On-Road Truck and Bus Applications

Sole Source Technology with 33 Issued Patents

Energy and Emission Solutions
Rentar Fuel Catalyst is Independently Verified to:

- Reduce Fuel Consumption And Extend Range 2.0% to 12.0%
- Reduce Oil Fired Furnace Fuel Consumption 7.0% to 30.0%
- Reduce Greenhouse Gases (NOx, CO and CO2) Up To 19.2%
- Reduce Particulate Matter (PM) Up To 58.2%
- Reduce Black Smoke (Opacity) Up To 44.8%
- Extend Engine Life Between Engine Rebuilds 20% to 50%
- Reduce Organic And Elemental Carbon Up To 35.0%
- Reduce Volatile Organics up to 63.0%

Results vary based on the applications, type of engine and type of fuel utilized
Benefits of the Rentar Fuel Catalyst to the On-Road Truck Application

- Reduces Fuel Consumption
- Increases Payload Per Gallon / Liter
- Reduces Greenhouse Gas Emission
- Extends Engine Life
- Extends Oil Life
- Reduces Engine Maintenance
- 10 Year Warranty
- Easy to Install
- Pays for Itself in Fuel Savings in 3 to 12 Months
Rentar Is Independently Verified By:

- Southwest Research Institute
- EPA & CARB Recognized Laboratories
- Aberdeen Proving Grounds
- Olson Ecological Laboratories
- Virginia Tech University
- SGS,SA
- Toyota Car Carrier Fleet
- DHL
- Federal Express
- C.R. England
Reduce Fuel Consumption and Exhaust Pollution
Improve Payload Per Gallon /Liter
Extend Engine and Oil Life

Extend Engine Life 20% Between Rebuilds
Testimonial Letters
FIVE TOYOTA/PENSKE TRUCK TRACTORS

POWERED BY CATERPILLAR C-12 DIESEL ENGINES

ETS, a Division of Olson Engineering For Toyota Motor Company
EPA and CARB Recognized Engine Emission Laboratory
5 Toyota/Penske Truck Tractors Powered by Caterpillar C-12 Diesel Engines
Testing Conducted in Environment Controlled Laboratory Dynamometer

Results: (Average Results of 5 Trucks)

Steady State (“highway driving”)
11.3% Fuel Consumption Improvement
42.2% Particulate Matter (PM) Improvement
9.7% CO2 Improvement
33.5% Carbon Monoxide Improvement
36.8% Total Hydrocarbons

Hot-Start UDDS-HD (“city driving”)
3.2% Fuel Consumption Improvement
6.9% Particulate Matter (PM) Improvement
2.5% CO2 Improvement
9.9% Carbon Monoxide Improvement
10.3% Total Hydrocarbons Improvement
Penske Truck Leasing, at their Terminal in Lubbock Texas, tested fuel consumption reduction on **FIVE Exel/DHL trucks**.

Penske collected data over **66 days and 123,954 miles**.

The independent conclusion was that the Rentar Fuel Catalyst **reduced fuel consumption by 5.1%**.

### EPA Recognized Fuel Test Procedure

**10 Class 8 DHL trucks.**

**5 Test Trucks / 5 Control Vehicles**

**289,200 miles over 95 days.**

*Fuel Savings: 4.59%*

Annual Savings of **$3646 per year**

This created a **ROI of less than a year**
The fuel consumption was reduced by 3.56%

In Harrison Arkansas and North Carolina, Seven Federal Express class 8 Trucks were tested with the Rentar Fuel Catalyst over 18 months during which a total of approximately 900,000 miles were accumulated on 7 trucks.

Data was collected over four months during which a total of approximately 640,000 miles were accumulated on the 16 trucks.

The fuel consumption was reduced a net reduction of 3.66% of the class 8 trucks tested in Kansas.

The fuel consumption was reduced a net reduction of 2.68% of the class 8 trucks tested in Salt Lake City.

The average fuel consumption reduction of the two groups together is 3.17%

See Test Reports whose data was established by Federal Express
Summary of Findings

C.R. England conducted fuel economy studies. They solely managed and collected the data. The results are reported below.

In Salt Lake City, Utah at the C.R. England truck facility, C.R. England managed a fuel economy test procedure using ten Class 8 Tractors as test vehicles and thirty-two Class 8 tractors as control vehicles. All were new tractors with no miles on them thus there was no baseline to start with. The premise was to test the ten Rentar installed tractors against the thirty-two control tractors. The results, as documented in the attached report were a **4.4% average improvement in fuel consumption** on the ten tractors with the Rentar Fuel Catalyst installed over the thirty-two control tractors.

The forty-two trucks were driven over similar routes and in similar weather conditions throughout the duration of the fuel economy study. Testing started in 2006 and included ten Rentar-equipped trucks and thirty-two control trucks. Rentar Fuel Catalysts were installed on ten of the new vehicles from factory by C.R. England and supervised by Rentar staff. The test lasted over the entire lifecycle of the 42 trucks in C.R. England’s fleet, covering **12,703,840 miles**.

