

# **VORTEX FUEL SAVER TEST RESULTS**

## **Conversion of Para-Hydrogen to Ortho-Hydrogen Technology Its Fuel Saving and Emissions Reduction Capabilities**

The *Vortex Fuel Saver* builds upon the 25+ years of research and development, and over \$18 million in research and development. The technology behind the Vortex Fuel Saver has been issued six patents (and more pending) and products based on these breakthroughs have been used in over 50 countries around the world. Note that under U.S.C. 35 section 101, any utility patent must be proven scientifically operable and correct before issuance.

The fuel savings and emissions reductions capabilities have been extensively tested both in laboratories and real world driving conditions on trucks, cars and buses as well as farm tractors, generators, trains and motorcycles. The following are some of the tests that have been conducted:

### **FUEL SAVINGS**

- US Postal Service, CA - Fuel Savings of 8+%, Reduction of Hydrocarbons by 15+%, Reduction of Carbon Monoxide by 11+%
- U.S. Federal Border Patrol – 10+% increases in fuel savings, 50+% reductions in carbon monoxide and hydrocarbons
- Environmental Protection Agency (Latin America) - 18.8% reduction in fuel consumption. CVS-75 Standard Motor Industry Test
- VTEC Laboratories – 26% drop in fuel consumption under laboratory conditions on equipment calibrated to the United States equivalent of NAMAS (National Accreditation of Measurement and Sampling)
- Electrometal Ltd. – Genset (Motor/Generator) – Saved 25% on Diesel Fuel
- City of Berkeley, CA – Fuel Economy change: Car 14.13%, Van 7.06%
- Wheels Ltd. – Increased Mileage of two rental cars by 17.46% and 18.0%
- Beijing Railway - Locomotive fuel savings between 4.88-5.91%. Testing also noted a 60% reduction in smog, elimination of carbon buildup in the combustion chambers and elimination of boiler scale
- Independent Trucker - 2000 Freightliner FLD classic, 60 Series Detroit, 550HP, 13 speed transmission, 450,000 miles – 19.2% Fuel Savings
- Myriad Techno Pvt. India – Buses experienced an 8% reduction in fuel consumption

- Littrell Parts, Yreka, CA – Diesel trucks 6.45% increase in 60 days and 10.09% in 90 days
- Dave Manners Enterprises (Professional Automotive Racing Tech Center Mileage Test) – Four trial runs of 74 to 167 miles experienced 10 – 34% increase in fuel mileage; 10% increase in horsepower; 100% reduction in CO
- C. C. Allanson Buses – 13% savings on fuel
- Ministry of India Surface Transport – Buses tested had an average fuel savings of 16.8%
- Excel Industries – motor cycles tested increased mileage by 22+%

## **EMISSIONS REDUCTION**

Using the *Vortex Fuel Saver*, emissions are reduced virtually immediately. Since it is much quicker, and easier, to test emission reductions than fuel mileage, we have many emission reduction tests. Please remember, a reduction in emissions, by definition, means an increase in fuel mileage.

High exhaust emissions are a result of incomplete combustion as shown in the Engineer's Mechanical Handbook, by Baumeiste, where the stoichiometric chart shows the relationship between emissions and unburned fuel. As combustion efficiency increases, emissions go down and fuel savings goes up. All of the following reports attest to *Vortex Fluid Optimizer's* major role in reducing exhaust emissions and increasing fuel saving.

- United States Air Force - 80% reduction in smoke, 50+% reduction in carbon monoxide and 50+% reduction in hydrocarbons
- Emissions test by Institute of Aeronautics (Poland) – 40% CO reduction, 20% HC reduction.
- EPA/Sri Lanka (Ceylon) - Diesel Smoke Opacity Emission Test, 60% reduction in Diesel Emissions
- Mercedes Benz - Well over 50% reductions in smoke, hydrocarbons and carbon monoxide
- All of the following car tests performed under Federal EPA Code 40 CFR, Sec. 51.351. These are before and after results with a *Vortex Fuel Saver* installed showing reduced emissions.
- Ford/Volkswagen - In excess of 50% reduction in carbon monoxide emissions
- Sirim/Malaysia - 40% reduction in carbon monoxide emissions
- Dicorsa (Nissan) Guatemala – 63% reduction in HC and 83% reduction in CO at low idle; 41% reduction in HC and 91% reduction in CO at high cruise

