Reducing Commercial Vehicle Fuel Consumption

Workshop on Cleaner and More Efficient Commercial Vehicles
Bangalore, India
July 2, 2012

Brian Mormino

Cummins Inc.

Diversified Global Power Leader – Four Complementary Businesses

Engines

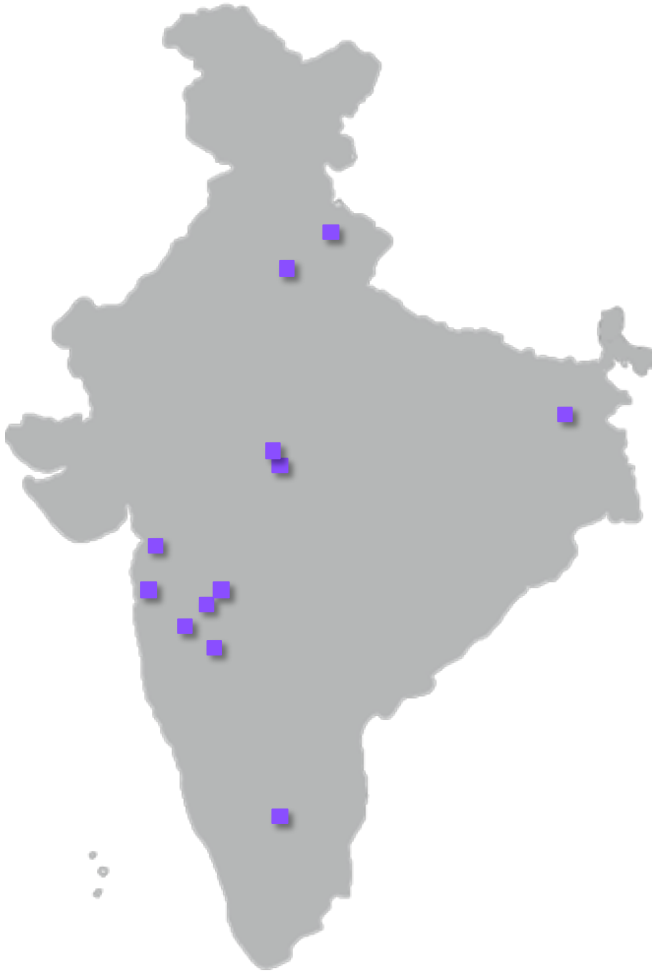
Power Generation

Components

Distribution

· World's largest independent diesel engine manufacturer ·
· Over 1 million engines built in 2011 ·
· Customers in over 190 countries and territories ·

Cummins in India



Largest diesel engine manufacturer

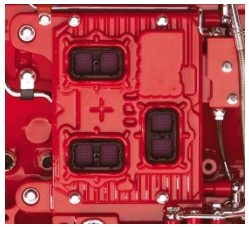
- In India since 1962
- Over 1 million engines in operation
- Over 11,000 employees
- 2011 combined sales of $2.3 billion

Entities:

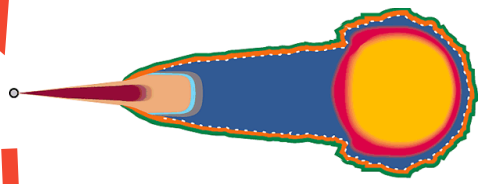
- Cummins India Ltd.
- Cummins Research & Technology India Ltd.
- Cummins Generator Technologies India Ltd.
- Cummins Technologies India Ltd.
- Tata Cummins Ltd.
- KPIT Cummins Infosystems Ltd.
- Fleetguard Filters Pvt. Ltd.
- Valvoline Cummins Ltd.

