



HY-RANGER hybrid engine kits.



It's HY time for cleaner energy.

The **HY-RANGER** is a cutting-edge hydrogen hybrid conversion kit designed exclusively for the automotive and heavy equipment industry. Vehicles still use gas or diesel, but with the benefit of extended range and less emissions.



RELIABLE • EFFICIENT • SUSTAINABLE



Own a fleet?

Keep diesel fleets longer

Lower emissions
without impacting
performance

Get full depreciation

Hydrogen-diesel hybrid



Don't just upgrade your fleet, electrolyze it.

HY Performance. HY Fuel Savings.



Up to 20% Fuel Savings

Join the ranks of the City of Kawartha Lakes fleet, already saving up to 20% in fuel costs.



Up to 50% Emission Reduction

Cut Tailpipe Emissions (PM, CO, NOx) by up to 50%.



Engine Optimization

Experience improved engine performance and efficiency, while the hydrogen also cleans out the carbon for a longer-lasting engine.



Innovative Technology

Our smart electrolyzer communicates with the engine to provide the amount of hydrogen it wants.



Safe Technology

Hydrogen on demand, never stored or under pressure - Only created when the engine needs it, and used right away.

Financing Available

Financeit

Greenfoot Energy Solutions

1-800-380-9384

info@greenfootenergy.ca

HYGN System – Key Benefits and Performance Overview

Fuel Savings & GHG Reductions Lower emissions

The HYGN system has been tested across a broad range of diesel and gasoline engines.

Independent, third-party real-world testing has demonstrated fuel **savings between 16% and 32%**.

Because reductions in fuel consumption directly translate to lower greenhouse gas emissions, the system provides a **corresponding 16%–32% decrease in CO₂ output**.

Additional Emissions Reductions & Operational Benefits

1. Reduction of Hydrocarbons (HCs)

Introducing hydrogen into the combustion process promotes a more efficient and complete burn of the existing fuel. This improved combustion helps prevent the formation and accumulation of unburned hydrocarbons within the exhaust system.

For fleet operators, hydrocarbon buildup is a known contributor to higher maintenance requirements due to fouling and residue accumulation along with environmental benefits.

By improving combustion efficiency, the HYGN system helps mitigate these issues.

2. Reduction of Carbon Monoxide (CO)

Carbon monoxide is a toxic byproduct of incomplete combustion. Enhancing combustion efficiency significantly reduces CO emissions, delivering health, environmental, and operational benefits.

Third-party emissions testing (see attached report) recorded substantial CO reductions, including cases where CO emissions decreased by up to 98%.

3. Reduction of Nitrogen Oxides (NOx)

Nitrogen oxides are harmful pollutants formed under high-temperature combustion conditions. NOx contributes to smog, acid rain, ozone depletion, and respiratory health issues.

Reducing NOx emissions provides broad benefits across:

- ⚡ **Public health**
- ⚡ **Climate impacts**
- ⚡ **Environmental sustainability**
- ⚡ **Ecosystem protection**
- ⚡ **Operational compliance**



Independent testing documented CO and NOx reductions of up to 98% (see below test results)



HYGN

Emissions Test Report

HY-
RANGER





Emissions Test Report

The following are a series of e-test reports conducted by LYNX Emissions, on behalf of HYGN and their various customers who are currently using the HY-Ranger. The report showcases emission levels pre and post the installation of the HY-Ranger Hybrid Kit.

The report covers the following vehicle types:

- Pick-up Trucks
- Mining Vehicles
- Construction Equipment
- Buses
- Class-8 Trucks
- Utility Trucks
- Snow Plow
- Garbage Trucks



Pick-Up

Trucks





Emissions Test

HY-RANGER

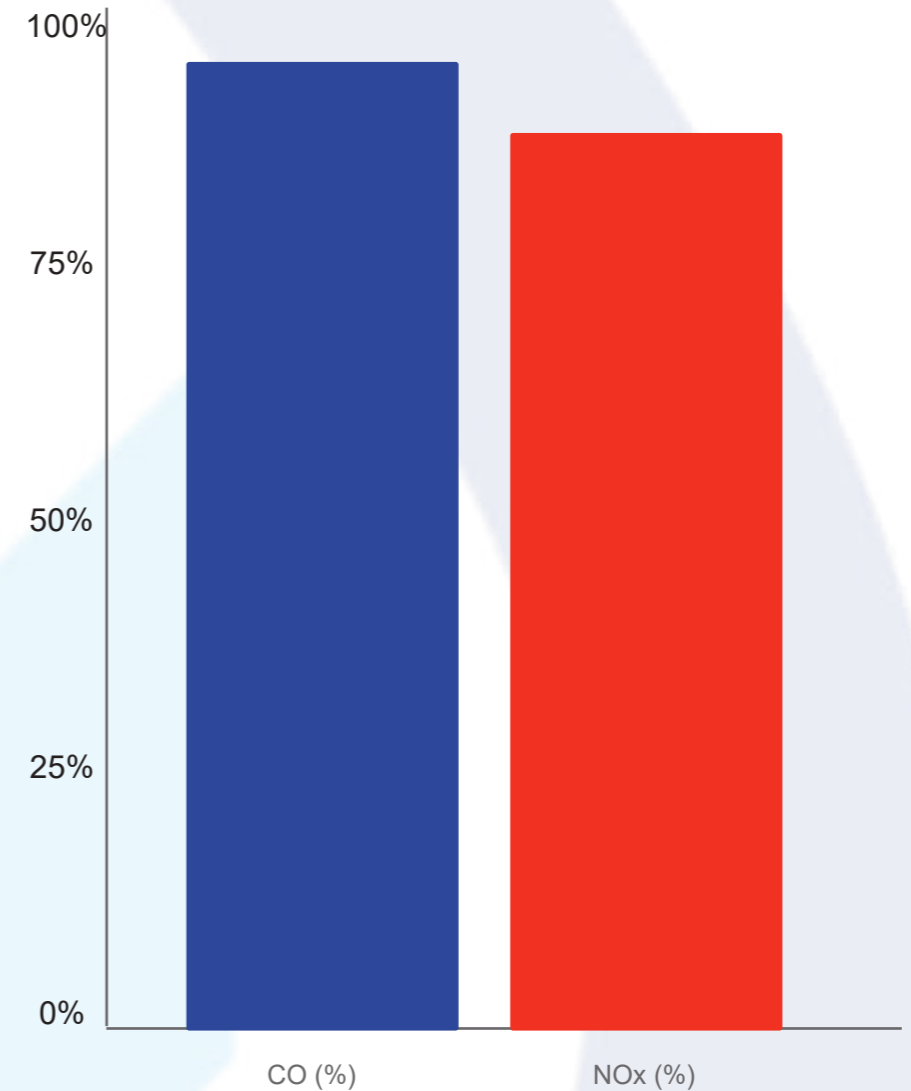
Vehicle Type: Pick-up Truck
Make: Dodge
Model: RAM 1500
Engine Type: 5.7L Hemi
Year: 2018



