X10 Overview

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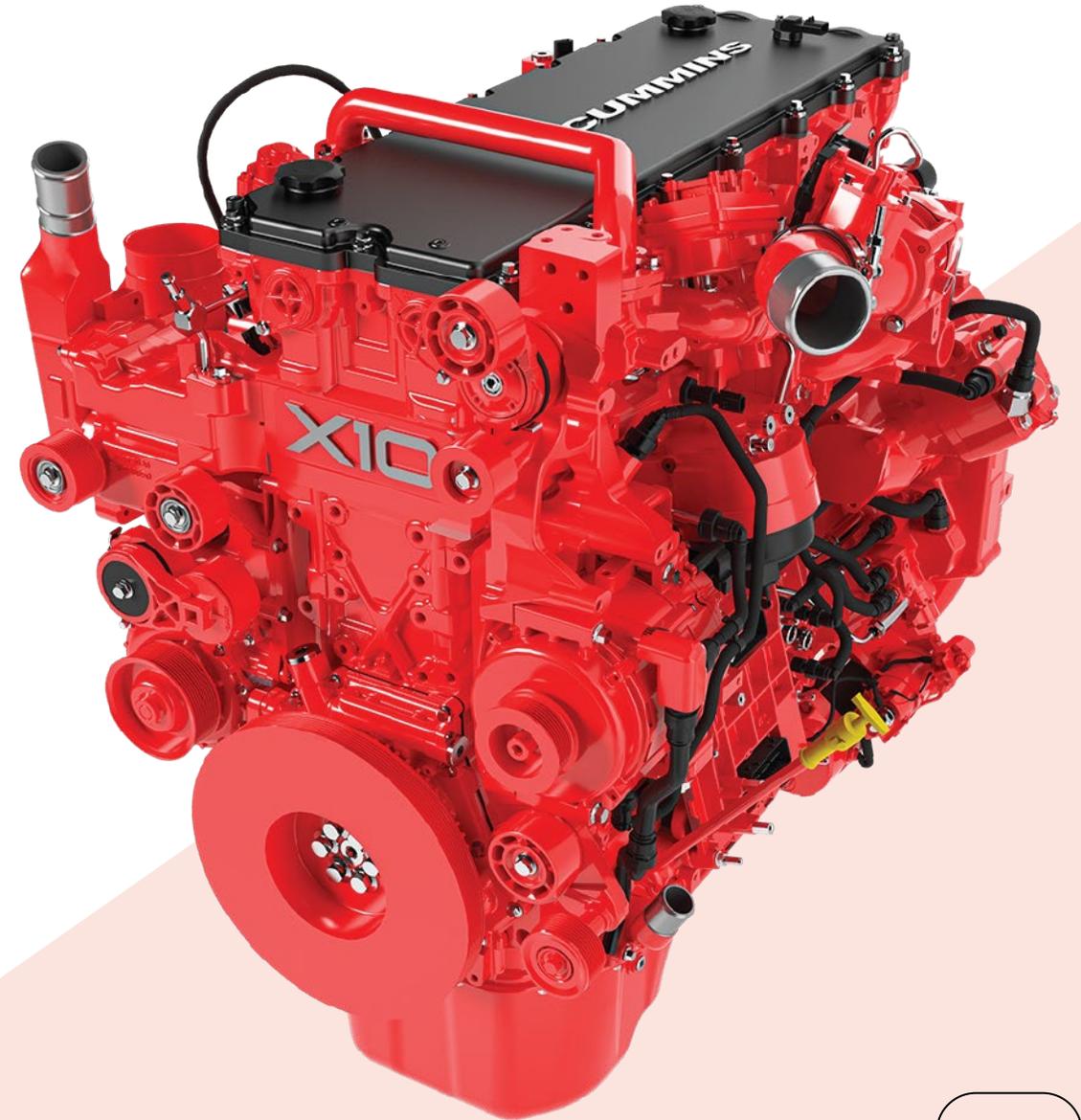
X10

10 Liter ARB27 & EPA27

New State of the Art Global Platform w/Improved GHG Efficiency & Fuel Economy

EPA27 Compliant Product*

Ratings:

