

Rentar Fuel Catalyst

Reduces Fuel Consumption and Reduces Harmful Emissions
More Energy on Less Fuel



Mining Applications

18-Year-Old Established Company * Sole Source Technology with 33 Issued Patents
Verified Effective by EPA Recognized Laboratories

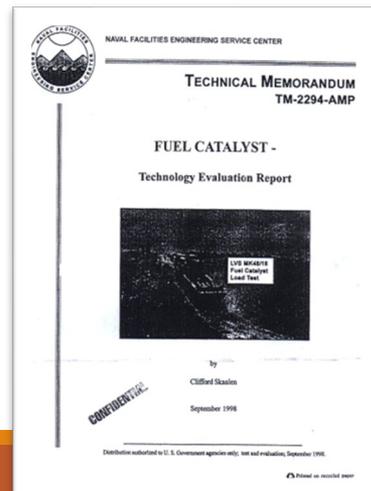
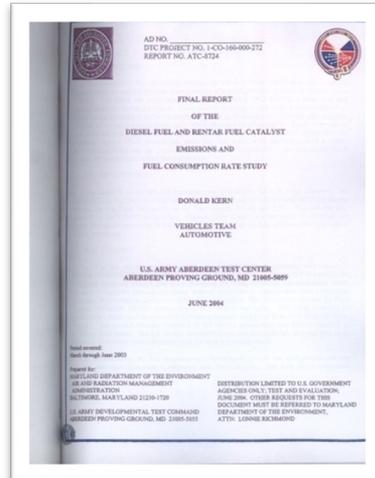
Rentar Fuel Catalyst is Independently Verified to:

- 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

Rentar Is Independently Verified By:



- Southwest Research Institute
- EPA & CARB Recognized Laboratories
- Aberdeen Proving Grounds
- Olson Ecological Laboratories
- Virginia Tech University
- SGS, SA
- Vale Mining
- Yamana Gold
- CEMEX
- Vulcan Materials



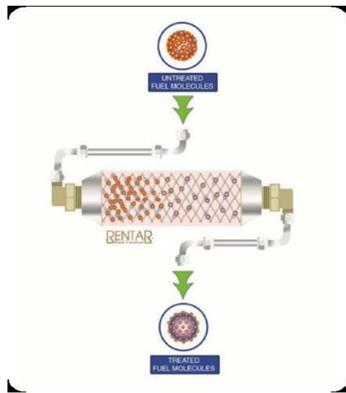
Benefits of the Rentar Fuel Catalyst to the Mining Industry

- **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**



How does it work?

RENTAR[®]
Fuel Catalyst



The Company's core product is the *Rentar*[®] Fuel Catalyst ("RFC"), which aggressively conditions fuel through a series of complementary processes resulting in a more complete and cleaner burn at combustion. The Rentar technology works with any fossil fuel combustion process.

Fundamentally rooted in "cracking fossil fuels", a method of altering organic compounds with large molecules, making them more useful compounds with smaller molecules. The RFC enables the clustered molecules in fuel to temporarily repel each other, allowing more surface area of the fuel molecules to be exposed to oxygen at the point of combustion.

The proprietary combination of rare earth elements contained in Rentar's catalyst cause the saturated straight chain aliphatic (paraffin) molecules to convert into unsaturated ring compound aromatics which in turn releases a small amount of hydrogen. The hydrogen interacts with the dispersed fuel molecules to achieve a more complete combustion.

Improve Payload Per Gallon /Liter

Reduce Fuel Consumption and Exhaust Pollution

Extend Engine and Oil Life



Extend Engine Life 20% Between Rebuilds

Testimonial Letters



Date: 02/05/2012

To whom so ever it may concern

This is to certify that HBL -Rentar Fuel Catalyst having following specifications have been installed at Tata Motors Ltd., Lucknow plant

Sr No.	Model No.	Qty	Mounted on Equipment
1	HBEH 2012	02 Nos.	1010 KVA Cummins DG
2	HBEH 2012	02 Nos.	1010 KVA Cummins DG

Since the installation, Fuel catalysts are performing to our satisfaction at above mentioned DG sets. We are pleased to confirm that we have achieved saving of 15.57% on specific fuel consumption.

For M/s. Tata Motors Ltd.