96% ↓
CO%
REDUCTION

.....
87% ↓
NOx%
REDUCTION

Emissions Reductions with HY-Ranger



Emissions Test

HY-RANGER

Vehicle Type: Utility

Make: Ford

Model: Excursion 26

Engine Type: 3.5L V6 Ecoboost

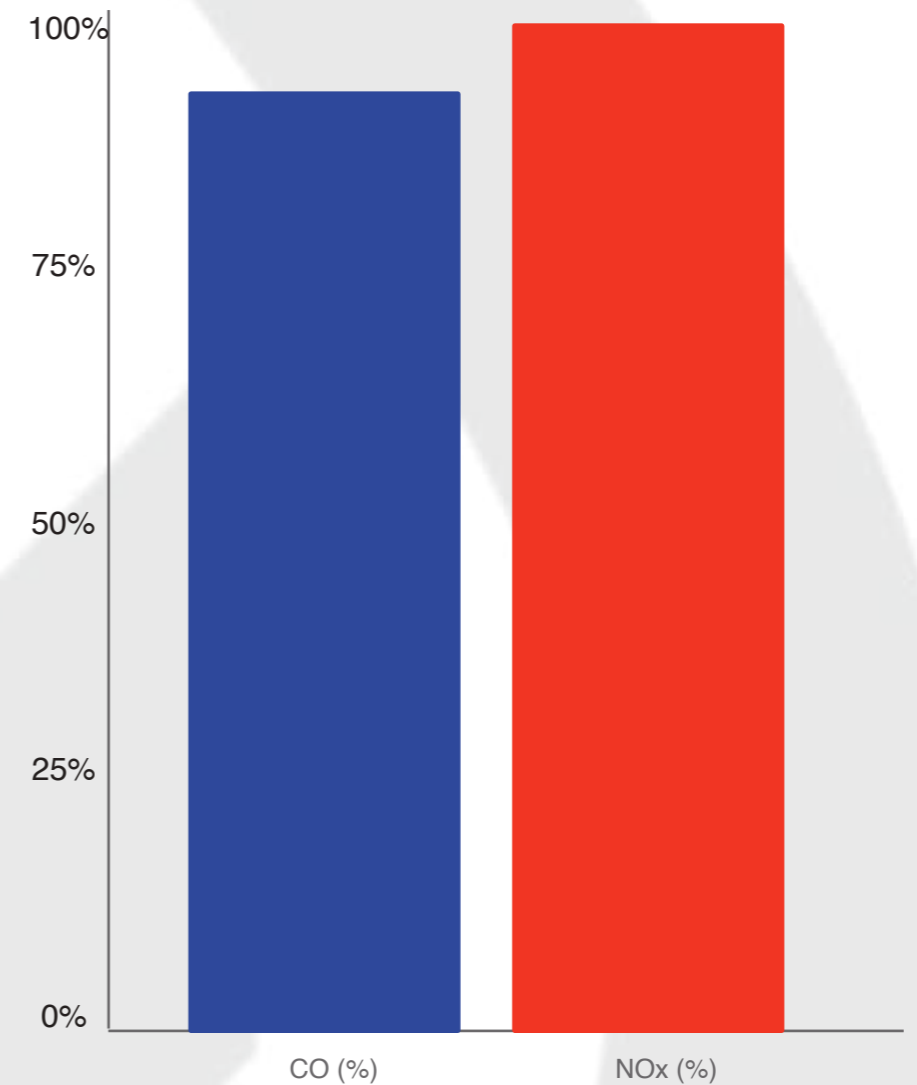
Year: 2021



83% ↓
CO%
REDUCTION

.....
98% ↓
NOx%
REDUCTION

Emissions Reductions with HY-Ranger





Emissions Test

HY-RANGER

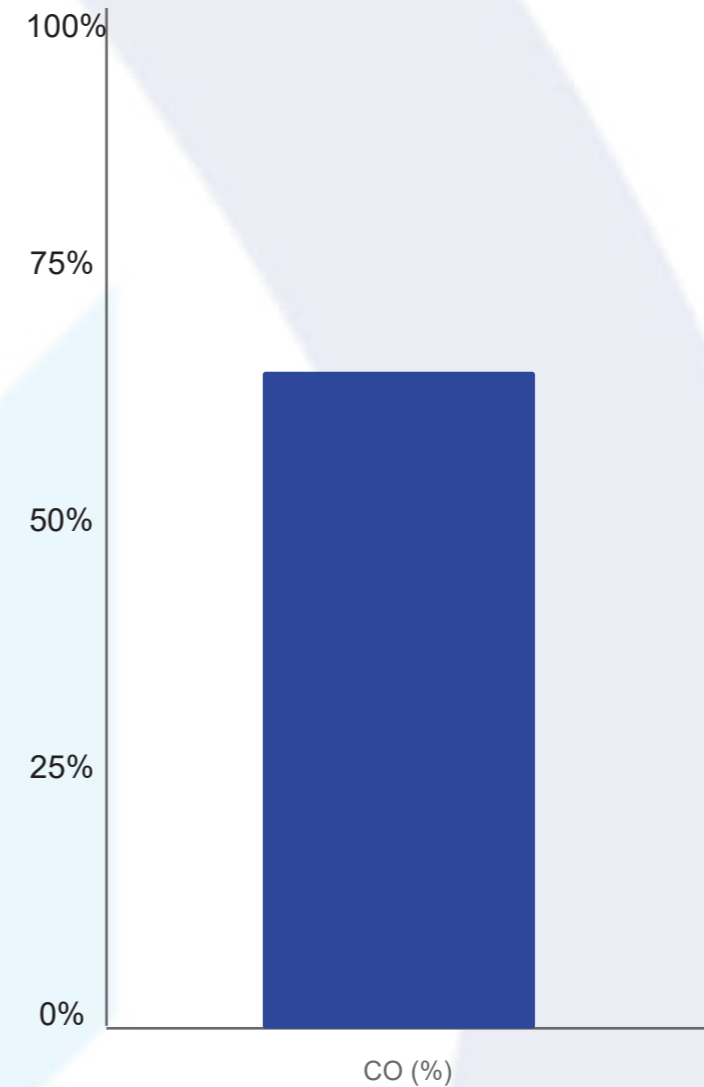
Vehicle Type: Pick-up Truck
Make: Ford
Model: F-350
Engine Type: 6.7L Turbo Diesel
Year: 2024



66%
**CO%
REDUCTION**



Emissions Reductions with HY-Ranger





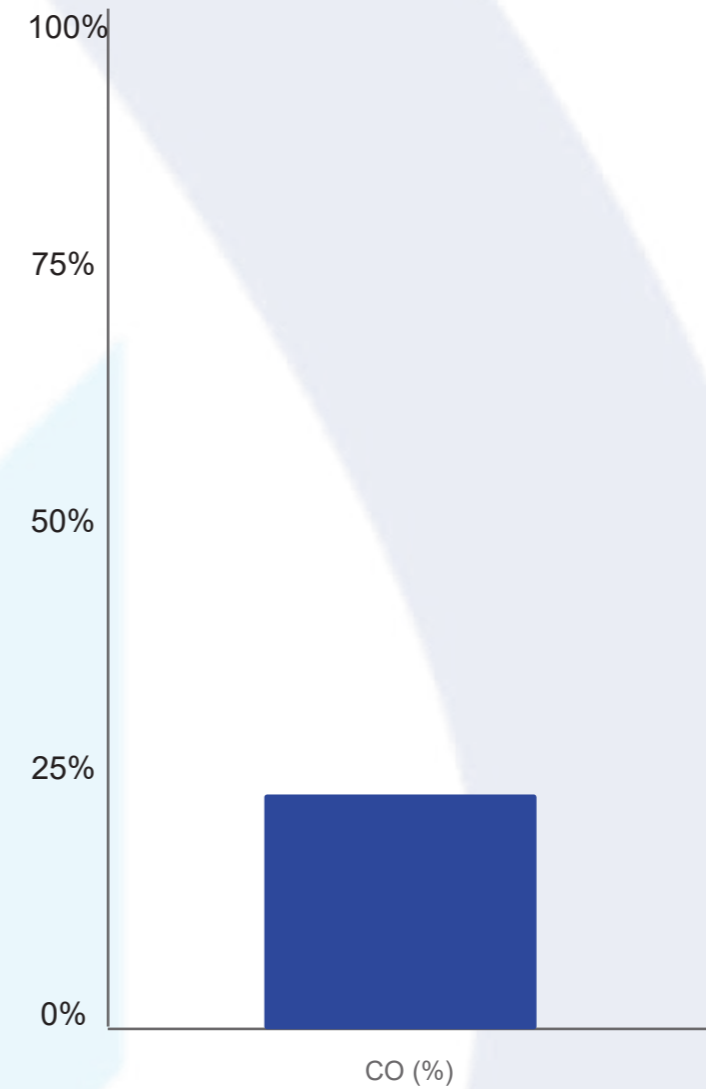
Emissions Reductions with HY-Ranger

Emissions Test

HY-RANGER

Vehicle Type: Pick-up Truck
Make: Ford
Model: F-350
Engine Type: 6.7L Turbo Diesel
Year: 2025