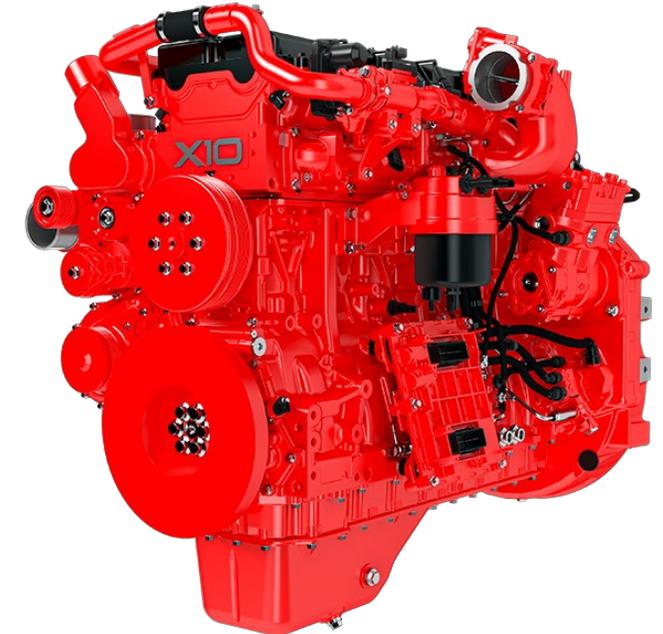- Targeting from 320hp/1000 ft-lb up to 450hp/1650 ft-lb

Targeting Minimal Space Claim Change from EPA2021 L

Lower NOx and GHG Emissions

Cummins Legacy Durability & Reliability

DISCLAIMER: The future B and L platform products are still in the early stages of development. The information provided here is for preliminary OEM notification purposes only and are subject to change until technical requirements are confirmed.
*EPA27 Compliance assumes no change to current EPA guidance. Agency discussions are ongoing and legal NOx limits are subject to change.

Highlights

X10™

Next in the Cummins HELM™ platform launching in North America in 2027 demonstrating Cummins' continued commitment to advancing internal combustion technology.

- The X10 architecture uses a belt-driven, high output 48-volt alternator and aftertreatment heater solution optimized for increasingly stringent emission standards.
- Improved GHG Efficiency & Fuel Economy built upon Cummins' Uptime legacy.
- Ratings up to 450 hp / 1650 ft-lb available.
- Extended maintenance intervals to reduce visits to the shop and minimize cost of operation.
- Optimized for a diverse range of applications such as P&D, Vocational, Regional Haul, Transit bus, Recreational Vehicle and Emergency.
- Base Warranty: 2 years / 250k miles for truck, 2 years/ unlimited miles for transit, 5 years / 100k miles for EV/RV (no change from current product).

Coming Soon

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Overview

Differentiators

- Certified to 2027 emissions standards
- New State of the Art Platform with **Improved GHG Efficiency & Fuel Economy**
- Ratings up to **450 hp / 1650 ft-lb** available
- Maintaining **market required REPTO and FEPTO** capabilities seen in the current L9
- **Extended maintenance** intervals to lower total cost of operation

Primary Applications

Vocational

Body builder

Value package

- Dependability
- Durability
- Increased power
- Harsh duty cycles

Maintenance Event	Target
Oil and filter	Up to 75k mi / 2200 hr
Valve lash adjustment	150k mi
DPF clean	MD 225k mi & HD up to 600k mi
DEF change	225k mi
Base warranty	2 yr / 250k mi

Latest Update: December 9, 2024

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X10 Scope

Integration

12 and 24V Compatible

Transmissions In Scope: Allison 3000\4000\B500\B500R, ZF1720 Eco Life 2, Endurant HD\HDV, Voith DIWA NXT
    and Eaton Manual

Engine Weight (Wet): 895.33 +/- 25 kg

Oil: See next slide

Cummins requires all engines to have Cummins or OEM first fit connectivity solution

Performance Targets

Idle Speed: 600 – 800 rpm

DEF Consumption Targets:

- 6% for medium duty applications
- 7% for heavy duty applications

Ratings Plan:

X10	Horsepower	Torque (ft lb)	Aftertreatment Pairing
MHD	320 – 450 @ 2100/2200 rpm	1000 – 1250	TM10
HHD	350 – 450 @ 1800 rpm	1350 – 1650	TM13
Transit	350@ 1800 rpm	1150	TM10*

*Transit specific TM10

Oil Recommendation

- **Normal** Engine Operation:

For normal engine operation, Cummins Inc. recommends the use of a high quality 10W-30 viscosity heavy duty engine lubricating oil that meets the requirements of Cummins® Engineering Standard (CES) 20087 (such as Valvoline™ Premium Blue™ 8700 FE). Refer to Procedure 359-001 in Section 3.