Meeting Emissions Standards

Filtration and Diesel Exhaust Fluid



Electronic Controls



Combustion Technology

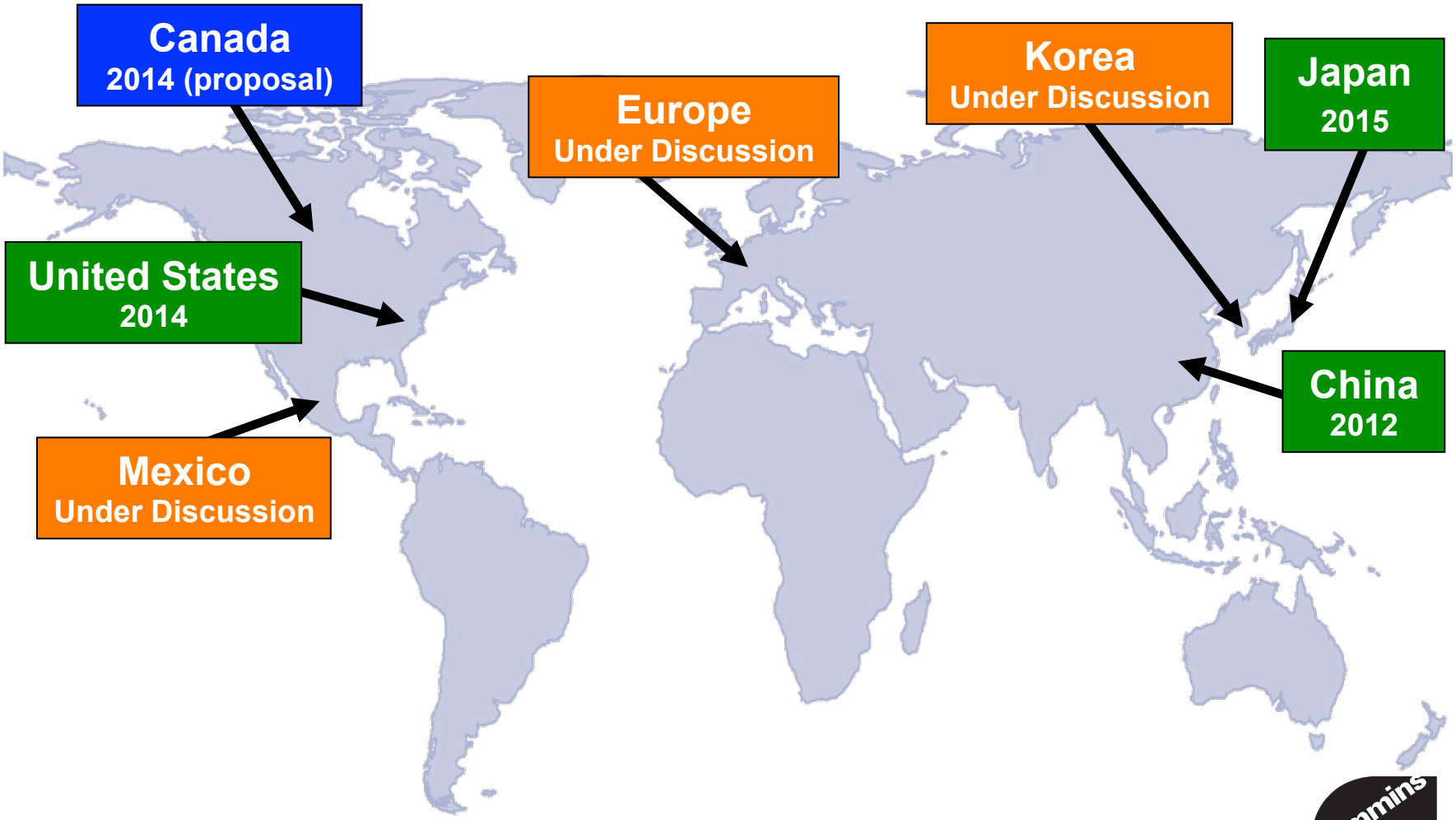
Aftertreatment System