21%
CO₂
REDUCTION





Emissions Test

HY-RANGER

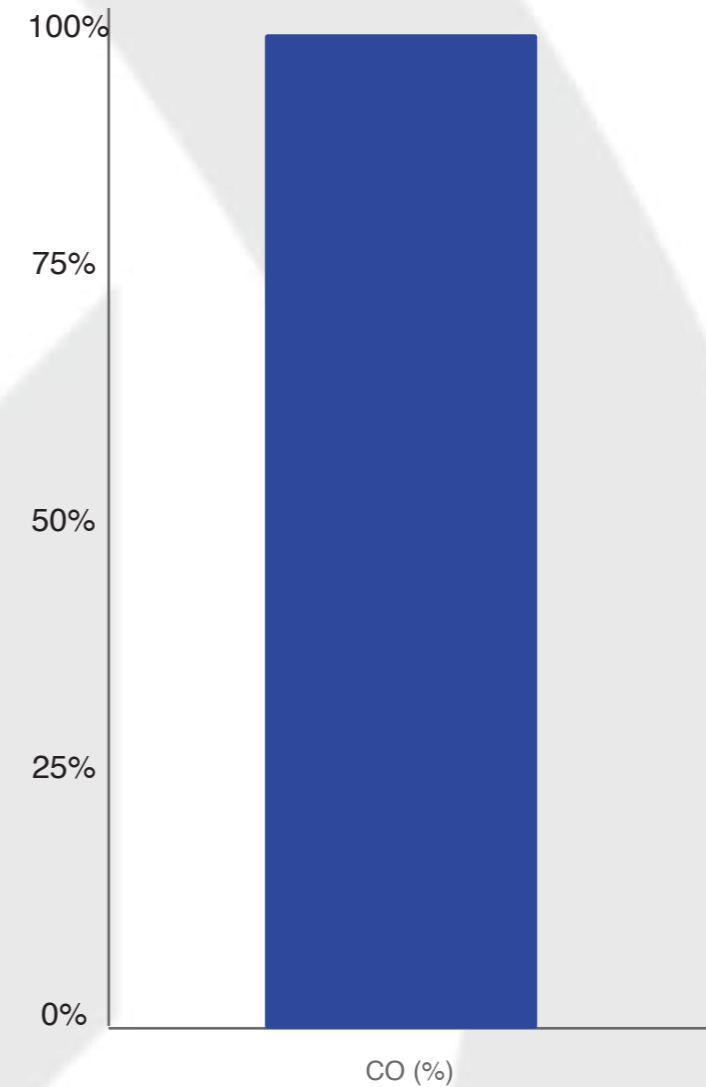
Vehicle Type: Pick-up Truck
Make: Dodge
Model: RAM
Engine Type: 5.7 Hemi
Year: 2024



97%
CO%
REDUCTION



Emissions Reductions with HY-Ranger





Emissions Test

HY-RANGER

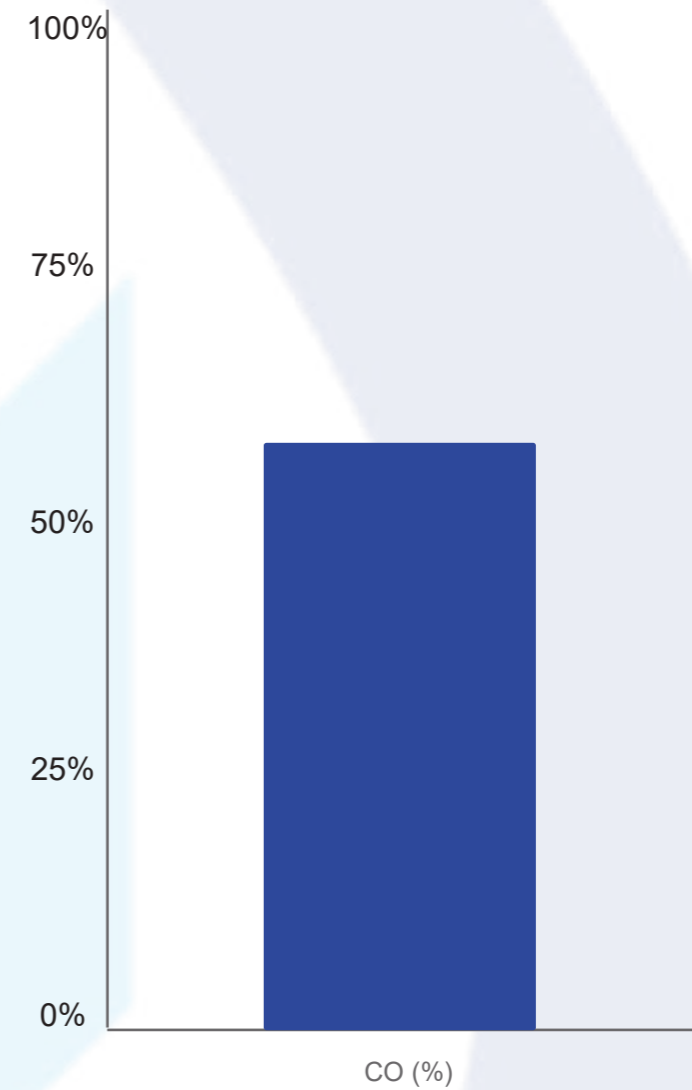
Vehicle Type: Pick-up Truck
Make: Ford
Model: F-150 (#25)
Engine Type: 3.5L EcoBoost V6
Year: 2025



60%
CO%
REDUCTION



Emissions Reductions
with HY-Ranger





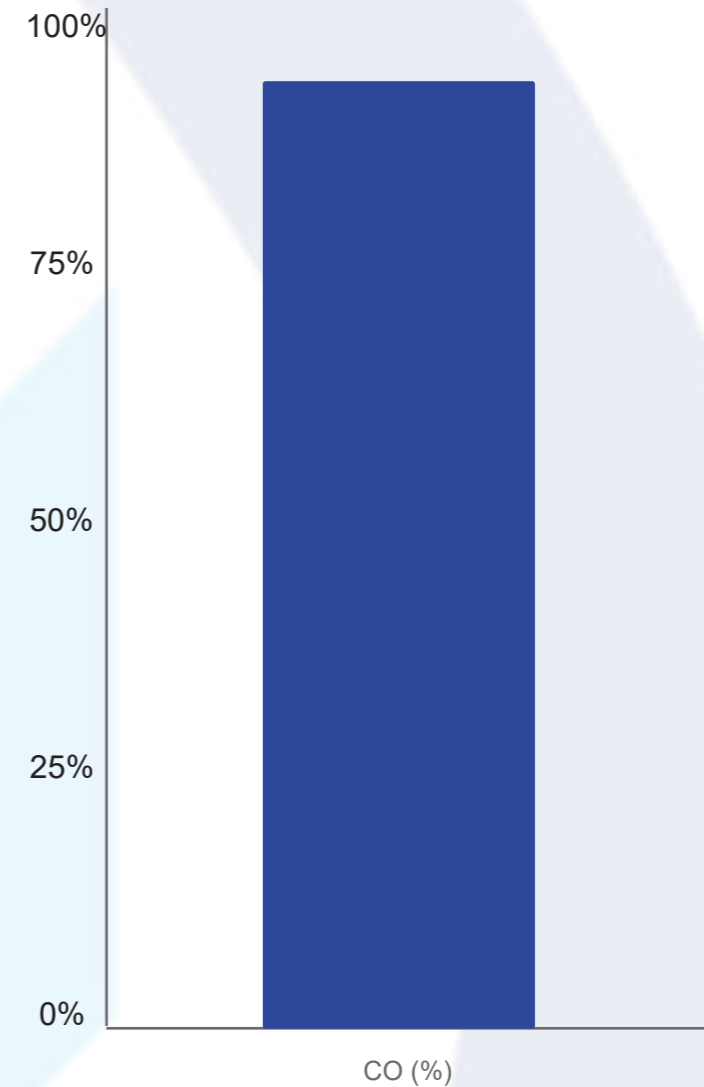
Emissions Test

HY-RANGER

Vehicle Type: Pick-up Truck
Make: Ford
Model: F-150 (#2)
Engine Type: 3.5L EcoBoost V6
Year: 2025



