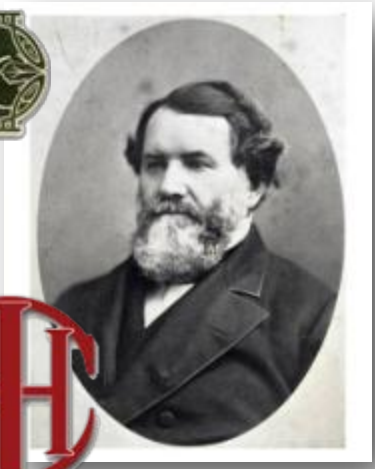
NAVISTAR-DRIVING EFFICIENCY WITH INTEGRATED TECHNOLOGY

Denny Mooney – Vice President, Navistar Global Engineering

NAVISTAR

Navistar History



1831: Cyrus McCormick invents mechanical reaper

1900s: International Harvester Company founded

1910s: School buses added to product line

1930s: First engine plant opens

1940s: Military vehicle production for war effort

Navistar History

1950s: IH enters off-highway truck business

1980s: Aerodynamics is the new buzz

1990s: Emphasis on visibility, comfort, efficiency

2000s: Hybrid vehicles, Navistar Defense, ProStar/LoneStar

Navistar Today: North America Focus, *Global Growth*

North American Market Share Leader: Q3-2011 YTD

School Bus: 48% **Medium: 40%** **Severe Service: 34%** **Heavy: 17%**

#1

#1

#1

#2

#2 **Combined Class 8 Market Share (Q3-2011): 21%**

School Bus/Combined Class 6-8 Market Share	
FY-2009	27%
FY-2010	35%
YTD-2011	27%

2007 Core Products

2011 Global Product Portfolio

MWM

Mahindra NAVISTAR

NC²

JAC

WORKHORSE

MONACO RV

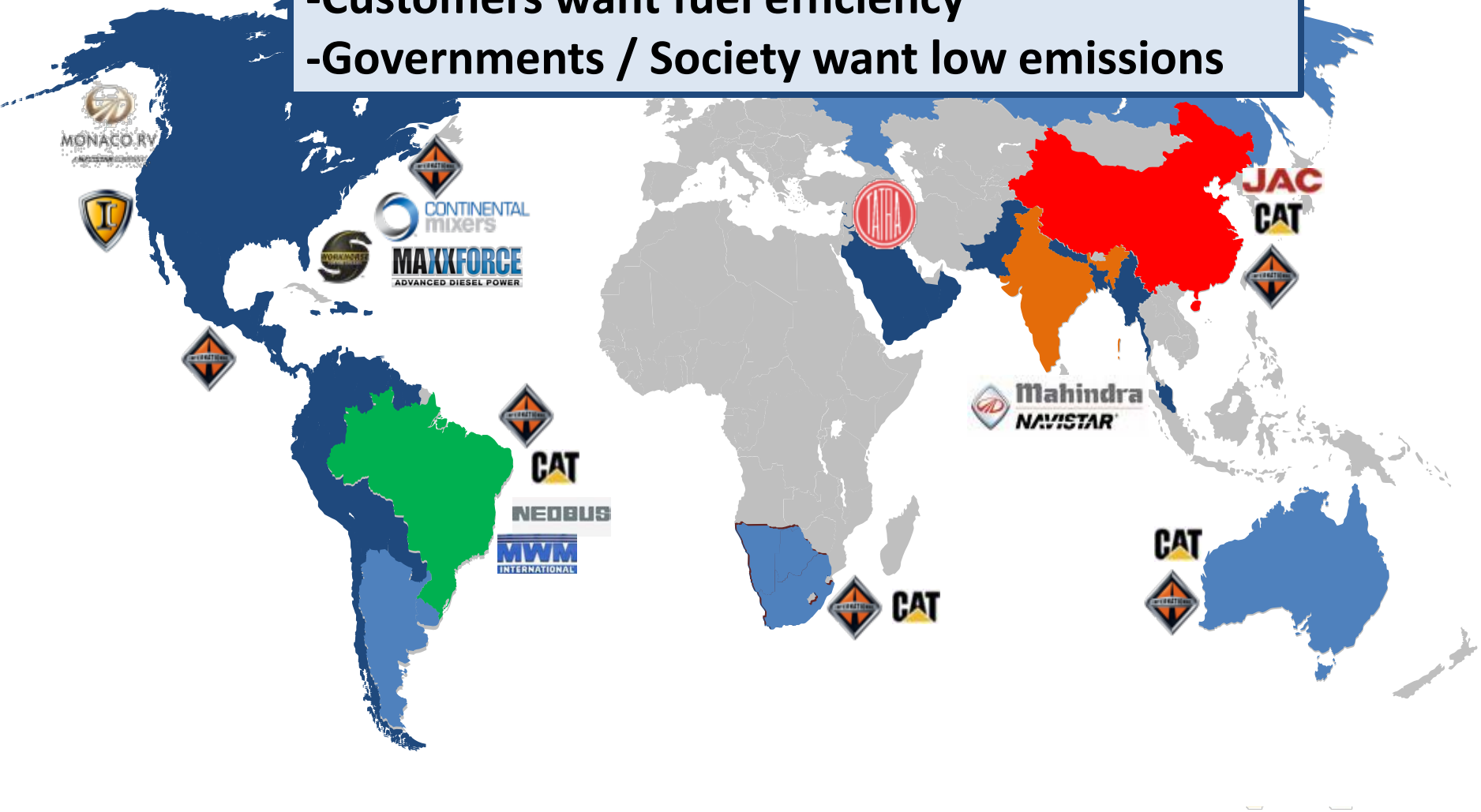
purePOWER TECHNOLOGIES

CONTINENTAL mixers

Navistar Global Presence Today

Navistar Global Presence Today