S. M. Singh
DGM – Plant Services

TATA MOTORS LIMITED
Chhat Industrial Area Lucknow 226 019
Tel 91 522 2818012 2818033 2818832 Fax 91 522 2818346
Registered Office: Bumbay House 24 Homi Modi Street Mumbai 400 001



Mahindra & Mahindra Ltd
Agri Development Centre
Tractor Division
Kichha Road, Lalpur (Rudrapur)
Dist. Uttam Singh Nagar - 203143
Tel : 91-59944-289723 / 25
Fax: 91-59944-289724

DESIGN PRIZE Winner - 2003 JAPAN QUALITY MEDAL Winner - 2007

Ref no: MBM/RDP/HBL/1204/24 Date: 24th April '12

TO WHOM SO EVER IT MAY CONCERN

This is to certify that HBL RENTAR fuel catalyst has been installed on our generators and boiler applications.

The performance of HBL RENTAR Fuel Catalyst has been good and about 6% HSD saving achieved.

We appreciate the green energy efforts of M/S HBL Power System LTD. towards reducing the fuel consumption and carbon emission.




Registered Office: Gateway Building Apollo Bunder, Mumbai-400001.
Phone:2202 1051 Fax : (022) 2202 8780 / 8990

YAMANAGOLD | **15 ANOS**

March 21st 2019

We at Mineração Maracá Indústria e Comércio, a YAMANAGOLD job site, have successfully piloted the Rentar fuel catalyst model HBEH 2012 on our CAT 785C haul trucks with results that surpassed our objectives for fuel efficiency with a payback of less than a year. As a result, we have purchased the Rentar fuel catalyst for installation on our fleet.

We are pleased with the support from SOTREQ, our Rentar dealer, and from the direct relationship with the manufacturer itself. We are also pleased with the trouble-free performance of the catalysts, to date.

We are looking forward to our continued use of the Rentar fuel catalysts.




Fabio Gonçalves
Maintenance Coordinator
Tel: +55 62 3383-4049

YAMANAGOLD **15 ANOS**

Mineração Maracá Indústria e Comércio
Rodovia GO 347 s/n – Fazenda Genapapo
Alto Horizonte GO – Brasil
76560-000
<http://www.yamana.com>

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% NO_x Reduction**
- 35.4% CO Reduction**
- 15.4% Hydrocarbon Reduction**



World's Largest Inspection and Technology Verification Company



**SGS Verifies a 17.05% Fuel Reduction*,
a 27.5% Reduction of NO_x
and 32.5% Reduction of CO**



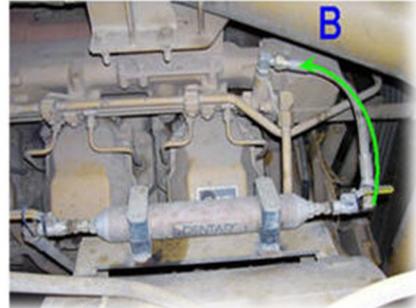
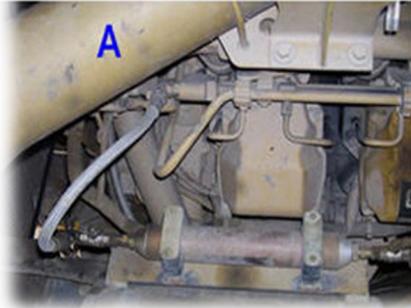
- Over 97,000 employees
- Over 2,600 offices and laboratories worldwide
- Conducted an emissions study on the Rentar fuel catalyst in 2016
- World's largest inspection and technology verification company

* Computed by Carbon Balance

Heavy Duty Equipment

WHEEL LOADER 980H WITH CAT C15 | USA
5.6% IMPROVEMENT IN FUEL EFFICIENCY

CAT 797B WITH CAT 3524B ENGINE | CHILE
6.3% IMPROVEMENT IN FUEL EFFICIENCY



RENTAR[®]
Fuel Catalyst



- **SOTREQ CATERPILLAR**, the fourth largest Caterpillar Dealer in the world has acquired the right to distribute the Rentar Fuel Catalyst in the eighth largest market in the world, Brazil. In addition to supplying all the new equipment, they maintain tens of thousands of existing pieces of equipment.

