



# Green Business Expo Presentation

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## The Evolution of Fuel

# Introducing GO<sub>2</sub>...

- Cerion Energy's Diesel Combustion Catalyst
- GO<sub>2</sub> Diesel Fuel Optimizer (GO<sub>2</sub>) reduces fuel consumption and greenhouse gas emissions in a variety of diesel vehicles
- GO<sub>2</sub> is created by Cerion scientists, formerly of Eastman Kodak, who collaborated to put their nanotech research to work.



# GO<sub>2</sub> Deliverables

7 to 10 % Reduction in Fuel Consumption

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8 to 40 % Reduction in Greenhouse Gases\*

– CO<sub>2</sub>, CO, NO<sub>x</sub>, & Total HydroCarbons (THC)

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25 to 35% Reduction in Soot

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\*depending on specific gas

# Return on Investment (ROI)

If you use 10 Million Gallons of Diesel per year and are spending about \$25 Million per year on fuel, then you will save approximately **\$1,750,000 to \$2,500,000** annually in fuel costs.

At the  $\text{GO}_2$  cost of 10 cents per treated gallon, net savings to your business would be **\$750,000 to \$1,500,000**.

Price and volume discounts can be available to enhance your first year savings.

Fuel Savings of 7 to 10%  
\$2.50 / gallon diesel fuel

What is Cerion GO<sub>2</sub>?

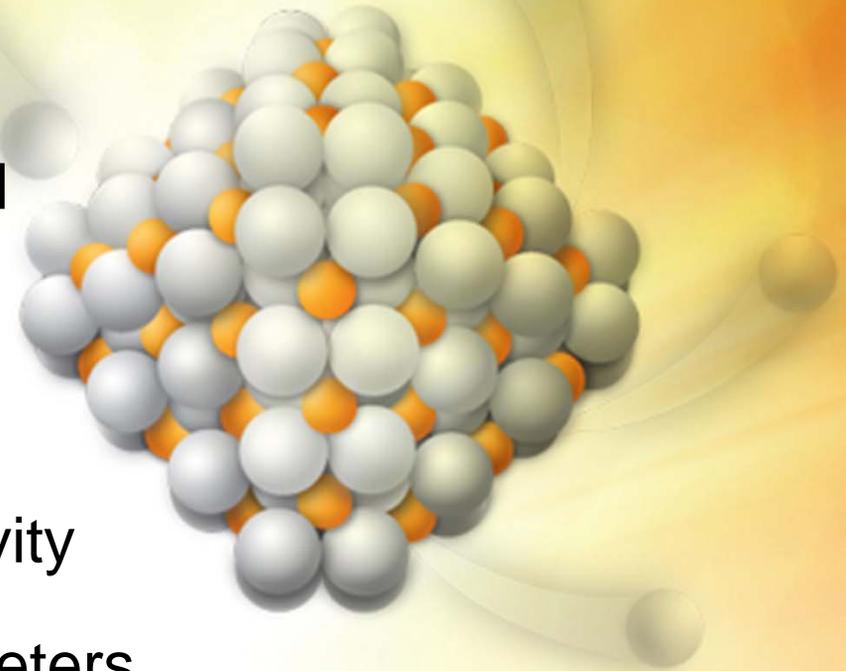
How does GO<sub>2</sub> work?