One Common Theme
-Customers want fuel efficiency
-Governments / Society want low emissions



Global Engines and Emission Capability

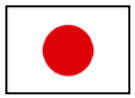
Displacement	2.8	3	3.2	4	4.3	4.5	4.8	6	6.5	7.2	7 V8	DT	8.7	9	10	11	13	15
Engine																		
EPA 04						X				X	X	X		X				
EPA 07							X				X	X		X	X	X	X	
EPA 10											X	X		X	X	X	X	X
Euro3	X	X					X			X	X	X					X	
Euro4			X				X			X		X		X			X	
Euro5			X				X			X				X			X	
Euro6																		
Off Road Emission	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X
Industrial& Generators	X	X		X	X		X	X	X	X	X	X		X	X			
Non Emission	X	X			X				X		X							
Military		X						X			X	X	X	X			X	

The Markets We Serve :













Navistar's Technology Roadmap

Aerodynamic Innovation

2012 / 2013

- Advanced Aero Devices
- Tractor / Trailer Aerodynamics
- Body Modifications

Prime Path:
In-cylinder Solution

Cooling

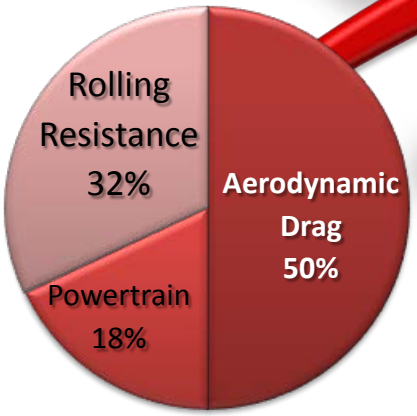
Aftertreatment

Further Combustion Development + Alternative Technologies

30% Fuel Economy Improvement

2015

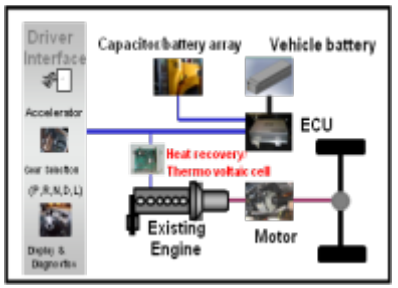
- **Further Advanced Combustion**
- Heat Recovery
- Multi-Stage Hybrid
- Next Generation Aerodynamics