Turbochargers

Fuel Systems

Commercial Vehicle Regulations

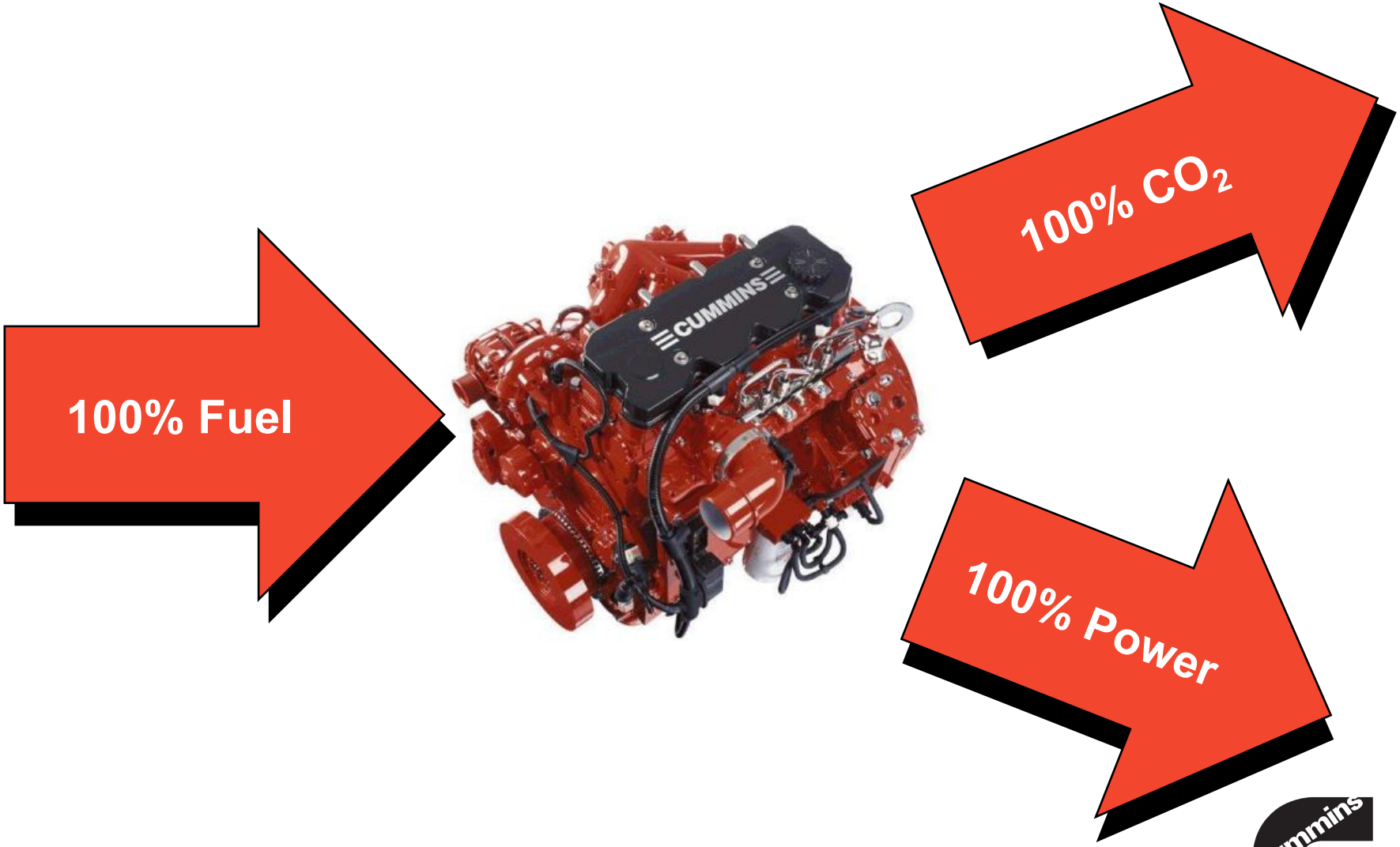
Status of Greenhouse Gas and Fuel Consumption Regulations