GO<sub>2</sub> Performance

GO<sub>2</sub> In Your Operation

# What is Cerion GO<sub>2</sub>?

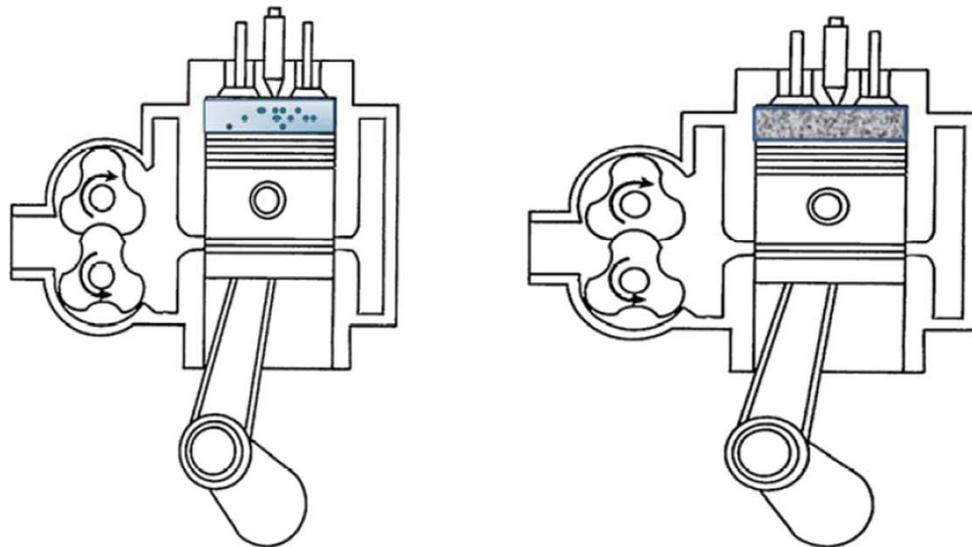
- Liquid suspension of highly reactive Nano-Particles, added directly to diesel fuel supply
- Based on a Cerium Dioxide crystal enhanced with other elements to increase its reactivity
- Each particle is 2 to 10 nanometers, or about the width of your DNA!
- 1 gallon of Cerion GO<sub>2</sub> treats 4,000 gallons of diesel fuel



# How Does GO<sub>2</sub> Work?

- Cerion GO<sub>2</sub> is present in the diesel fuel as it is injected into and vaporizes in the cylinder
- Inside the cylinder, Cerion GO<sub>2</sub> catalyst rapidly transfers oxygen to provide a more uniform O<sub>2</sub> distribution

Ceria is an oxygen buffer



# GO<sub>2</sub> Performance

## Efficiency Gains:

	<b>Marine</b>	7-9% decrease in fuel consumption
	<b>Rail</b>	8-13% decrease in fuel consumption