See Test Report
Automotive Research Association of India
is co-operative industrial research association by the automotive industry with the Ministry of Industries, Government Of India

Testing Conducted on 6SL8800TA 200 KW Kirloskar 250 Genset Engine
Tested with ISO: 8178 D2 - 5 Mode Test Protocol

3.04% Fuel Improvement
58.2% Reduction of Particulate Matter
7.9% NOx Reduction
35.4% CO Reduction
15.4% Hydrocarbon Reduction

See Test Study
World’s Largest Inspection and Technology Verification Company

SGS Verifies a 17% Fuel Reduction*, a 27.5% Reduction of NO\textsubscript{x} and 32.5% Reduction of CO.

- Over 97,000 employees
- Over 2,600 offices and laboratories worldwide
- Conducted an emissions study on the Rentar fuel catalyst in 2016
- World’s largest inspection and technology verification company

* Computed by Carbon Balance
Children’s Exposure to Diesel Exhaust on School Buses

John Wargo, Ph.D.
Yale University

• In the United States nearly 600,000 school buses transport 24 million students to school daily. Each year buses travel 4.3 billion miles as children take nearly 10 billion school bus rides. In Connecticut, 387,000 students ride to school each day on 6,100 buses. If rides average 30 minutes in each direction, students will spend 180 hours on buses each year. Collectively, U.S. children spend 3 billion hours on school buses each year.

• Connecticut children annually spend more than 50 million hours on school buses.¹

• Most U.S. school buses are powered by diesel fuel. Diesel exhaust is comprised of very fine particles of carbon and a mixture of toxic gases. Federal agencies have classified diesel exhaust as a probable human carcinogen. Benzene, an important component of the fuel and exhaust, is designated to be a known human carcinogen. Components of diesel exhaust are genotoxic, mutagenic, and can produce symptoms of allergy, including inflammation and irritation of airways. There is no known safe level of exposure to diesel exhaust for children, especially those with respiratory illness.

• The Centers for Disease Control and Prevention (CDC) estimates that 4.5 million U.S. children have asthma. This figure includes nearly 44,500 school-aged children in Connecticut diagnosed with the illness. Diesel exhaust can adversely affect children with underlying respiratory illnesses such as asthma, bronchitis, and infections. Diesel emissions may enhance the effects of some allergens among sensitive individuals.

• Children’s airways are not yet fully developed and have a smaller diameter than those of adults. If airways are inflamed or constricted by asthma, allergies or infections, diesel exhaust may make breathing more difficult.
Simple Installation
Credentials

- UL® Listed
- Sotreq CAT
- BBB Accredited Business
- World’s 4th Largest Caterpillar Dealer
- A Rentar Distributor
- 400 Offices - 4300 Employees
- $2 Million International Product Liability Insurance
- Export-Import Bank of the United States
- Official Export Credit Agency
- California Resource Board Executive Order (CARB)
Rentar Case Studies

CASE STUDY

COVANTA ENERGY

Covanta Holding Corporation (NYSE: CVA) is an international owner and operator of Energy-from-Waste power generation projects converting municipal solid waste into renewable energy for numerous communities throughout the United States. 2009 consolidated operating revenues were $1.55 billion with $397 million in operating cash flow and adjusted EBITDA of $515 million.

COVANTA ENERGY
for a cleaner world

Installed Rentar Fuel Catalyst on entire fleet of heavy-duty diesel vehicles at 26 plants around the United States.

- 5% reduction in fuel consumption.
- 43.6% reduction in CO2 emissions.
- 75.9% reduction in CO.
- 47.7% reduction in NOx.
- 52.6% reduction in particulate matter.

CASE STUDY

U.S. ARMY

Located in Hartford County, Maryland on 79,000 acres with research capabilities in Automotive, Environmental Effects & Technologies, Fire Control; Firepower; Support and Survivability/Lethality; Warfighter & Support Equipment.

The Aberdeen Test Center tested Rentar units on a Navistar International 386.9 cu. in, 170 hp. diesel engine and reported the following:

- 3.6% Fuel Consumption improvement.
- 3.6% Extended Range improvement.
- 12% NOx improvement.
- 14% CO2 improvement.
- 17.4% CO improvement.
- 12.6% HC improvement.
- 10.9% O2 improvement.

CASE STUDY

TOYOTA

Toyota Motor Company, established in 1937, is today the world’s largest automobile manufacturer by sales (7,051,000 units FY 2009), with 320,808 employees building autos under the DAIHATSU, HINO, LEXUS and TOYOTA brands.

Toyota has installed Rentar Units of all their auto transport trucks operating in the Ports of Long Beach & Los Angeles with the following results:

STABLE STATE (Highway Driving)

- 11.3% Fuel Consumption improvement.
- 42.2% Particulate Matter improvement.
- 9.7% CO2 improvement.
- 33.5% Carbon Monoxide improvement.
- 36.8% Total Hydrocarbon improvement.

Toyota Laboratory Results conducted by EPA & CARB recognized laboratory.
Logos of Rentar Fuel Catalyst Purchasers
Rentar Environmental Solutions, Inc.
Contact: Joel Ratner
Telephone: 561-345-0359
Email: JoelRatner@Rentar.com