- **Severe** Engine Operation:

For severe applications, the engine is compatible with 15W-40 viscosity heavy duty engine lubricating oil that meets the requirements of CES 20086 (such as Valvoline™ Premium Blue™ One Solution Gen2).

- **Cold** Weather Operation:

For cold weather reference below table:
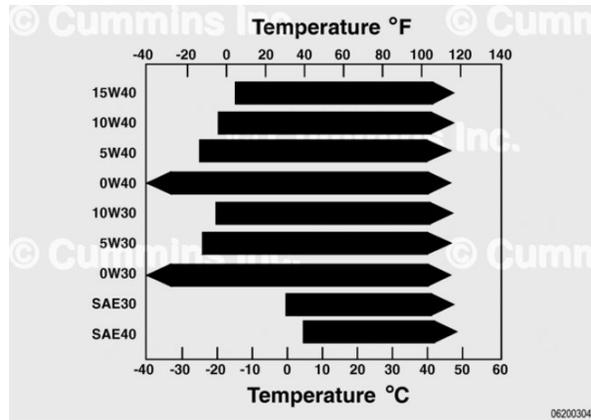
For further details and an explanation of engine lubricating oils for Cummins® engines, see the latest revision of Service Bulletin, Cummins® Engine Oil and Oil Analysis Recommendations, Bulletin 3810340.

Target Service Intervals

| Item	Vocational	Severe 3-4.9 mpg	Shorthaul 5-5.9 mpg	Normal 6-6.9 mpg	Light > 7 mpg
Oil Drain*	35,000 miles / 1,500 hrs.	30,000 miles / 1,500 hrs.	50,000 miles / 2,200 hrs.	55,000 miles / 2,200 hrs.	75,000 miles / 2,200 hrs.
Oil Drain with Valvoline PB	40,000 miles / 1,500 hrs.	30,000 miles / 1,500 hrs.	55,000 miles / 2,400 hrs.	60,000 miles / 2,400 hrs.	75,000 miles / 2,400 hrs[TJ1] .
DPF Ash Maintenance MHD	225,000 miles / 6500 hrs.				
DPF Ash Maintenance HHD – Schedule Based Interval	300,000 miles / 6,750 hrs.			400,000 miles	600,000 miles
CRANKCASE BREATHER and[TJ2] HC DOSER	Maintenance Free				

Engine Walk-Around

X10™

Power Cylinder:
New piston bowl and higher compression ratio for optimized efficiency and power

9.9L, 450HP / 1650 ft-lb torque

Lube & Cooling:
Dual Thermostat and improved coolant system design to reduce parasitics

Addition of CCV (closed crankcase ventilation) to meet regulatory requirements

Cartridge style lube and fuel filters to improve cost of maintenance & environmental impact

Base Engine:
Sculpted block and head delivering engine weight reduction

DOHC cylinder head design and new cam carrier enables advanced valvetrain technology and High-Power Density brake