93%
CO%
REDUCTION



Emissions Reductions with HY-Ranger





Emissions Test

HY-RANGER

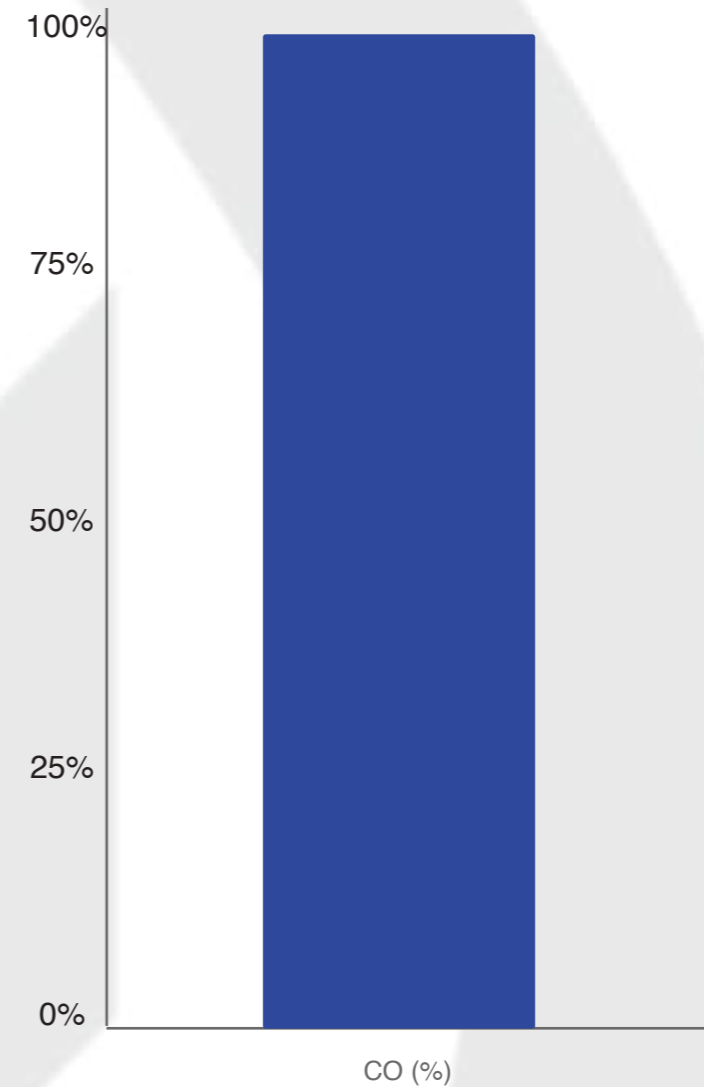
Vehicle Type: Pick-up Truck
Make: Dodge
Model: RAM
Engine Type: 5.7 Hemi
Year: 2024



97%
CO%
REDUCTION



Emissions Reductions with HY-Ranger



Construction

Equipment



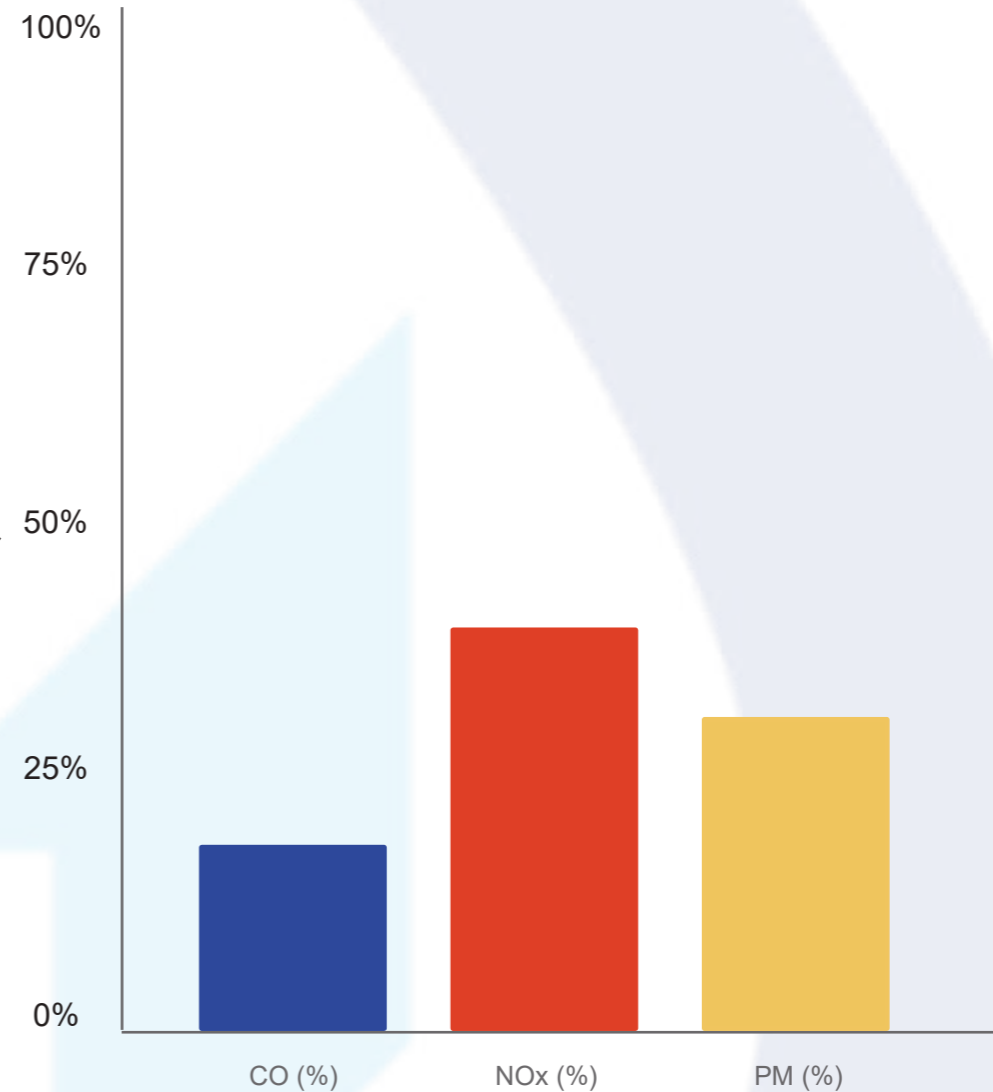
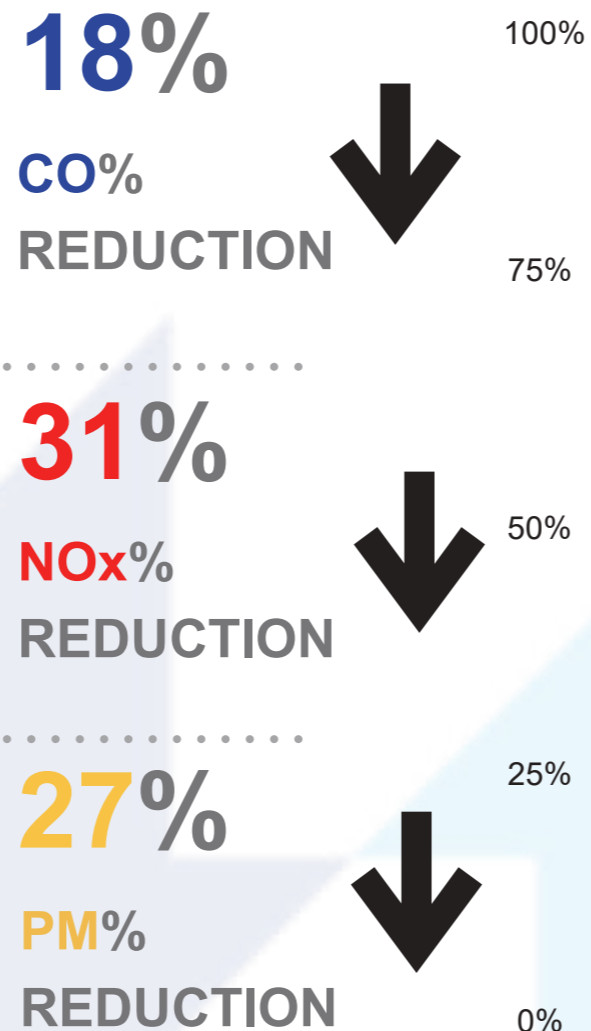
Emissions Test