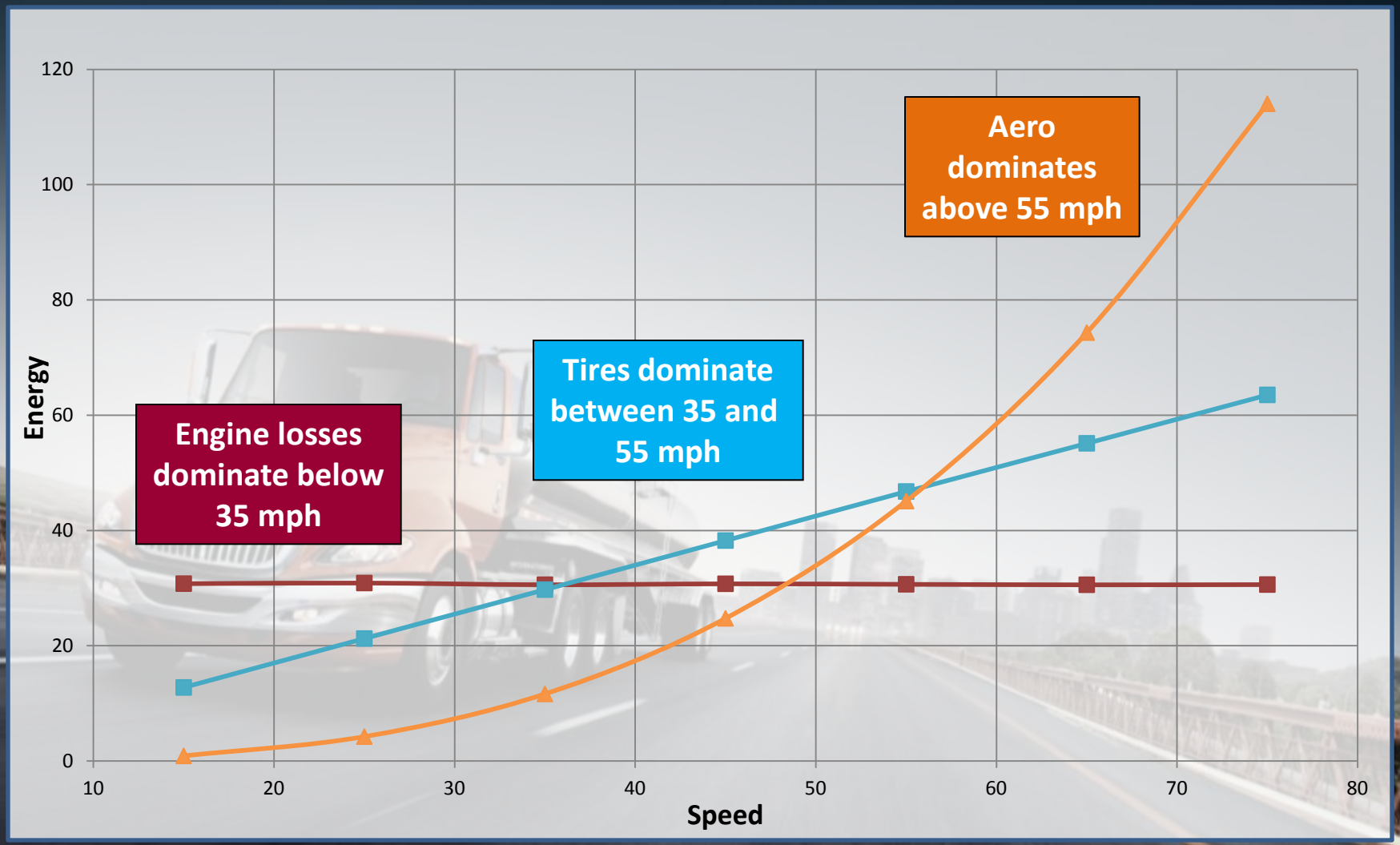
2010

Emissions Compliance with:

- **Advanced EGR**
  - Fuel Economy Optimization
- Aero Improvements
- Hybrids
- Electric Vehicles



Where does the energy go?