Multiple capacity oil pan options providing longer oil drain interval options

* Information is preliminary and may be subject to change.
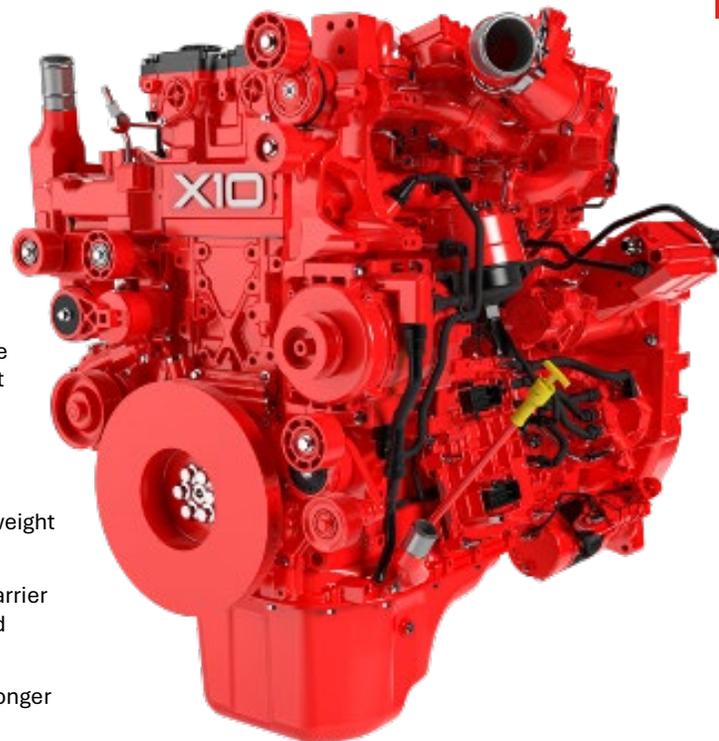
Fuel System:
2200 Bar fuel-lubed pump for better PM control and fuel efficiency improvement

Incorporates thermal recirculation valve to aid in cold starts and priming pump for efficient startability

Air Handling:
Improved efficiency through use of new, larger VG turbo

Heavy-duty EGR cooler delivers emission reductions

Electronics:
48V FEAD belt-driven air cooled IPD Alternator dedicated to the aftertreatment heaters

New CM3550 supports safety, cyber security and software improvements

Engine and injector harness support new components, packaging and ease of maintenance