HY-RANGER

Vehicle Type: Construction
Make: Caterpillar
Model: 826H
Engine Type: C15
Rebuilt: 2024



Emissions Reductions with HY-Ranger



Buses

Long & Short



HYGN

Emissions Test

HY-RANGER

Vehicle Type: City Bus
Make: Nova
Model: Long Bus
Engine Type: 9L Diesel
Year: 2016



65%
CO%
REDUCTION



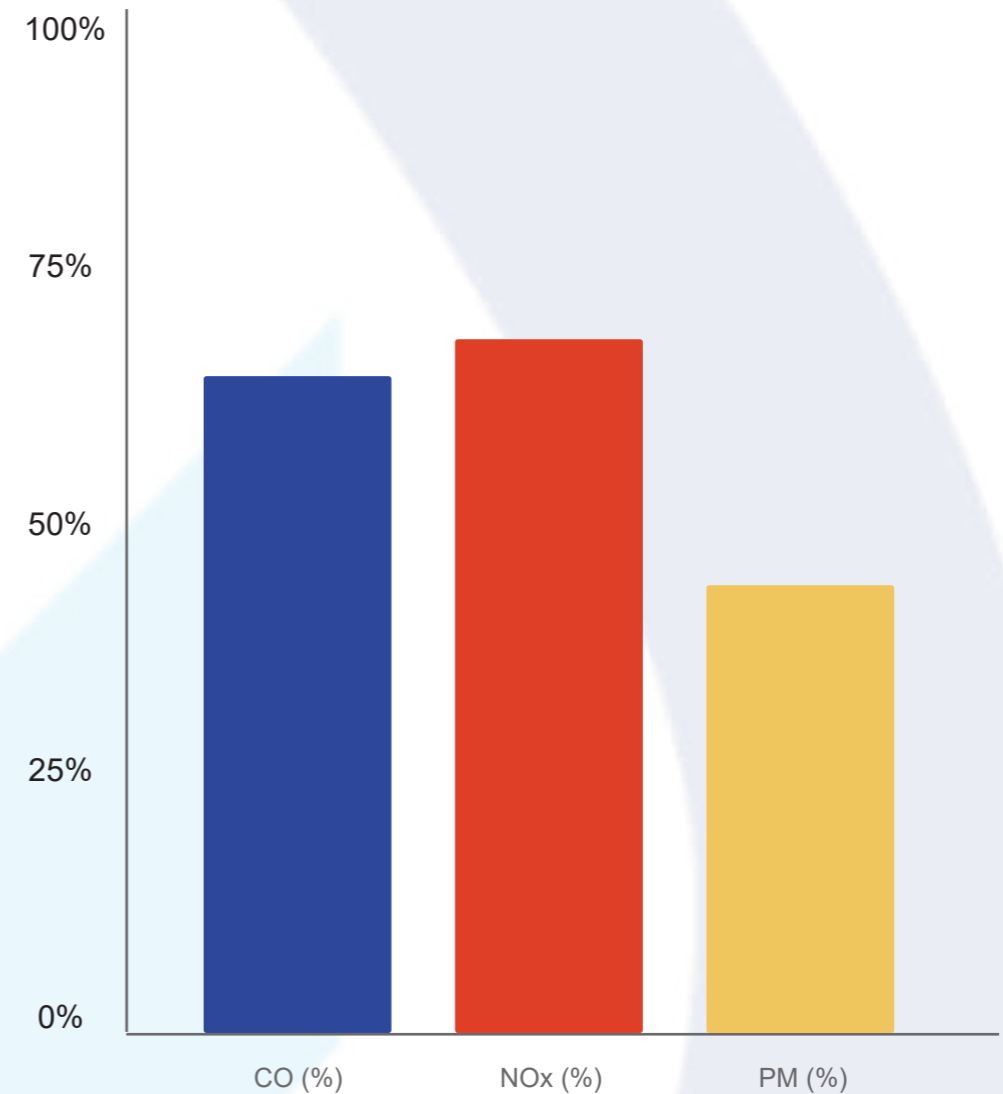
.....
67%
NOx%
REDUCTION



.....
46%
PM%
REDUCTION



Emissions Reductions with HY-Ranger



HYGN

Emissions Test

HY-RANGER

Vehicle Type: City Bus
Make: Chevrolet
Model: Short Bus
Engine Type: 6.6L Gas
Year: 2021



Emissions Reductions with HY-Ranger

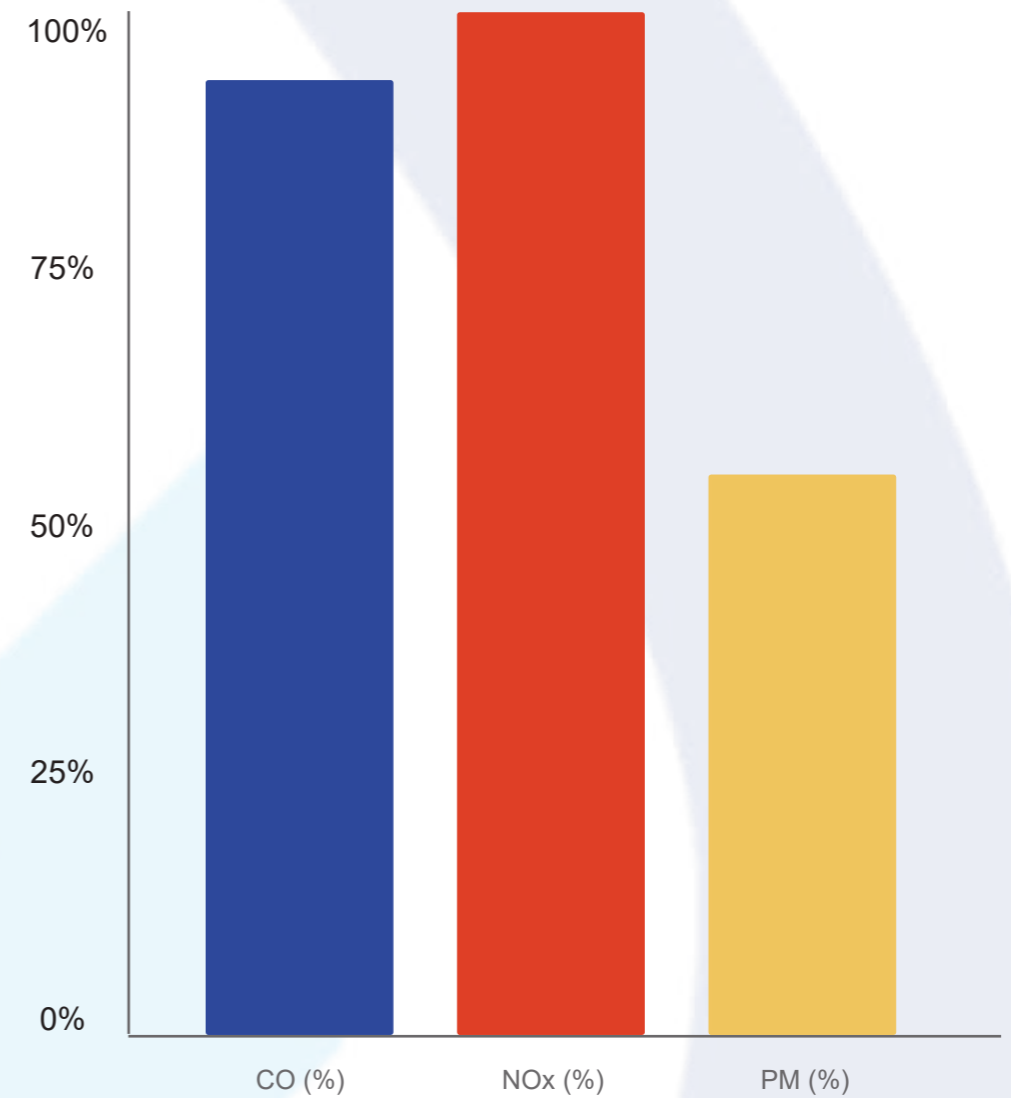
88%
CO%
REDUCTION

.....

