Reduced 10 to 14 Tons/Year



Applications

- Beverage
- Delivery Trucks
- Stake Trucks
- Refuse (not residential)
- Non Front-Line Emergency
- Library Truck
- Service Trucks
- Dump
- Landscape
- Tanker



Key Specs (342-1R4)

- M2-106 straight truck, GVW up to 40K
- Cummins ISB – 200 to 325hp / 520 to 660 ft-lb
- Eaton Parallel Electric Hybrid Drive – 60hp/310 lb-ft peak
- Air or Hydraulic Brakes
- Day Cab, Extended Cab, and Crew Cab configurations
- **Electronic PTO (ePTO) – stationary only, 13hp (26hp peak)**



Key Specs (342-1U2)

- Same as Above but compatible with APG
- 5kW/110V or 7kW/208V
- Charges through regenerative braking or diesel engine (parked)
- Extended stationary (parked) capability



Performance (dependent on stationary PTO usage)

- **Fuel Economy Improved 40% - 60%**
- Idle Time Reduced 4 to 5 Hours per Day (application dependent)
- CO2 Output Reduced 13 to 17 Tons/Year



Applications

- | | |
|-----------------|----------------|
| • Bucket Trucks | Service Trucks |
| • Tree Trimmers | Roll-off |
| • Landscape | Signal Truck |
| • Tankers | |

DAIMLER M2e Hybrid Tractor and Shuttle/Bus



Key Specs (342-1T3, EH-8E306-T)

- M2-106 tractor (4x2)
- **GCW – 55K (diminishing loads such as beverage)**
- Cummins ISB – 280hp to 325 hp / 660 ft-lb to 750 ft-lb
- Eaton Parallel Electric Hybrid Drive – 60hp/310 lb-ft peak
- 6 speed Ultrashift transmission
- Air Brakes

Performance

- **Fuel Economy Improved 15% - 30%**
- CO2 Output Reduced 12 to 19 Tons/Year



Key Specs (342-1T5, EH-8E306-p)

- M2-106 shuttle, GVW up to 33K (special approval to 40K)
- Cummins ISB – 200 to 325hp / 520 to 660 ft-lb
- Eaton Parallel Electric Hybrid Drive – 60hp/310 lb-ft peak
- 6 speed Ultrashift transmission
- Air or hydraulic brakes

Performance

- **Fuel Economy Improved 20% - 40%**
- Brake Life Increased 2 to 3x
- CO2 Output Reduced 10 to 14 Tons/Year



Fleets running Freightliner M2 hybrids are having success.

- Beverage Delivery Applications (heavy stop and go)
 - 40% fuel economy improvement vs competitor's diesel
 - 20% fuel economy improvement vs EPA07 Cummins ISB
 - 41% fewer brake applications
 - 40% increase in miles between DPF regenerations
 - 45% idle time (parked) – fleet now tracking for improvement
- Delivery Application (heavy stop and go)
 - 35% fuel economy improvement vs similar truck, general freight
 - 20% fuel economy improvement vs similar truck, library book delivery
- Refrigerated Delivery Application
 - 36% fuel economy improvement vs EPA07 diesel
- Propane Delivery Application
 - 9.6 overall mpg, including fuel used for PTO time



Fleets running Freightliner M2 hybrids are having success.

- Utility Application
 - Fuel savings based on bucket time and load
 - Can deplete battery in about 5 minutes under full load (not typical)
 - Recharge takes between 4 and 6 minutes
 - Can reduce engine on-time 4+ hours per day (operation dependent)
 - DPF regeneration has not been an issue
 - Over 900 miles between DPF regens
 - DPF inlet temperature slightly higher in PTO mode than standard diesel
 - Opportunity to improve fleet operations – air conditioning
 - 94% of fan on time was with vehicle parked
 - 98% of fan on time was due to AC demand, not engine cooling

Opportunity to improve hybrids

- Higher energy bias for driving mode with utility applications
- More aggressive energy recovery
- Energy storage – more of it
- Pump and roll or pump and tow
- Be careful about diesel engine hp/torque reductions

Solutions to Reduce Idling and Further Improve Fuel Economy

- Telematics – you can improve what you measure



- Parked Air Conditioning – Dometic



- Parked Heating – Autotherm for moderate conditions or diesel fired solutions in extreme climate