Maintenance Monitor with virtual sensors to optimize service intervals

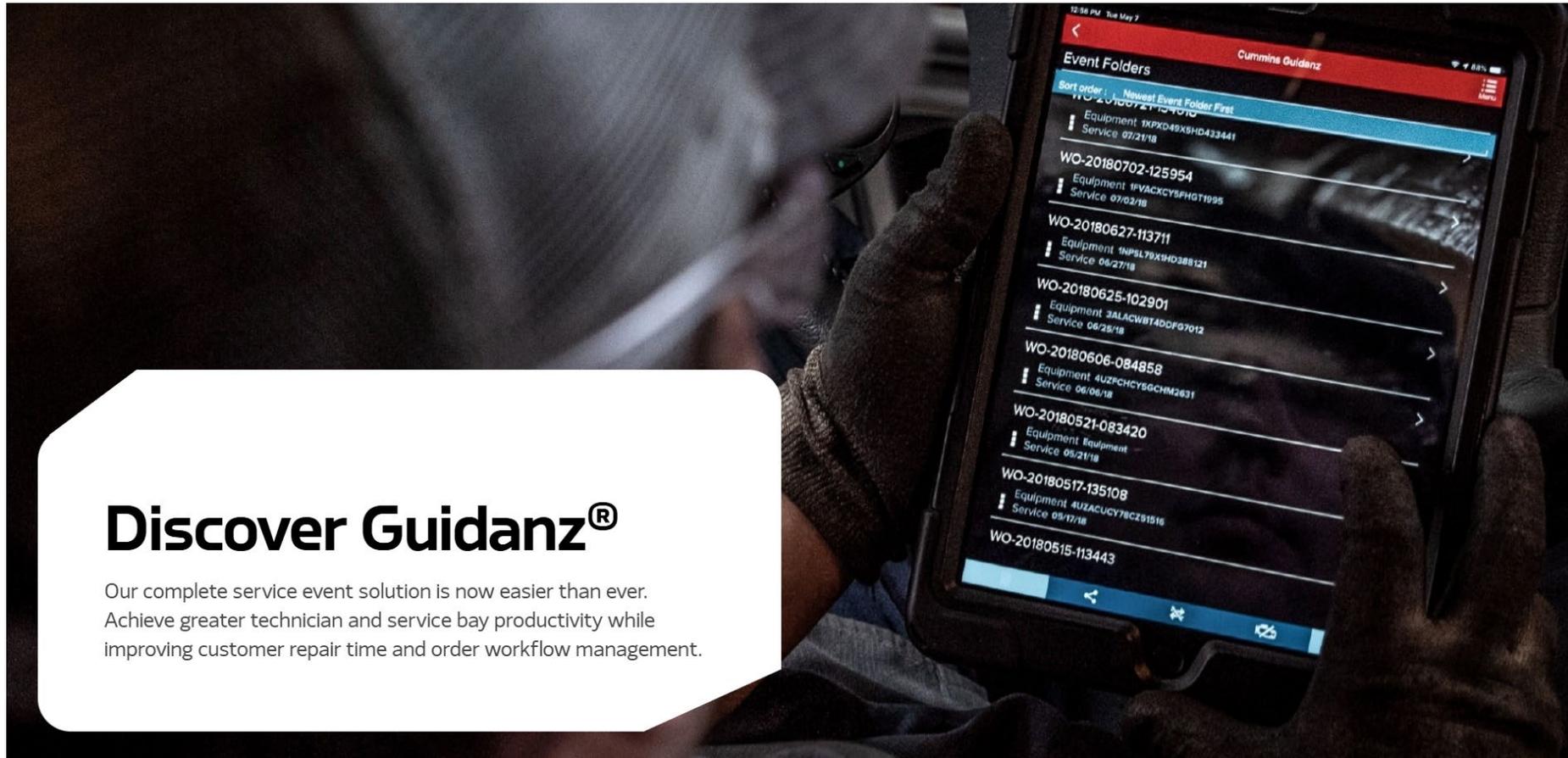🔴 FUEL EFFICIENCY 🔧 MAINTENANCE 🟢 REGULATORY 🔵 RELIABILITY

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Guidanz Diagnostic ToolKit

Discover Guidanz®

Our complete service event solution is now easier than ever. Achieve greater technician and service bay productivity while improving customer repair time and order workflow management.

https://www.cummins.com/en-na/parts-and-service/digital-products-and-services/guidanz

Current Product Comparison

	L9	X10		X12
		Medium-duty	Heavy-duty	
Displacement	8.9L	9.9L		11.8L
Cylinders	Inline 6	Inline 6		Inline 6
Compression Ratio	20.2:1	20.5:1		18.3:1
Ratings (By Family)	260-380hp / 860-1250 lb-ft	320-380 hp / 1000-1250 lb-ft	350-450 hp / 1350-1650 lb-ft	350-500hp / 1350-1700 lb-ft
Engine Weight (Dry)	769 kg, 1695lb	850kg, 1874lb		930 kg, 2050lb
Aftertreatment Weight	80 kg, 177lb	135 kg, 298lb | 148 kg, 326lb		110 kg, 243lb
Total System Weight	849 kg, 1872lb	985 kg, 2172lb | 998 kg, 2200lb		1040 kg, 2293lb
Oil Drain Interval	Up to 50k miles	Up to 75k miles		Up to 75k miles
Aftertreatment	10LX	TM10 | TM13		13SS