## Emissions Reductions:

- Greenhouse Gases (CO<sub>2</sub>, CO, NO<sub>x</sub>, THC): 8-40%

# GO<sub>2</sub> Platforms



GO<sub>2</sub>

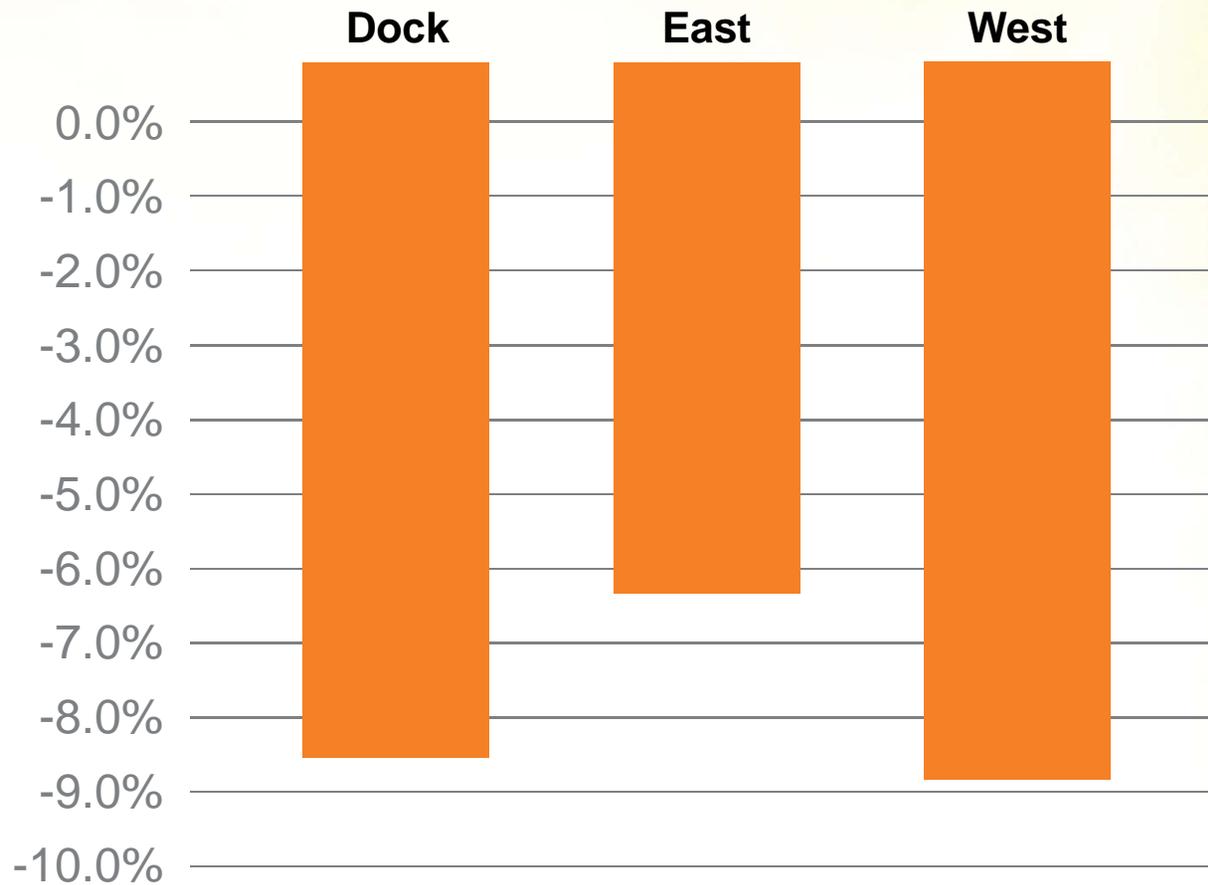


# Example GO<sub>2</sub> Platforms

<b>Engine</b>	Cummins K19	GE 7FDL-12	Cat 3512	Detroit 671
<b>Cylinders</b>	Inline 6	V-12	V-12	Inline 6
<b>Displacement</b>	19 L	132 L	52 L	7 L
<b>Cycle</b>	4-stroke	4-stroke	4-stroke	2-stroke
<b>Intake</b>	Turbo	Turbo	Turbo	Roots Blower
<b>Horsepower</b>	500	2250	1750	238

# Example Marine Fuel Reductions

## Fuel Consumption Change



# Example Marine Emissions Reductions

## Gas Emissions, % Change with GO<sub>2</sub>

	CO <sub>2</sub>	CO	NO <sub>x</sub>	HC
Dock Push	-7.6%	-44%	-8.7%	-65%
Eastbound NY Harbor	-5.9%	Trace	-5.6%	-49%
Westbound NY Harbor	-8.2%	Trace	-7.7%	-59%

# **Your fuel will stay within ASTM and Manufacturers' specifications.**

Analysis at Southwest Research Institute proved that fuel treated with  $\text{GO}_2$  will continue to meet all required physical and chemical specifications.

## **Increased Lubricity**

Fuel injector abrasion tests at SwRI showed a 40% reduction in wear with  $\text{GO}_2$ .

# GO<sub>2</sub> In Your Operation

## Treatment Options that Fit Your Needs:

- Splash Blending at individual vehicle refueling for small or remote operations
- Bulk treatment of your on-site fuel supply tanks for full-fleet implementation
- On-board injection into fuel stream for operator-free treatment
- Pre-treated fuel delivered by a partner regional fuel supplier for large fleet operations

Cerion GO<sub>2</sub> provides  
commercial diesel fleet operations  
an 7-10% reduction in fuel  
consumption and 8-40% decrease  
in greenhouse gas emissions

Q & A



# CERION

E N E R G Y

Please visit our booth for more information on how Cerion can help your business save money.

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