100%
NOx%
REDUCTION

.....

53%
PM%
REDUCTION



HYGN

Emissions Test

HY-RANGER

Vehicle Type: City Bus
Make: Chevrolet
Model: Short Bus
Engine Type: 6.6L Gas
Year: 2021



96%

CO%
REDUCTION



83%

NOx%
REDUCTION

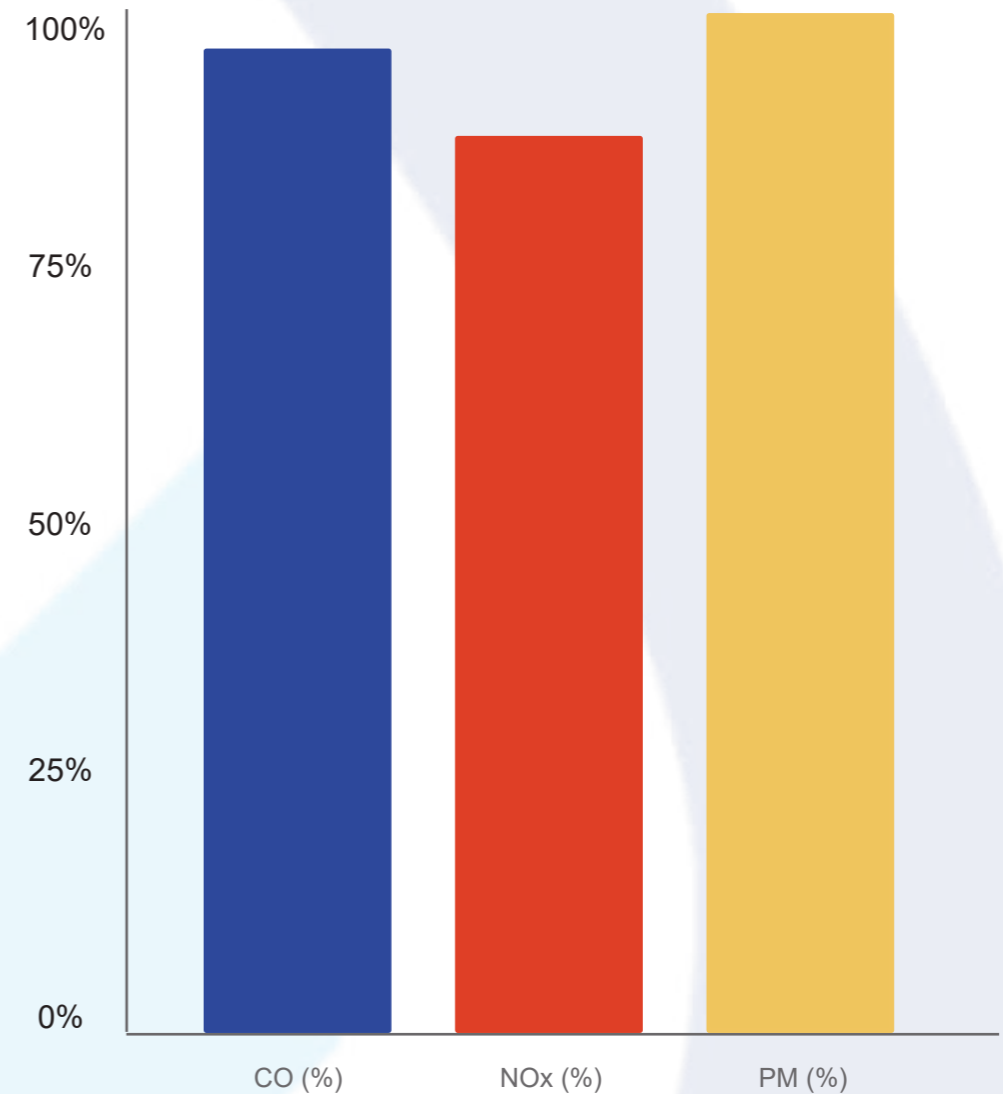


100%

PM%
REDUCTION



Emissions Reductions with HY-Ranger



HYGN

Emissions Test

HY-RANGER

Vehicle Type: City Bus

Make: Nova

Model: Long Bus

Engine Type: 9L Diesel

Year: 2016



Emissions Reductions with HY-Ranger

99%

CO%
REDUCTION



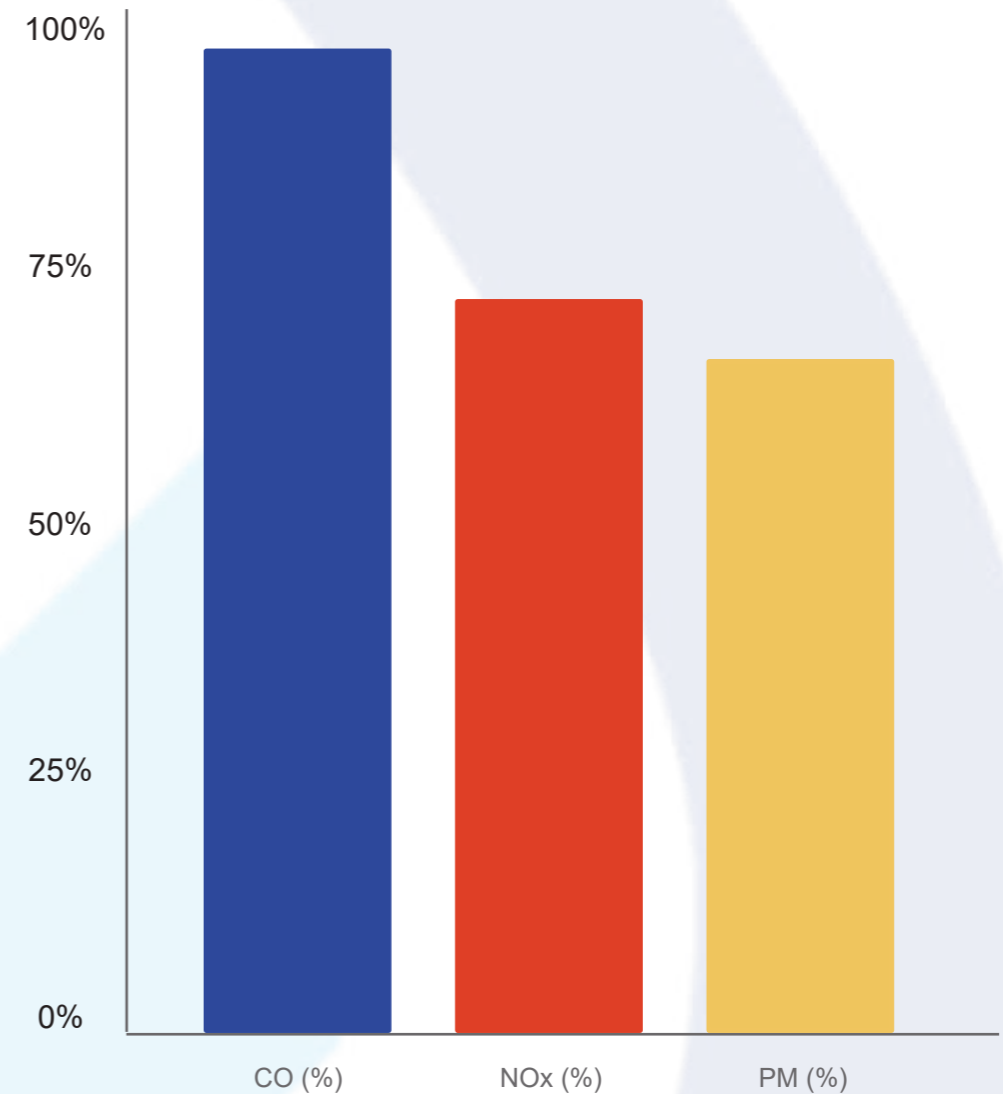
73%

NOx%
REDUCTION



66%

PM%
REDUCTION



HYGN Emissions Test

HY-RANGER