Latest Update: July 10, 2025

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Torque Curves

EPA 2024 X12 500/1700
EPA 2027 X10 HHD 450/1650

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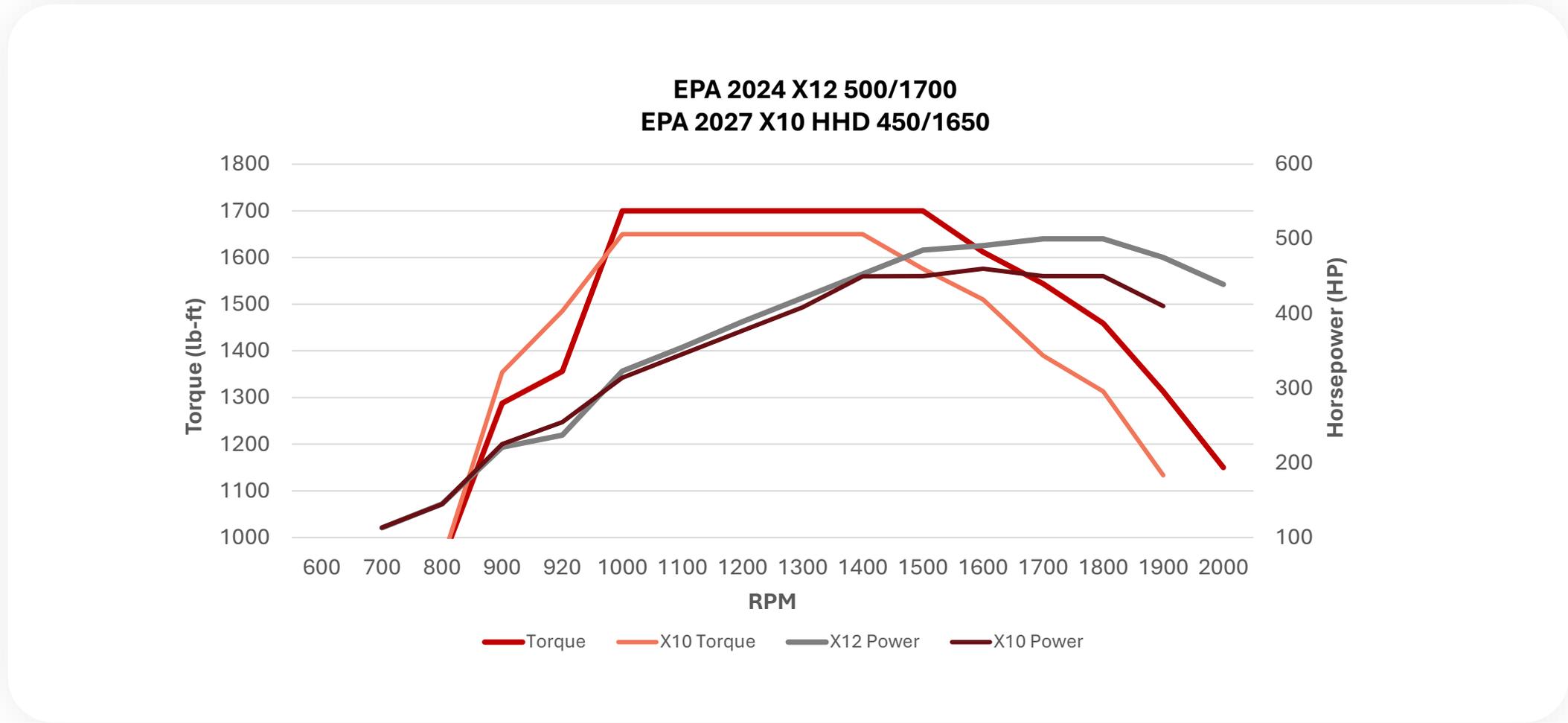Highlights | Overview | Walk-Around | Ratings | Product Comparison | Features | Applications | Validation | **Powertrain**

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Simple Architecture: Electric Aftertreatment Heat

To meet stricter 2027 NO_X regulations, Cummins is introducing an electronic heating system that enhances SCR (Selective Catalytic Reduction) performance by speeding up aftertreatment warm-up—especially during cold starts and idle.

How It Works

- When the engine is cold (like at start-up or idle), the Engine Control Module (ECM) tells the alternator to create a 48V electrical load by converting mechanical energy into electricity.
- The ECM then sends signals to:
  - Heater Control Module (HCU) on X15, or
  - Directly to the alternator for B7.2 and X10 platforms, instructing which heater(s) to power.
- Current flows to the heaters, which act like resistors – converting electrical energy directly into heat in the exhaust stream.

Why It Matters

- Fast-warm up = better NO_X reduction from the start
- On-demand thermal management improves efficiency and engine performance
- Maintenance-free design: Alternator and heaters are built to last the life of the engine

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Electric Aftertreatment Heat New Components