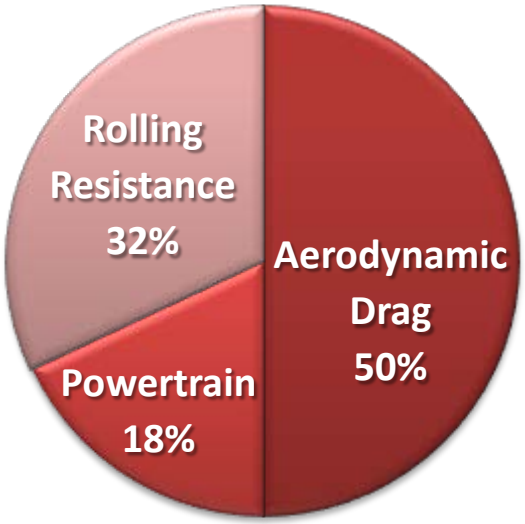


Main Contributors to Fuel Efficiency

Heaby-Duty Line Haul

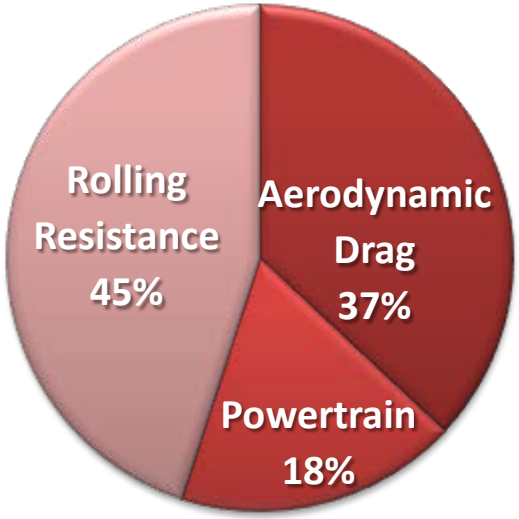
Fuel Economy Impact Class 8 On-Highway at 65mph

2% in Aero = 1% in Fuel Economy



Medium/Vocational

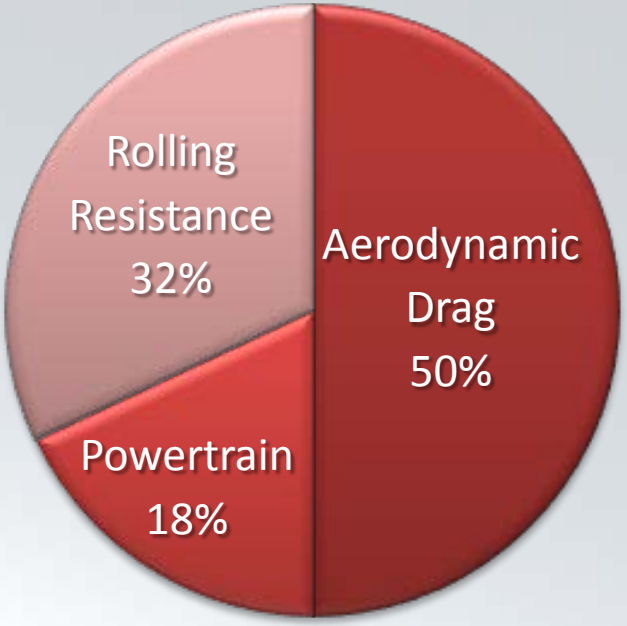
Fuel Economy Impact Medium-Duty Applications