Emissions = Unburned Fuel    Reduction of Emissions = Fuel Savings

	HC Before	HC After	HC % Decrease	CO Before	CO After	CO % Decrease
Chevy 307, V8	774	580	25%	.06	.00	100%
Chevy 400, V8	141	37	73%	1.78	.21	88%
Chevy 2.8L, V6	46	11	76%	.31	.00	100%
Pontiac 6000	227	42	81%	.33	.04	89%
Escort 4 Cyl.	259	54	79%	5.9	.25	96%
Ford Pick-Up V8	158	16	90%	.49	.21	57%
Nissan V6 3.0 4x4	130	30	77%	1.7	.00	100%
Chevy V8	10	0	100%	.00	.00	--
Chevy V6	72	0	100%	.64	.01	98%
Olds 280 V6	348	65	81%	.04	.01	75%
Lincoln 302 V8	13	4	68%	.05	.00	100%
Ford 2.3L (F.I.)	193	20	90%	.80	.01	98%
Dodge 318 V8	125	15	88%	1.24	.02	98%
Jeep 4.0L V6	18	8	55%	.09	.04	55%
Buick 350 V8	128	95	26%	4.21	4.04	4%
Pontiac	125	0	100%	.04	.00	100%
Chevy Van V8	190	125	34%	1.8	.30	81%
Jeep	38	7	81%	.16	.05	68%
Hyundai 4 Cyl.	18	14	22%	5.69	.02	99%
Suzuki, 4 cyl.	170	100	41%	1.6	.15	91%
Volkswagen, 4 cyl	320	270	15%	6.2	3.6	42%
Mitsubishi, 4 cyl	390	330	15%	3.8	3.2	42%
Chevy, 4 cyl.	320	180	44%	3.6	1.0	72%
Oldsmobile	63	0	100%	.06	.00	100%
Corvette 350 CID	383	197	48%	7.85	1.98	74%
Olds 6 Cyl.	60	48	20%	.32	.23	31%
Chevy 305	230	163	20%	9.83	8.6	12%
Chevy Luv 1600 cc	3.96	3.2	19.2%	57.3	53.7	6.3%
Fiat 126 Polska	N/A	N/A	20%	N/A	N/A	45%
Chevy 350 CID	366	38	90%	2.77	0.16	94%
Chevy V6, 2.8L	19	12.5	65%	.02	.00	100%
Chevy 350	79	21	73%	.14	.01	93%
BMW 6 Cyl.	64	39	39%	.60	.05	90%
Proton 1.5L	130	100	23%	2.0	1.4	30%
Maruti India Vehicle	100	60	40%	2.6	1.5	38%
Chevy Suburban	56	6	89%	.10	.00	100%
Ford Bronco	69	10	86%	.19	.00	100%
Nissan	43	4	91%	.00	.00	0%
D Truck/V6 Duetz --				40	10	75%

## **ENGINE PERFORMANCE**

- Penske Racing – 4.8% average horsepower gain (full race engine)
- Bacon Equipment Company (John Deere dealer) – 33% horsepower increase (farm tractor)
- J.P. (individual) Bethlehem, PA – 12.5% faster ¼ mile race time (Corvette)
- Manner Automotive Tech – 10% horsepower increase (Chevrolet)
- Northern California Diagnostic Laboratories reported a 5% increase in horsepower during testing

## **ENGINE MAINTENANCE**

The reduction of carbon and varnish residue, by technology incorporated in the *Vortex Fuel Saver* has been demonstrated in a U.S. utility patent issued to Phillips Petroleum, #4260583: “Reduction of deposits in carbon black reactors,” through suitable application on fuel oil, the hard carbon deposits within combustion chambers can be eliminated.

Carbon deposits are a result of incomplete combustion of fuel. The *Vortex Fuel Saver* causes a more complete combustion of fuel that not only prevents carbon and varnish buildup, but reverses it.

- Tom McCall, Petrochemical Engineer – de-carbonizing of fuel injection system and engine
- Quality Automotive - Report shows long-term positive effects of fluid optimization