1 Engine

- Hardware:
  - Dedicated 48V alternator, mounted on the cold side of the FEAD
  - Driven by a single belt from the damper
- Software:
  - Uses J1939 CANBUS communication
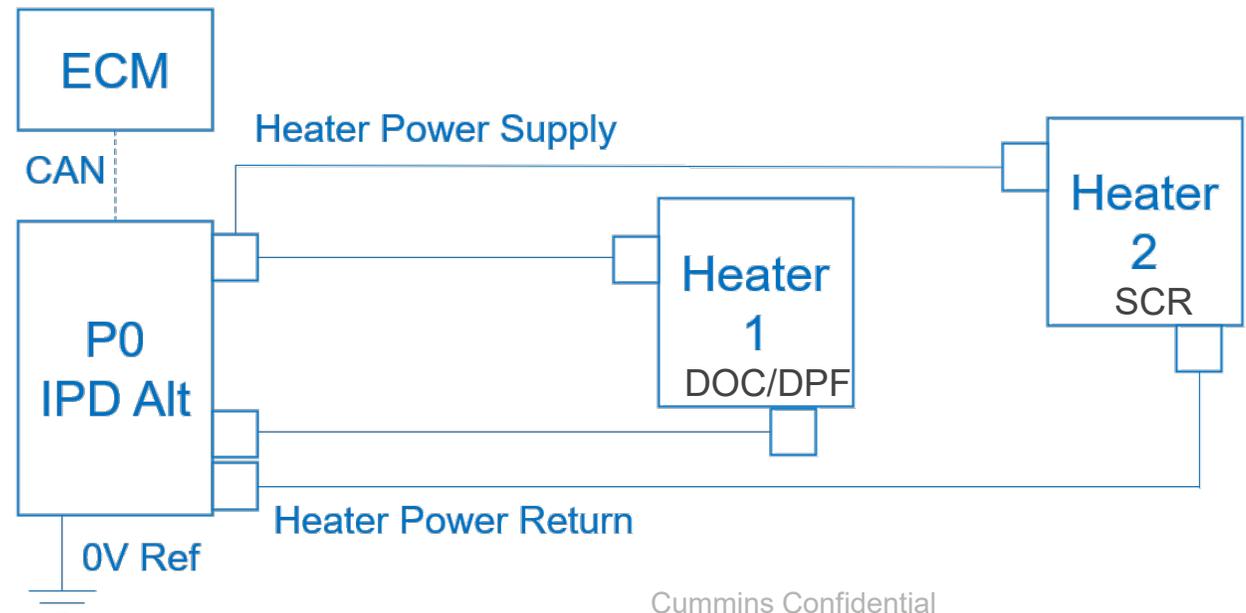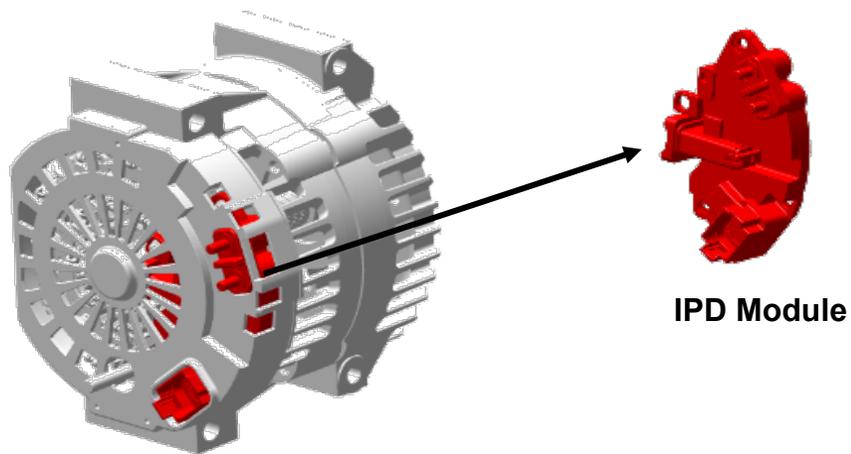 - ECM sends signals to the alternator and Heater Control Unit (HCU) (X15 only)

2 Aftertreatment

- Hardware: Two 5kW heaters, each with two high-voltage connections
- Software: None required at the aftertreatment level

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48V Heater System Overview

- One engine mounted alternator with an in-built Integrated Power Distribution (IPD) device

  - **X10 – Air cooled** Smart Alternator Integrated Power Distribution

- One DOC inlet heater and One SCR inlet heater, inbuilt within the aftertreatment

- IPD manages power to the Aftertreatment mounted heaters

  - IPD functions like the function of the Heater Control Unit of the X10

- OEM scope includes cable connection and accessories between the Alternator-IPD and Aftertreatment heaters