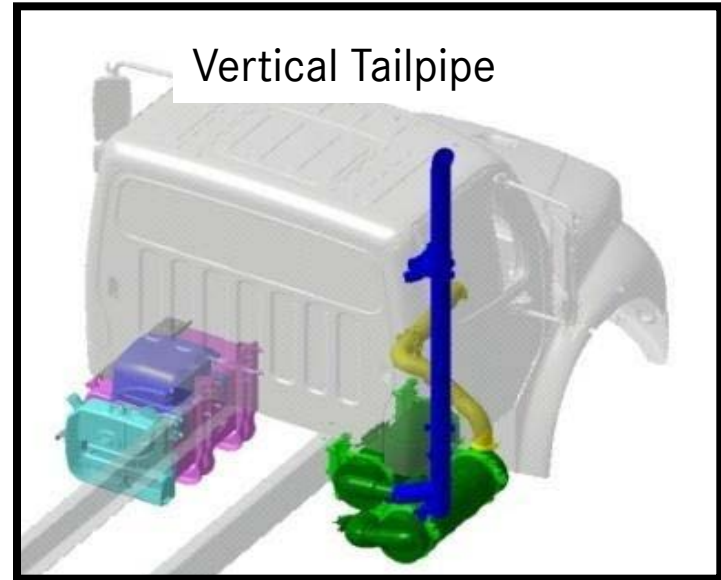
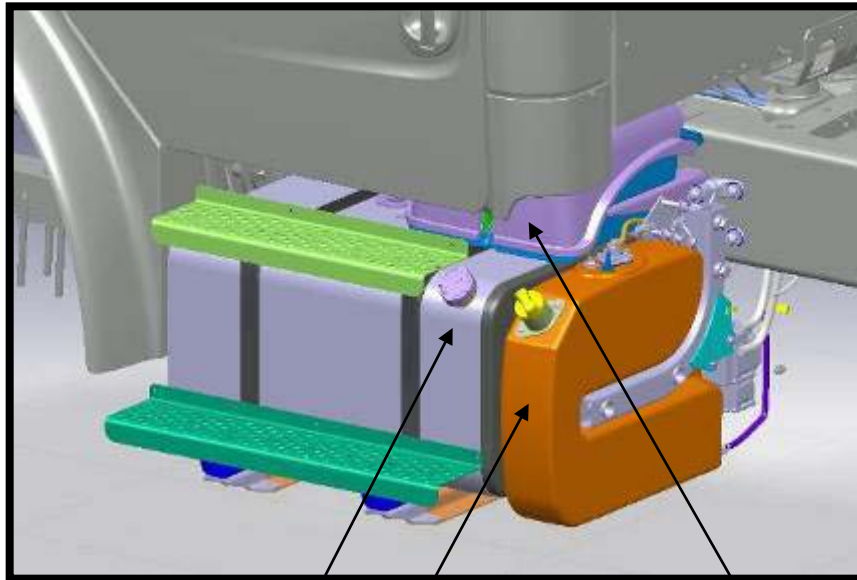




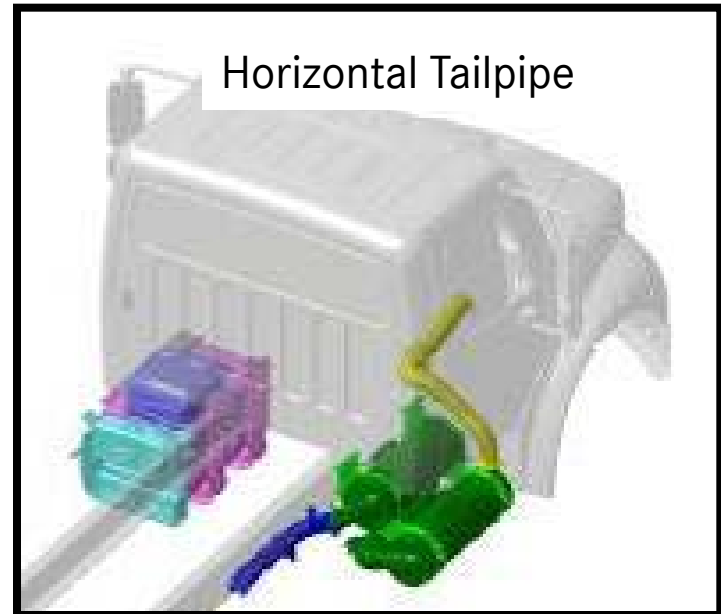
Fleets testing Medium Duty 2010 Engines with SCR are pleased with the performance.

- “Our technicians had no reliability issue and servicing the engine was transparent”
- “. . . our customer experienced a remarkable 10% improvement with the Cummins engine over their existing units”
- “There was very good performance, and no issues with availability of diesel exhaust fluid . . . The consumption rate of DEF was as good as advertised, 2% of the fuel consumption level. ”
- “This new engine delivers on what has been promised: cleaner air, meeting new emissions standards, and less NOx with better fuel economy.”





Vertical Tailpipe



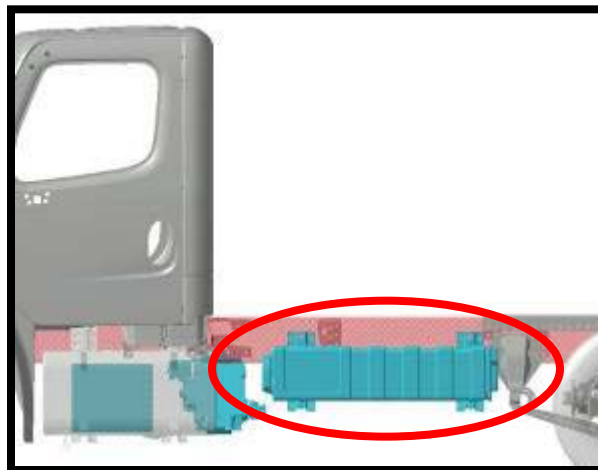
Horizontal Tailpipe

50 gallon fuel tank

Dual 12v Batteries

6 gallon DEF tank

PEC behind cab on LH frame rail is standard





Freightliner, as part of Daimler Trucks, is providing assistance to customers for Hybrid and Natural Gas vehicle funding

- Daimler Trucks participated in 14 DOE/Clean Cities grant applications including both hybrid and natural gas vehicles
 - Customers were awarded funding for over 600 vehicles
 - \$14M awarded for 5 natural gas fuel station projects
- Secured Federal Tax Credit approval for 2007, 2008, and 2009 vehicles.
 - Working on legislation for extension in 2010 and beyond
- Active participation in the CARB hybrid voucher program
 - Will fund approximately 800 hybrid vehicles next year