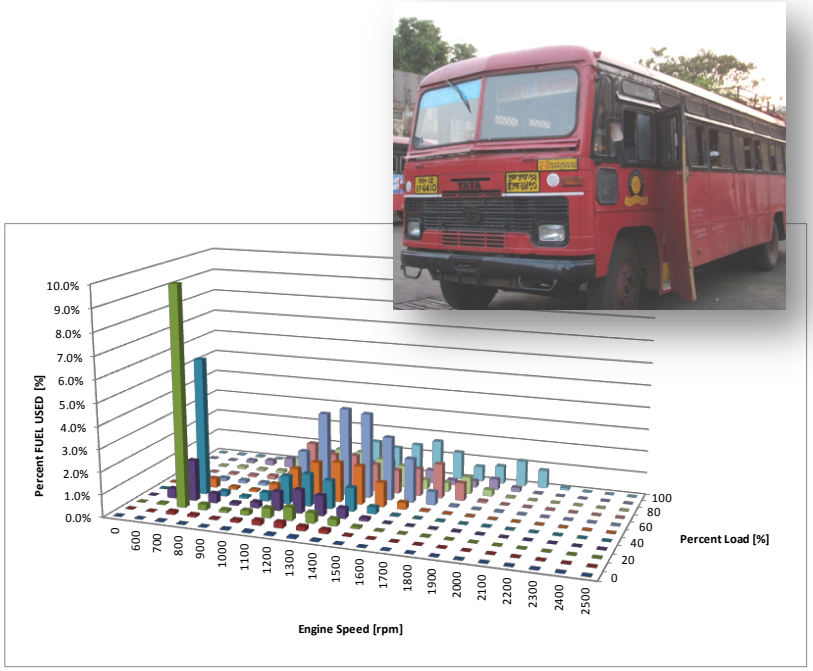
Vehicle and Application Complexity

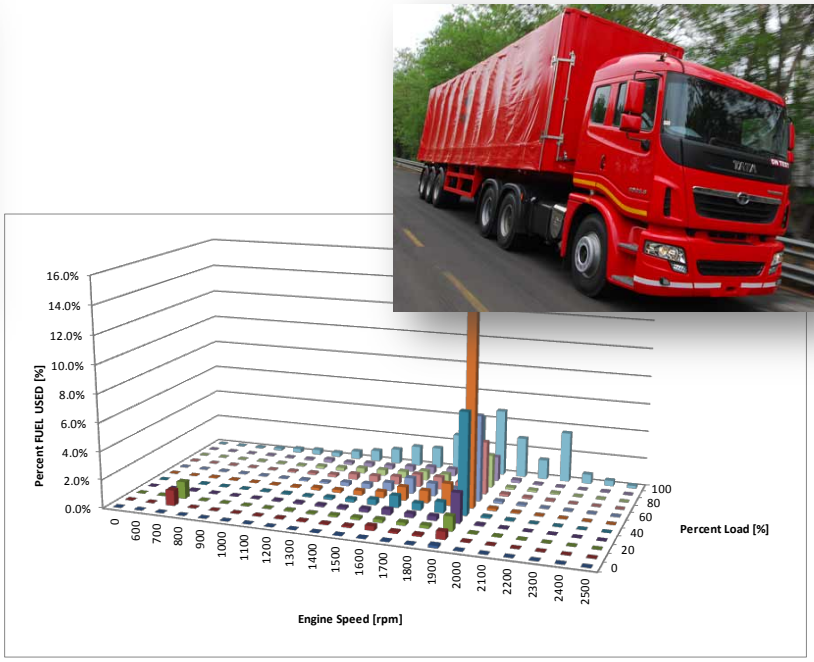
Separate Engine and Vehicle Standards

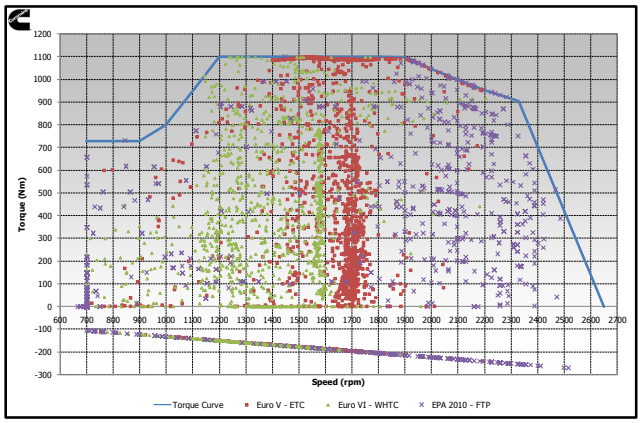