IPD Module

ECM

CAN

Heater Power Supply

P0
IPD Alt

Heater
1
DOC/DPF

Heater
2
SCR

Heater Power Return

0V Ref

Global Platform Validation

Global Platform Validation

6 years
research & development

54,500 hours
in-house and overload testing

8.8 million mi
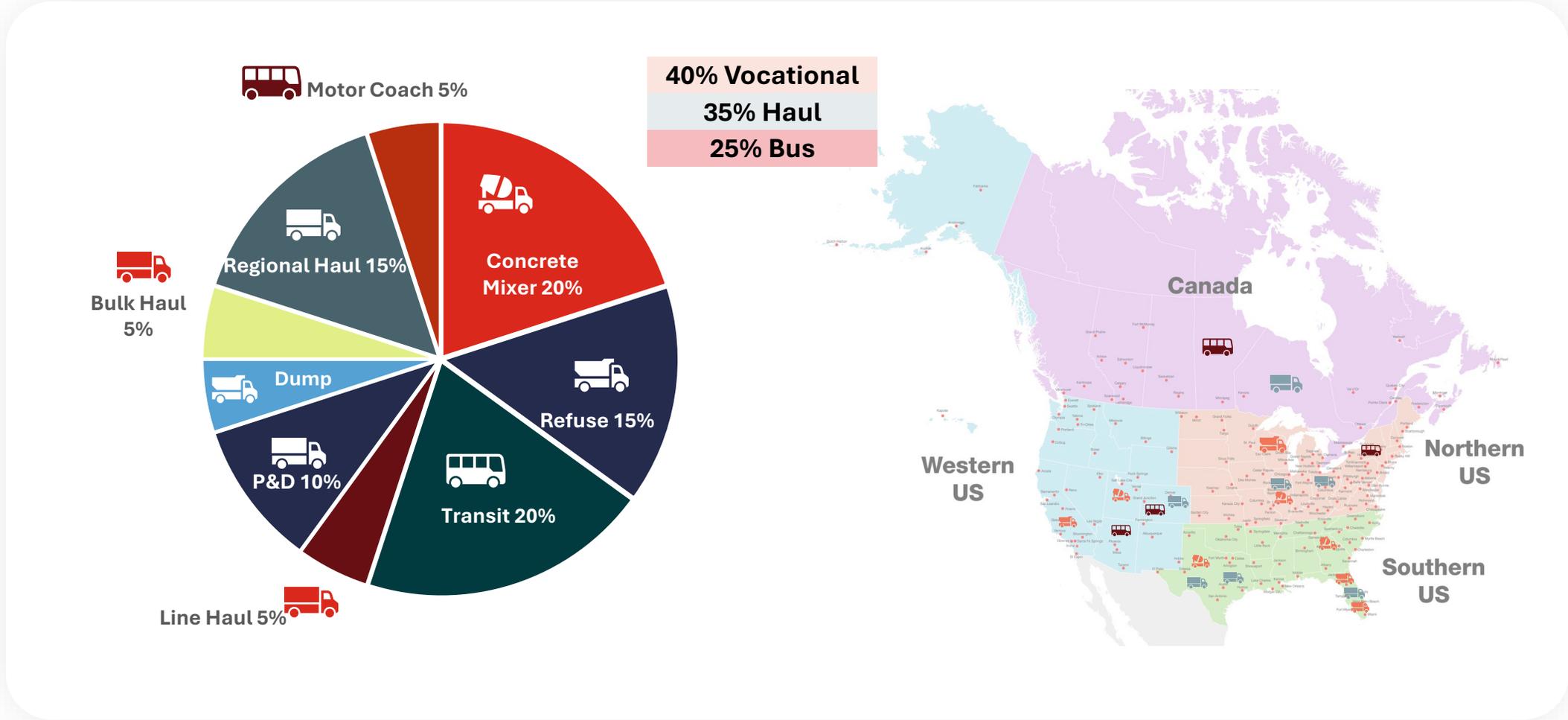on-road testing

Global Production **3,000+** engines

Planned Validation For X10

4 years
research & development

12,620 hours
in-house and overload testing

2.5 million mi
on-road testing

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Field Test Facts

Pie chart:
- Motor Coach 5%
- Concrete Mixer 20%
- Regional Haul 15%
- Bulk Haul 5%
- Dump
- Refuse 15%
- P&D 10%
- Transit 20%
- Line Haul 5%

40% Vocational
35% Haul
25% Bus

Map of North America: Canada, Western US, Northern US, Southern US

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Q+A