CAT 785C

Test Details

Trucks CB07 & CB12

Installation: 02/11/2018

End of Test: 03/12/2018

Trucks CB02 & CB10

Hours in Baseline: 694 (average)

Consumption in Baseline: 116.23 l/h

Hours in Post-cleanout: 135

Consumption: 124.59 l/h

WITHOUT RENTAR

Consumption on CB02 & CB10

$(124.59 - 116.23) / 116.23 = +7.19\%$

WITH RENTAR

Hours in Baseline: 556 (average)

Consumption in Baseline: 116.15 l/h

Hours in Post-cleanout: 134

Consumption: 119.91 l/h

CONSUMPTION DIFFERENCE

CB07 & CB12 (w/ Rentar):

$(119.91 - 116.15) / 116.15 = +3.24\%$

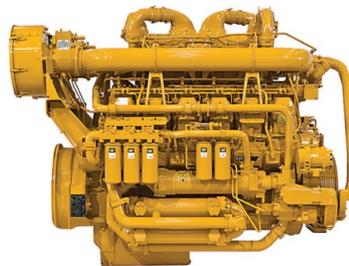
Hours per Day: 16.3

Days of Annual Operation: 365

Price per Liter of Diesel: US\$0.80

Rentar Fuel Catalyst: US\$ 10,269*

*2 catalysts per 785C



CAT 3512B

Final Result

$3.24\% - 7.19\% =$

-3.95%

Fuel Savings

ROI: 6 months

**Annual Savings:
US\$28,552
Per Truck**



Installation



Caterpillar 777D

Schedule of Annual Fuel Savings at Various Fuel Cost Using the Rentar Fuel Catalyst



Assuming the Caterpillar 777D
Consumes 20 GPH / 20 Hours per Day / 6 days per Week / 50 Weeks per Year

<u>Per Gallon Price</u>	<u>\$4.00</u>	<u>\$6.00</u>	<u>\$8.00</u>	<u>\$10.00</u>	<u>\$12.00</u>
2% Savings =	\$ 9,600	\$14,400	\$19,200	\$24,000	\$28,800
4% Savings =	\$19,200	\$28,800	\$38,400	\$48,000	\$57,600
6% Savings =	\$28,800	\$43,200	\$57,600	\$72,000	\$86,400
8% Savings =	\$38,400	\$57,600	\$76,800	\$96,000	\$115,200

RENTAR[®]
Fuel Catalyst



- **VALE SA**, a \$134 billion (revenue) company with 76,000 employees is the largest iron and nickel **MINING OPERATOR** in the world. They are saving \$20,000 to \$35,000 per piece of heavy-duty equipment annually through fuel savings at a one-time cost between \$5,000 to \$10,000. They have more than 2,000 pieces of equipment and they have begun equipping their fleet. They recover the cost of the Rentar Fuel Catalyst in less than four months.



Return-on Investment (ROI)

VALE S.A. (SOSSEGO MINE)

Actual

CAT 793D (CAT3516B)	Liters	US\$0.59/L (\$ cost)	4% fuel reduction (\$ savings)	5.29% fuel reduction (\$ savings)	7% fuel reduction (\$ savings)
Hourly	157.33 L	\$92.82	\$3.71	\$4.91	\$6.50
Day – 12 hours	1,887.96	1,114	44.56	59.00	78.00
Month – 30 days	57,426	33,881	1,355	1,792	2,372
Year	689,106	406,573	16,263	21,508	28,460
Five Years	3,445,531	2,032,863	81,315	107,538	142,300
10 Years	6,891,062	4,065,726	162,629	215,077	284,601

Approximate time to payback for a haul truck at SOSSEGO Mine is 5.6 months*

* Using a total product cost of US\$10,000 for two Rentar fuel catalyts on a CAT 793D haul truck at 5.29 percent fuel reduction

The CAT 793D haul truck requires two HBEN2012 units at an MSRP of US\$5,000 per unit.



March 21st 2019



Yamana Gold Inc. is a Canadian-based gold producer which is a listed NYSE company with more than \$1.8 billion in revenues. They have significant gold production, gold development stage properties, exploration properties, and land positions in Canada, Brazil, Chile and Argentina.

Yamana Gold has installed Rentar Fuel Catalysts at their Brazilian mine and provided this letter of endorsement.

We at Mineração Maracá Indústria e Comércio, a YAMANAGOLD job site, have successfully piloted the Rentar fuel catalyst model HBEN 2012 on our CAT 785C haul trucks with results that surpassed our objectives for fuel efficiency with a payback of less than a year. As a result, we have purchased the Rentar fuel catalyst for installation on our fleet.