Addressing the Engine Directly

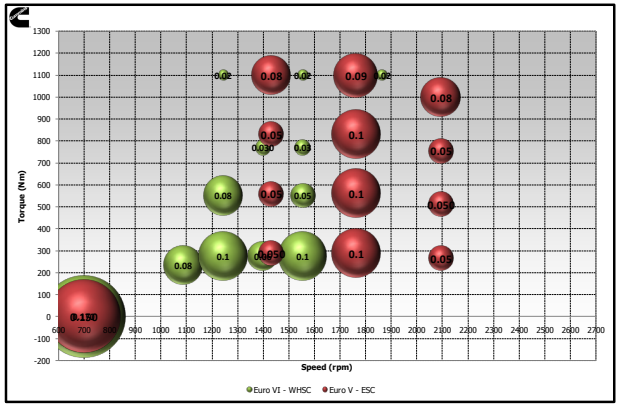


Existing Engine Protocols

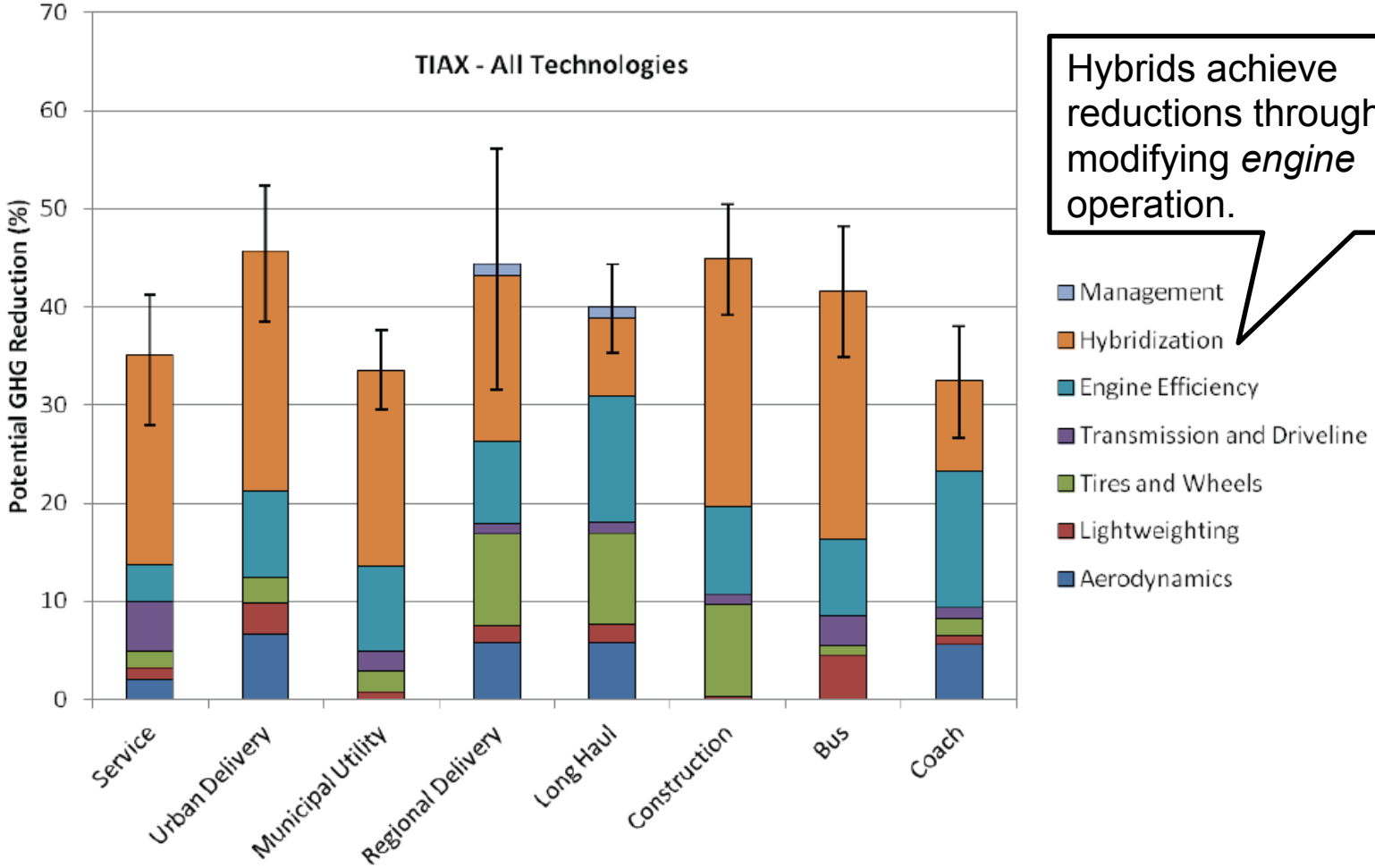








Engine Improvement Opportunities

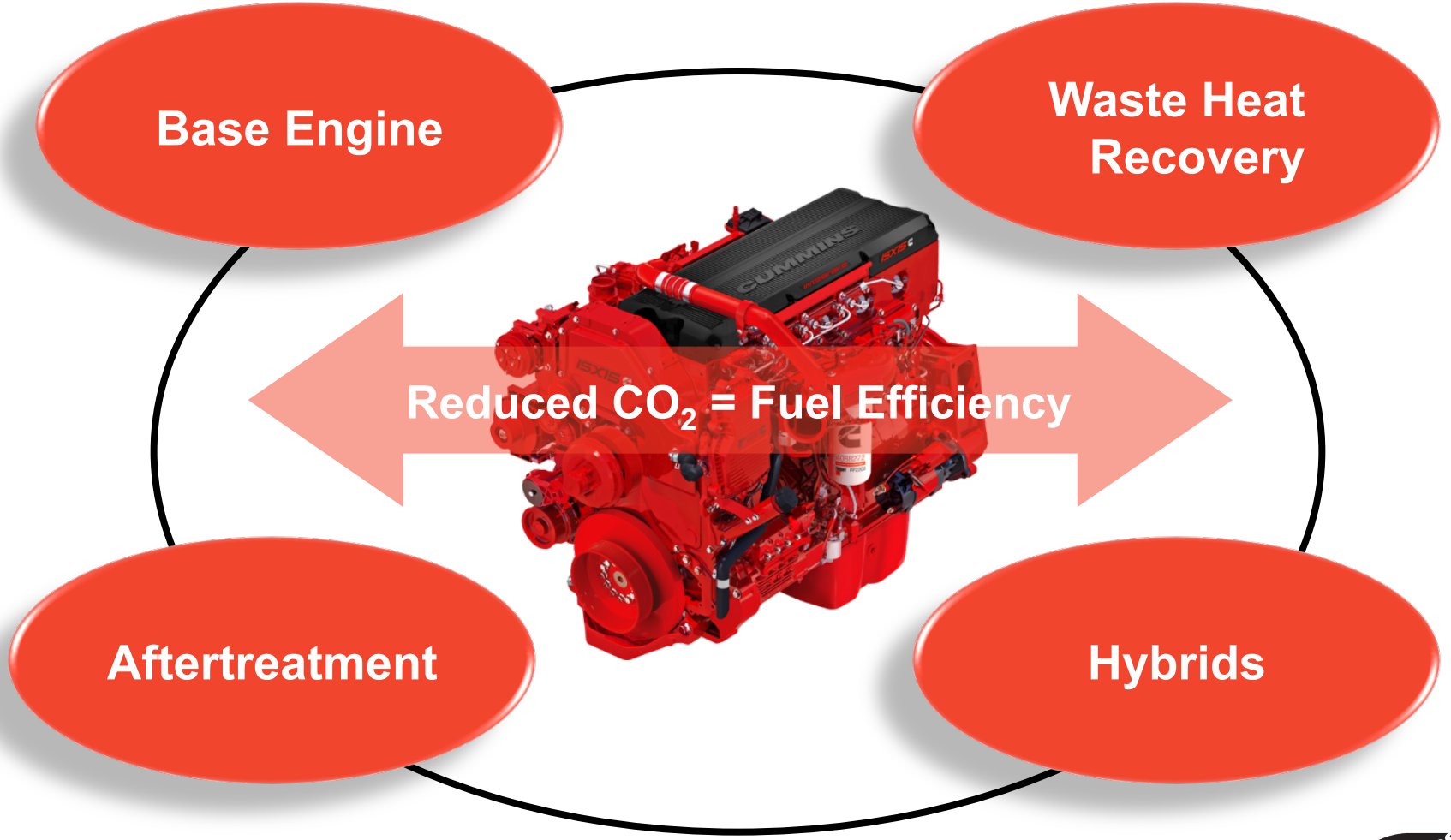