Vehicle Type: City Bus
Make: Ford
Model: E-450
Engine Type: 6.8L Gas
Year: 2017



58%
CO%
REDUCTION



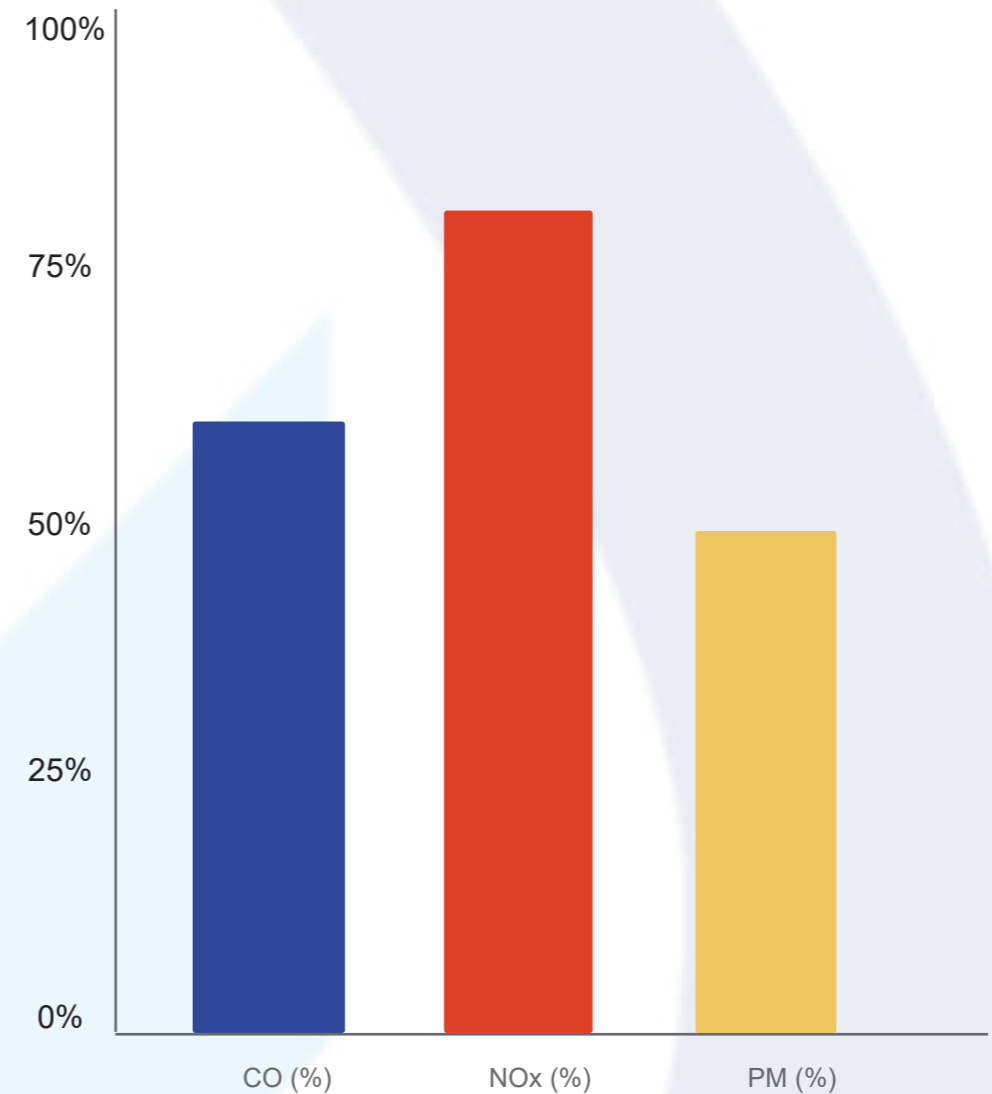
79%
NOx%
REDUCTION



49%
PM%
REDUCTION



Emissions Reductions with HY-Ranger



Class-8

Trucks





Emissions Test

HY-RANGER

Vehicle Type: Garbage Truck
Make: International
Model: Packer 834
Engine Type: 12L Diesel
Year: 2019



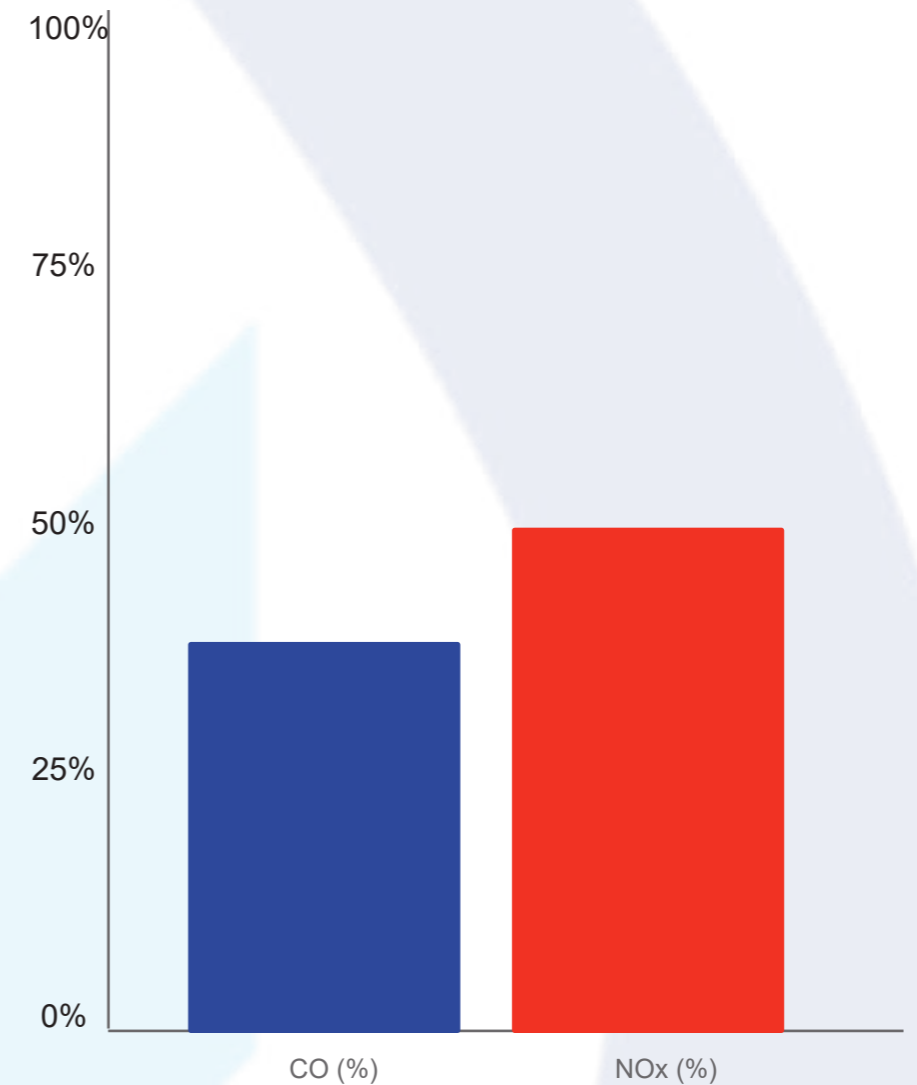
Emissions Reductions with HY-Ranger

33% ↓

CO%
REDUCTION

49% ↓

NOx%
REDUCTION



HYGN

Emissions Test

HY-RANGER

Vehicle Type: Dump Truck
Make: International
Model: HV Series
Engine Type: 12.4L Diesel
Year: 2020