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YAMANAGOLD | 15
ANOS

Mineração Maracá Indústria e Comércio
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Alto Horizonte GO – Brasil

76560-000

<http://www.yamana.com>

Increase Payload or Kilowatts Per Gallon /Liter

Reduce Fuel Consumption and Exhaust Borne Pollution



Extend Engine Life 20% Between Rebuilds

Generators/Gensets

GENSET WITH CAT 3306 ENGINE | SAIPAN
5.3% IMPROVEMENT IN FUEL EFFICIENCY



GENSET WITH CAT 3516 ENGINE | ALASKA
6.1% IMPROVEMENT IN FUEL EFFICIENCY

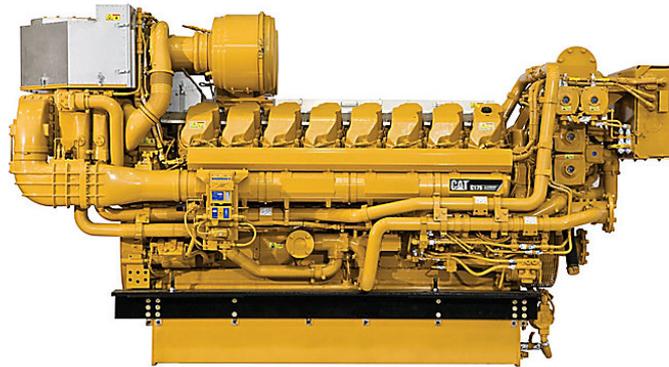
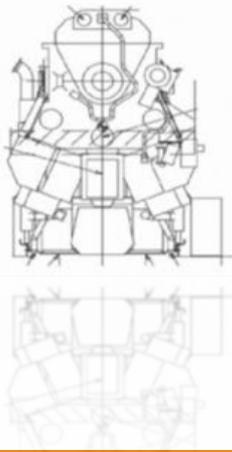
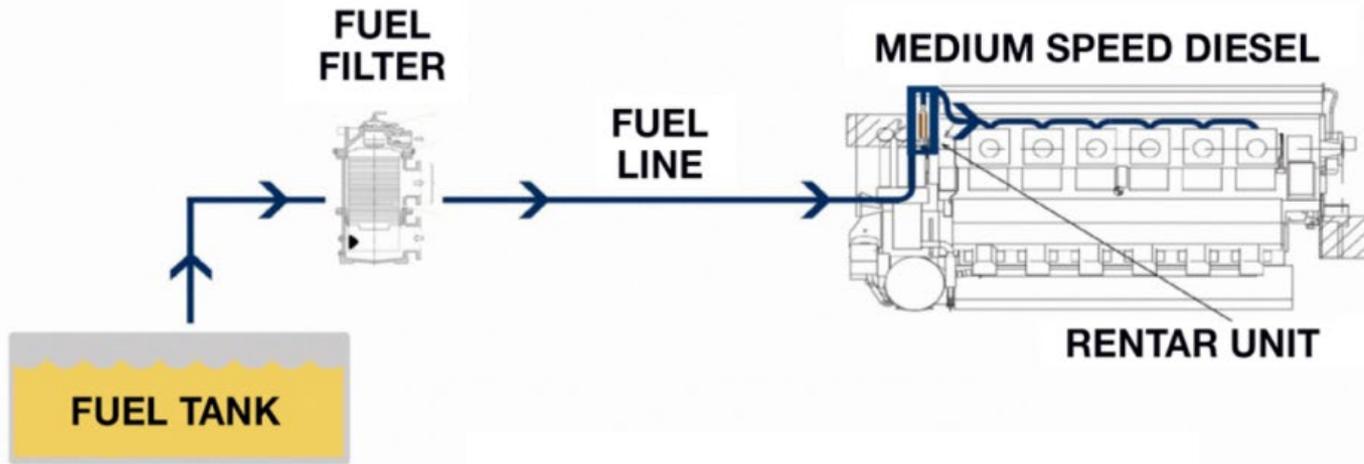


Generators/Gensets



Stationary Generators Fuel Consumption Reduced 4% to 12%

Simple Installation



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.



Installed Rentar Fuel Catalyst on entire fleet of heavy-duty diesel vehicles at 28 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 359.9 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 Port(s) of Long Beach & Los Angeles with the following results:

STEADY 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.



United States Department of Commerce

Credentials



Export Achievement Award



World's 4th Largest Caterpillar Dealer
A Rentar Distributor
400 Offices - 4300 Employees



Export-Import Bank of the United States
Official Export Credit Agency



\$2 Million International Product Liability Insurance



Member



Economic Development Organization for the State of Florida



California Resource Board Executive Order (CARB)

Rentar Fuel Catalyst Purchasers





THANK YOU

Rentar Environmental Solutions, Inc.
Manufacturer of the Rentar Fuel Catalyst

Contact: Joel Ratner (561) 345-0359

Email: JoelRatner@Rentar.com

Website: DieselCatalyst.com