Fuel Economy Focus Areas

Aerodynamic Leadership

Powertrain Efficiencies



Driver: +/- 15%

Driver Behavior

Total Vehicle Integration

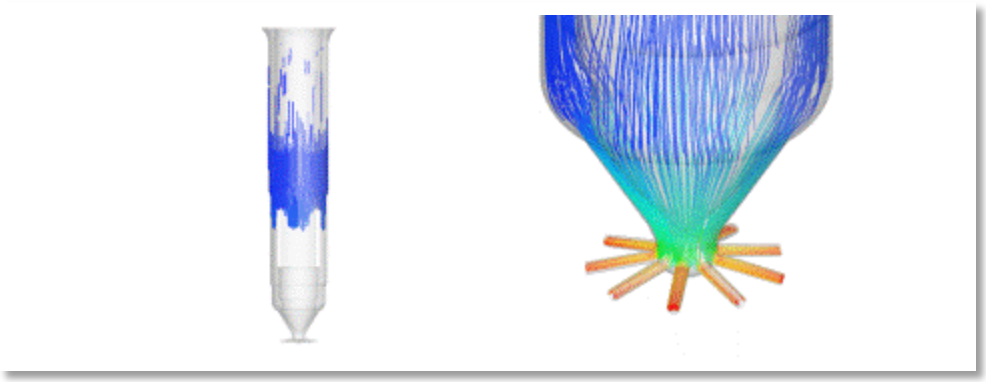
Fuel Economy Focus : Aerodynamics

ProStar and ProStar+

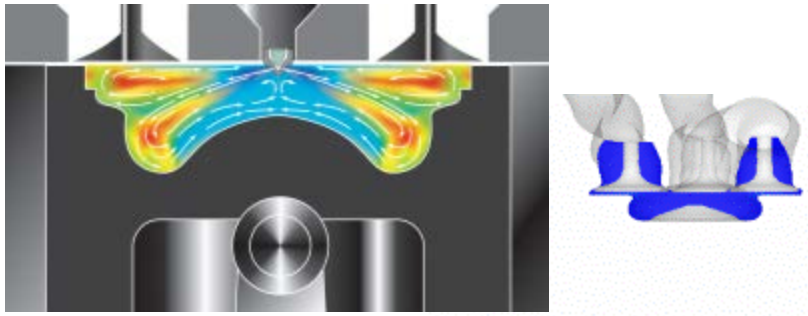
- Among most aerodynamic, fuel-efficient Class 8 trucks ever built
- Innovative, Aero-focused Design
- Comprehensive Aero Testing at NASA Wind Tunnel
- Focus on A-pillar, bumpers, mirrors, fairings, skirts, and trailer integration
- Finalist for D.O.E. SuperTruck

Fuel Economy Focus : Powertrain Efficiencies

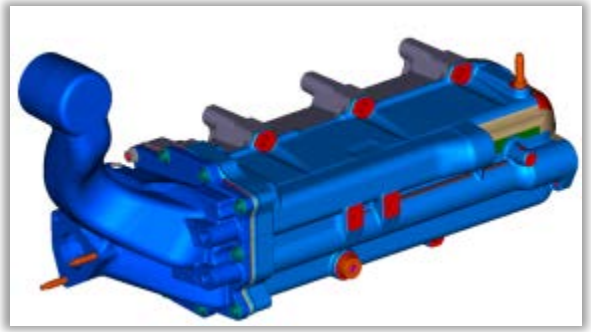
Advanced Fuel Injection Technology



Proprietary Combustion Bowl Design



Exhaust Gas Recirculation



Advanced Air Management

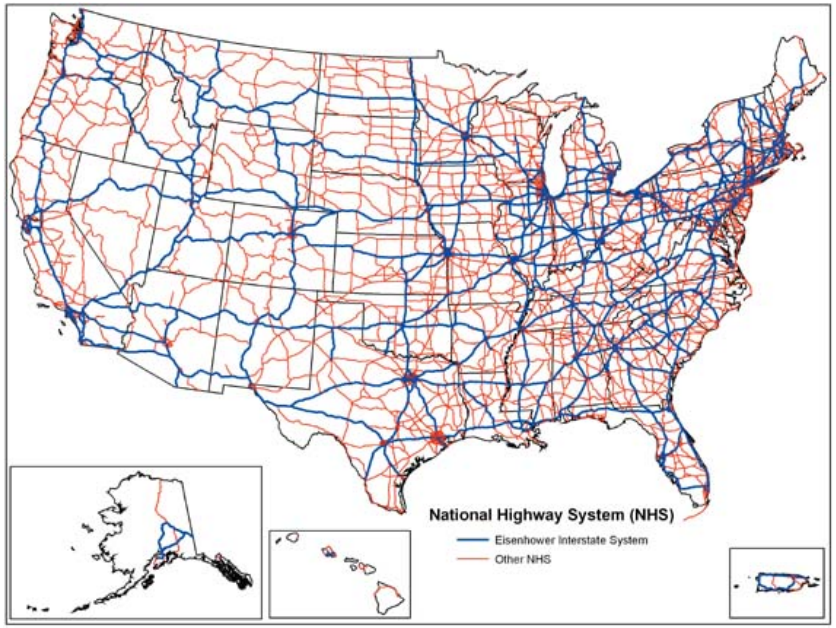
Electronic Engine Controller

Road Conditions / Driver Behavior

Mahindra NAVISTAR

-Significant congestion 35 KPH average speed
-Significant overloading
-Driver behavior

US – China Road Systems / Traffic / Routes



- Similar road conditions and high-way system
- Aero - nose trucks?