Emissions Reductions with HY-Ranger

92%

CO%
REDUCTION



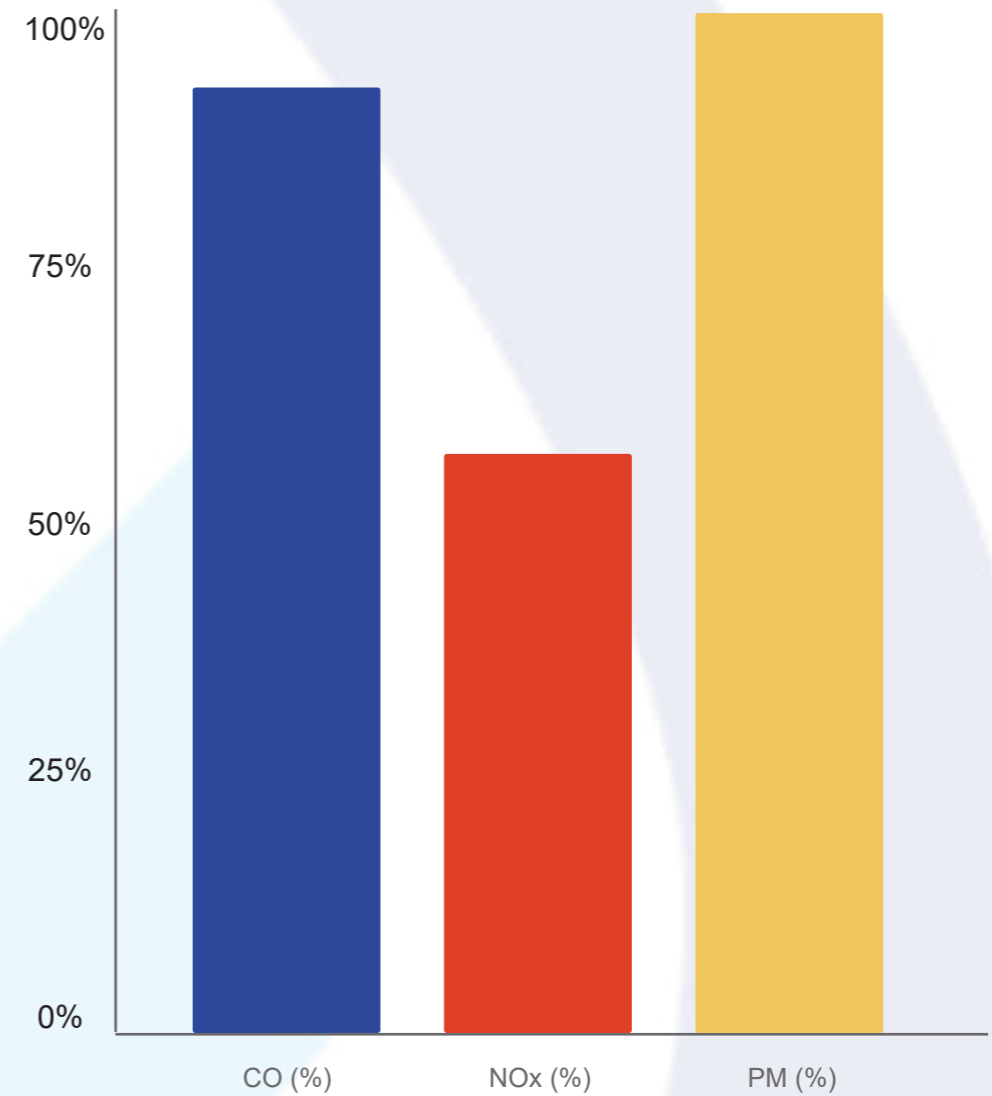
54%

NOx%
REDUCTION



100%

PM%
REDUCTION





Emissions Test

HY-RANGER

Vehicle Type: Concrete-Truck
Make: MACK
Model: 800
Engine Type: 13L Diesel
Year: 2016



708076614668J059716J Date / Time: Aug 11, 2025, 10:56 AM

VEHICLE/ENGINE INFORMATION	CHASSIS	ENGINE
Plate#: BX69281	Year: 2016	Year: 2016
VIN: 1M2AX13C1GM030358	Make: MACK	Make: MACK
GVWR(kg): 29938	Model: 800	Size (L): 12.0
Odometer: 270011	Fleet ID: 258	

OVERALL INSPECTION RESULT	PASS
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SAE SNAP ACCELERATION EMISSIONS INSPECTION RESULT

SNAP	1	2	3	4	5	6	7	8	9	Result	Limit
Opacity %	0	0	0							0	10
RPM	2100	2101	2101								

	Result	Limit
Zero Drift %	Valid	0 2
Snap Spread %	Valid	0 5

100%

PM%

REDUCTION



HYGN Emissions Test

HY-RANGER

Vehicle Type: Concrete-Truck
Make: Western Star
Engine Type: 13L Diesel
Year: 2025



88%

CO%
REDUCTION



.....
31%

NOx%
REDUCTION



.....
100%

PM%
DEDUCTION



RAINBOW
CONCRETE INDUSTRIES LTD.

Emissions Reductions
with HY-Ranger



Emissions Test

HY-RANGER

Vehicle Type: Class-8
Make: International
Model: HV Series
Engine Type: 12L Diesel
Year: 2019



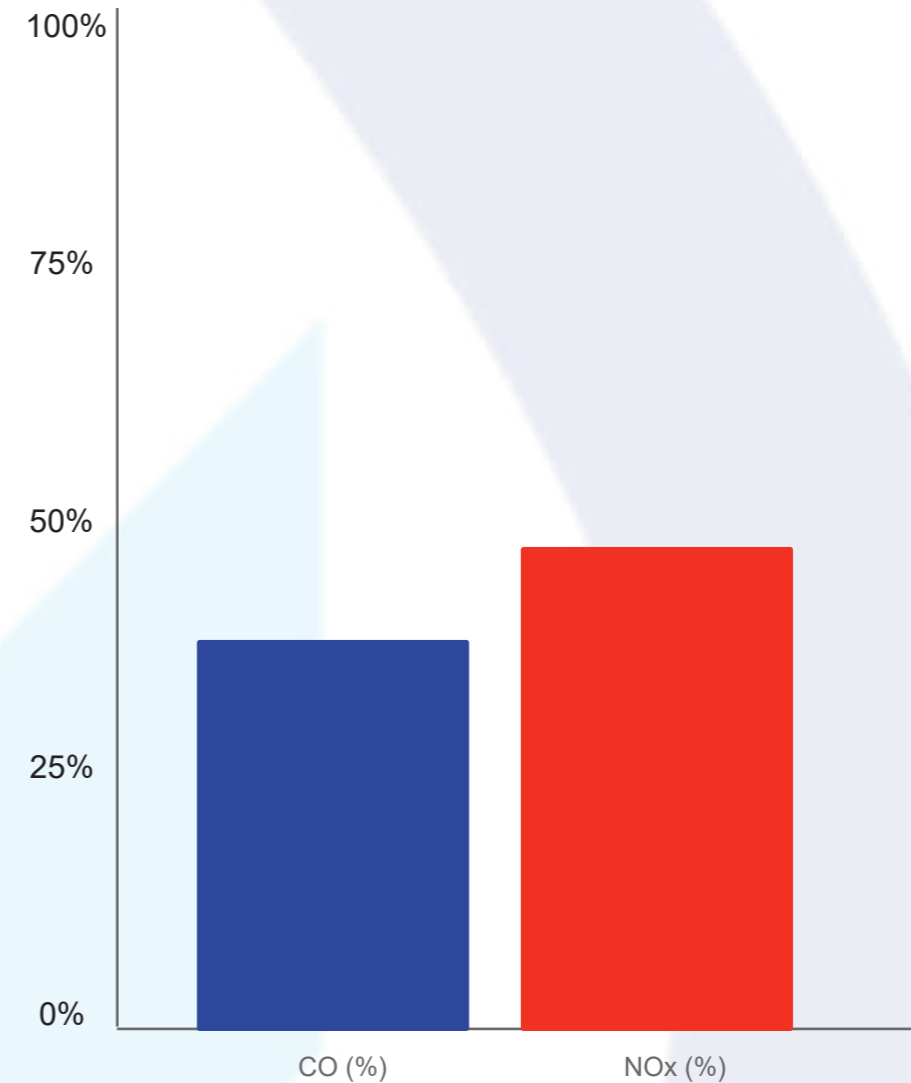
33% ↓
CO%
REDUCTION

.....
46% ↓
NOx%
REDUCTION



FEDERAL BRIDGE CORPORATION
SOCIÉTÉ DES PONTS FÉDÉRAUX

Emissions Reductions with HY-Ranger





Emissions Test

HY-RANGER

Vehicle Type: Class-8
Make: International
Model: HV Series
Engine Type: 12L Diesel
Year: 2025



100% ↓
CO%
REDUCTION

.....
31% ↓
NOx%
REDUCTION



Emissions Reductions with HY-Ranger