Hybrids achieve reductions through modifying *engine* operation.

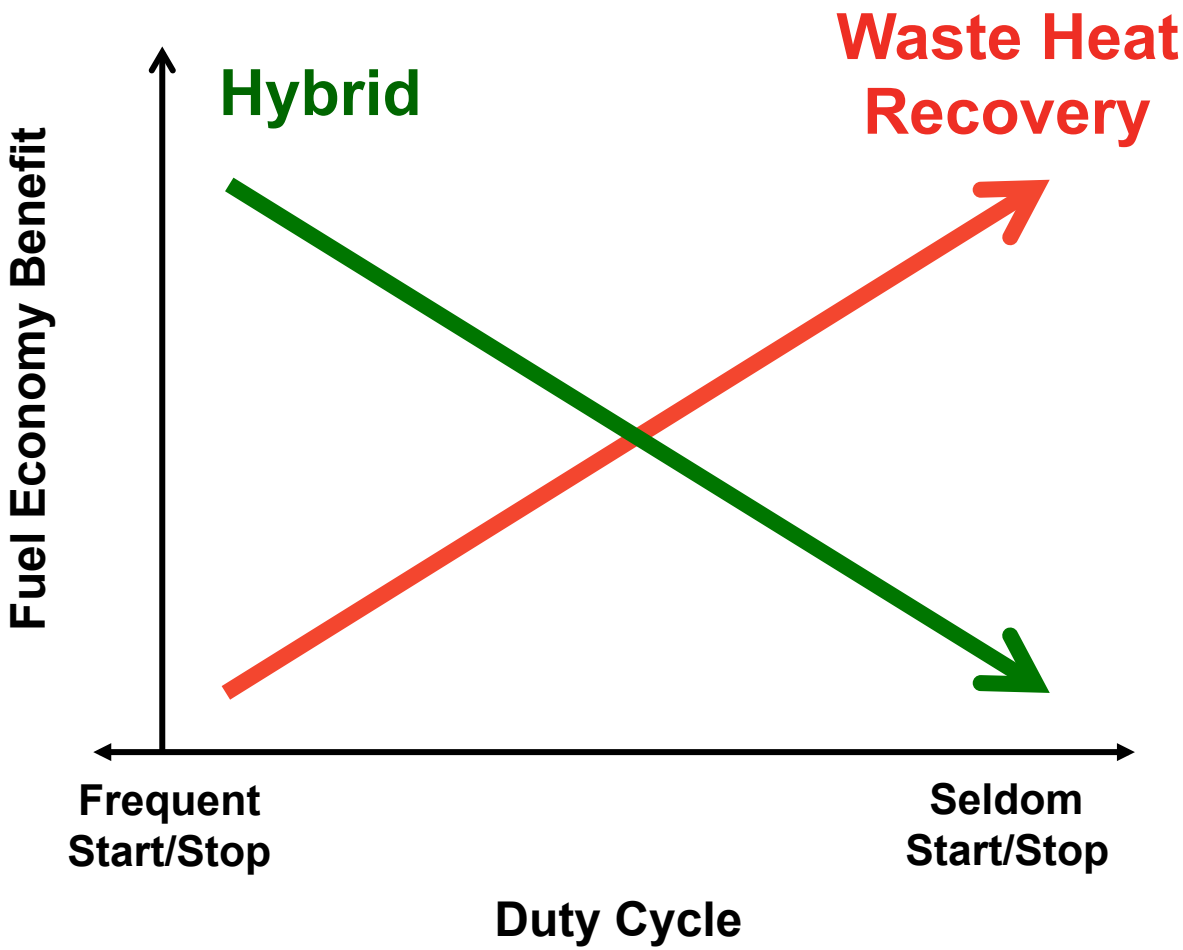
Reference: TIAX presentation "Technologies to Improve Fuel Efficiency of Heavy Duty Trucks"