Navistar Supertruck Program ---- Vehicle Technology

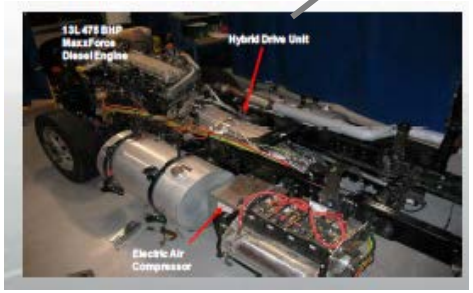
with DOE and Partners

Supertruck Concept

50% Improvement
on tractor trailer fuel efficiency

Aero

Gap reduction
Aero Drop
Camera Mirrors



Hybrid

Dual-Mode Drive
Electrified
Accessories

Light Weight

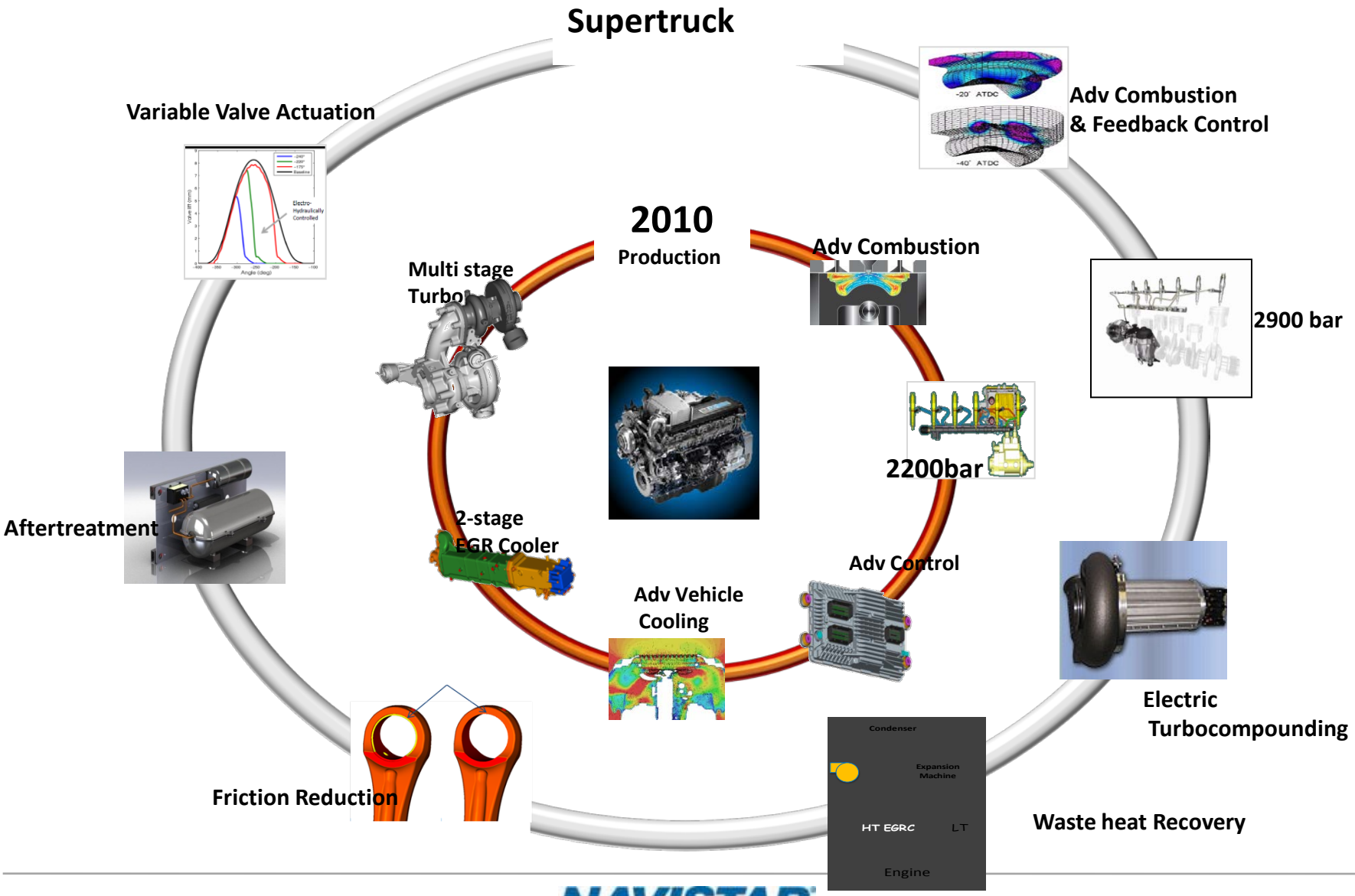
SMART tandem axles
Composite cab, trailer
Wide base single tires

Driveline

SMART tandem axles
Composite cab, trailer
Wide base single tires

Navistar Supertruck Program ---- High Efficiency Engine

Pushing the Technology Boundary



- Customers demanding fuel efficiency
- Global push for low emissions
- DOE/Navistar/Suppliers driving affordable technology
  - Supertruck
  - EV eStar

Thank You