http://www.theicct.org/sites/default/files/HDV_Workshop_10Nov2011_TIAX.pdf

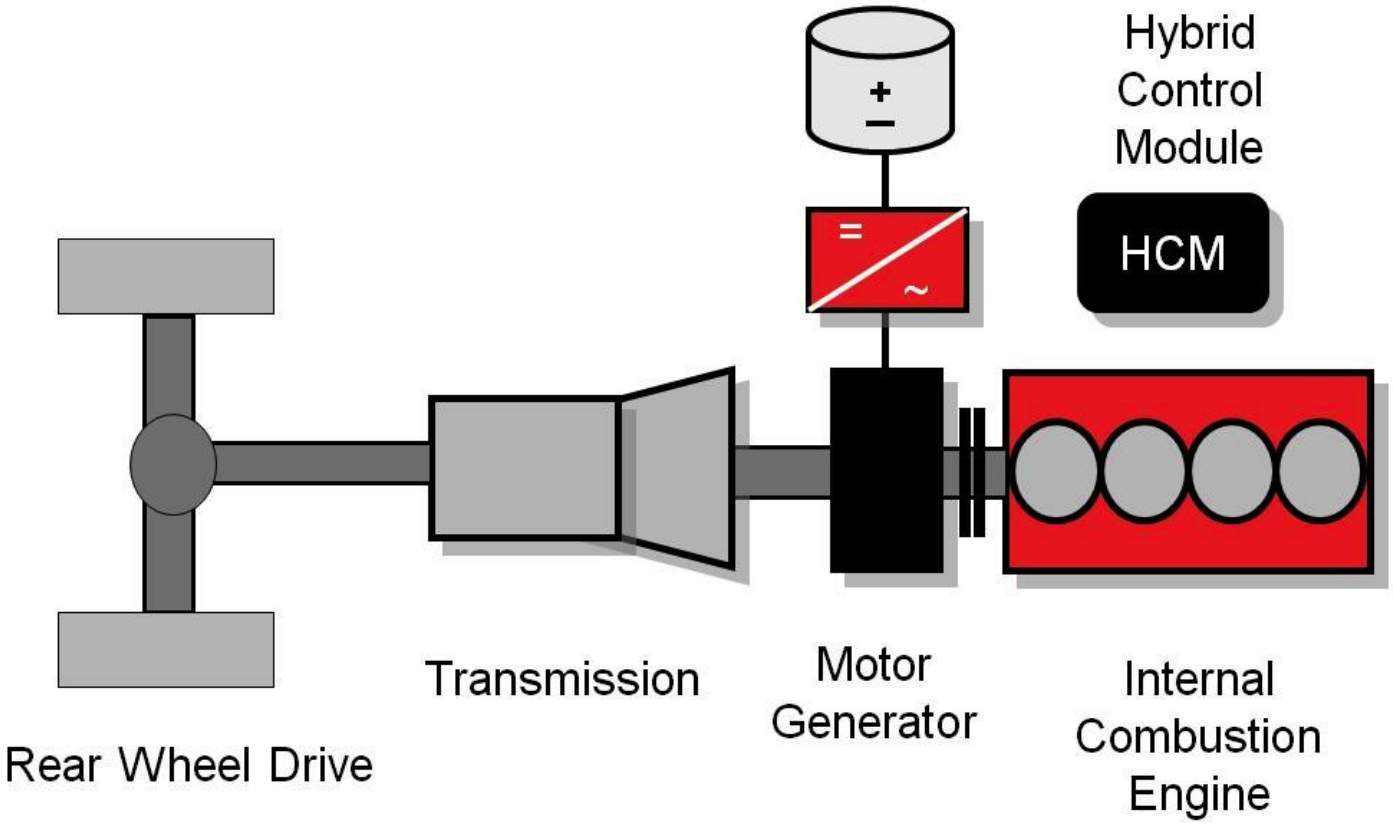
Certainty for Technology Development



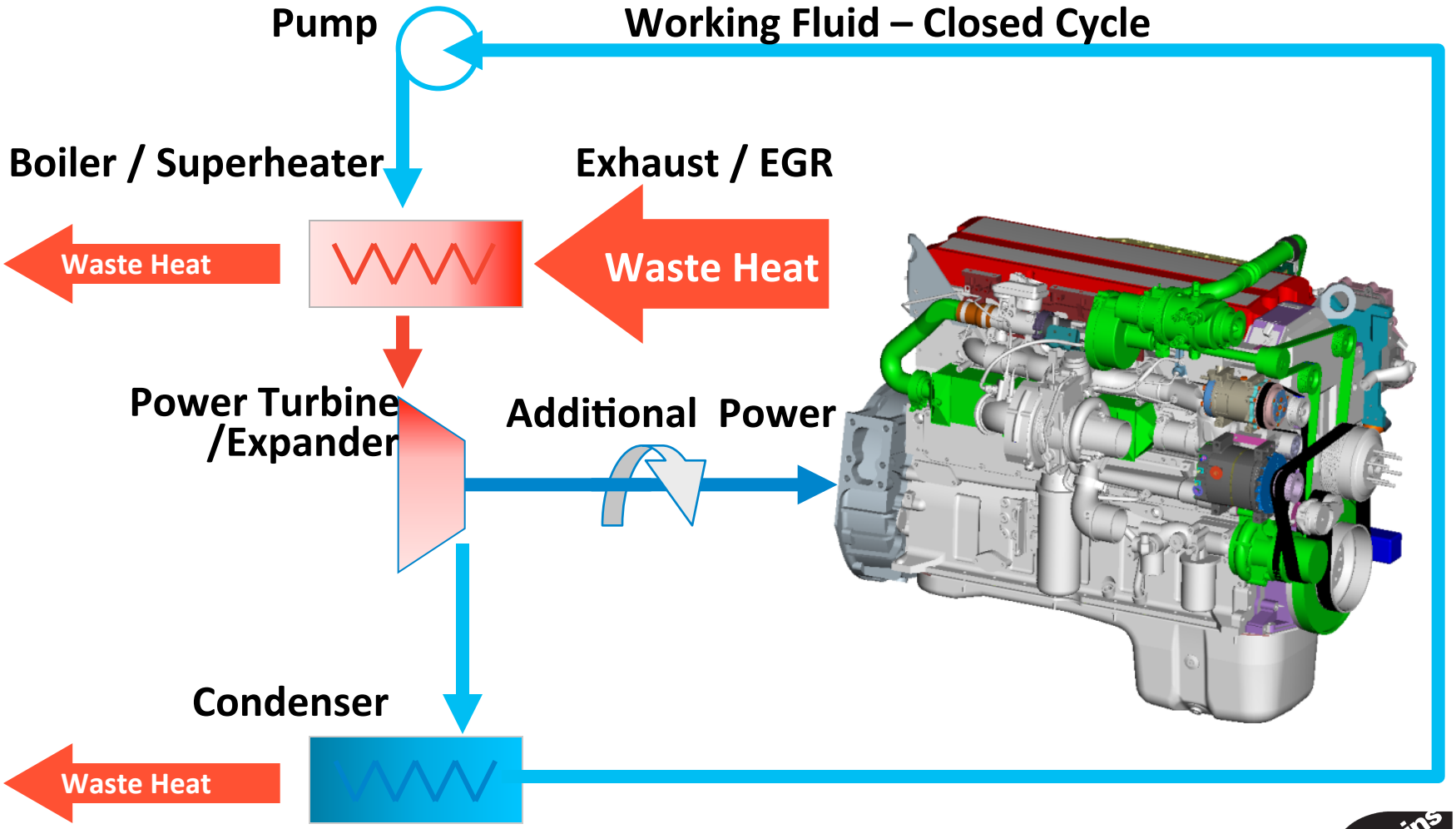
Hybrid and Waste Heat Recovery



Hybrids


Hybrid
Control
Module
HCM
+
–
=
~
Rear Wheel Drive
Transmission
Motor
Generator
Internal
Combustion
Engine

Waste Heat Recovery



Path to Fuel Consumption Improvements

- Criteria emissions
  - Stable legislation and clear implementation timeline
  - Infrastructure (fuel, urea)
  - Full enforcement

- Fuel consumption
  - Separate engine and vehicle standards
  - Lead-time, clarity and certainty for technology development

→ **Level Playing Field**