Enhancing Energy Conversion

Introduction and Proposal for

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Contents

Enhancing Energy Efficiency

NanoVit / OptiMotor will enhance your fleet's energy efficiency in three ways:

- ✓ Reduction of harmful emissions
- ✓ Lower fuel consumption
- ✓ Reduced maintenance

All of which will improve:

- ✓ Lifespan of fleet
- ✓ Carbon Footprint
- ✓ Resale Value

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What's the difference?

NanoVit / OptiMotor is based on physics, not chemistry!

- ✓ There is no chemical reaction with metals, oil or fuels: the properties of the motor oil and engine components remain the same;

- ✓ NanoVit / OptiMotor is NOT an oil additive. Oil is merely used as the transport medium. NanoVit/OptiMotor simply forms an adhesive and protective lining that helps protect from wear and tear, reduces friction and improves performance;

- ✓ NanoVit / OptiMotor will increase lifespan of oil by maintaining its viscosity for up to 150.000km, reducing number of oil changes and time spent off-road for servicing.

This is exactly how NanoVit / OptiMotor differs from all other products in the marketplace.

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The Technology

- ✓ Your NanoVit / OptiMotor dose is simply added via the oil filler cap at the next planned service;
- ✓ NanoVit / OptiMotor is applicable to both gasoline and diesel engines;
- ✓ NanoVit / OptiMotor will regenerate all metal surfaces by removing crud and contaminants bringing them back to an ‘as new’ state;
- ✓ The nano-lubricant layer will continue to regenerate itself up to 150.000 kms;
- ✓ Regular oil will retain its viscosity up to 5x longer.

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The Product

NanoVit consists of:

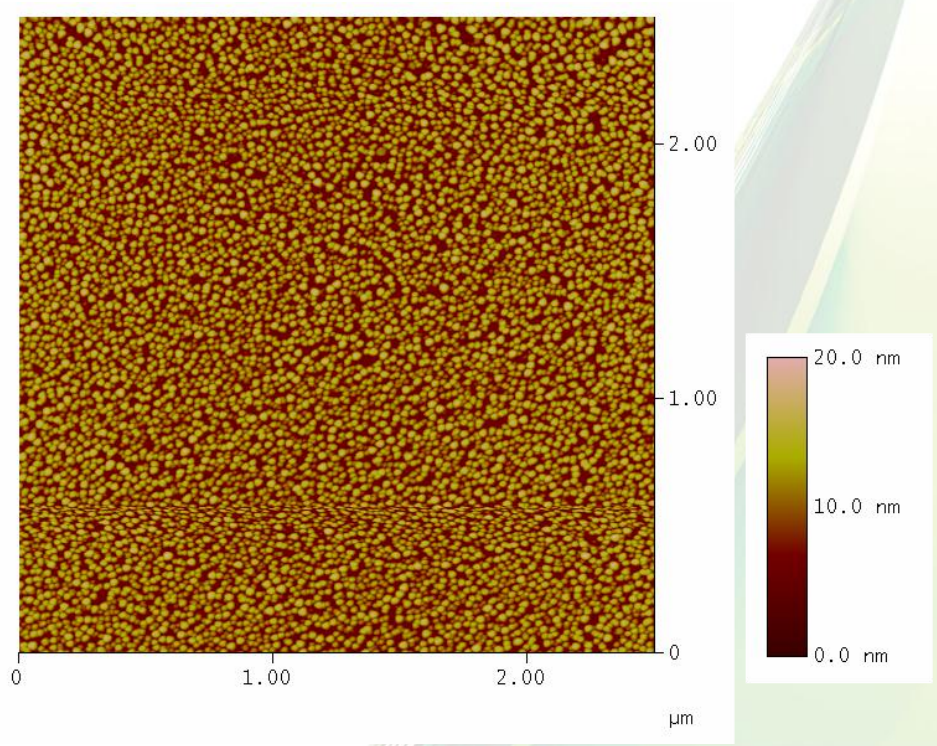
- ✓ Modified silicon oxide (SiO2),
- ✓ Aluminum oxide (Al2O3), and
- ✓ Plasma treated graphite (C)

Particle size : 1 nm = $1*10^{-9}$ m
(4 atoms fit in the space of 1 nm)

It is added to:

- ✓ Carter (engine)
- ✓ Transmission
- ✓ Differentials

NanoVit® is 14 nm large – a visual image:



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How it works

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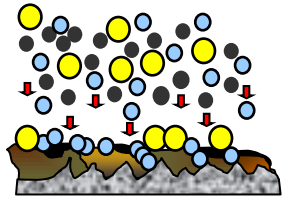
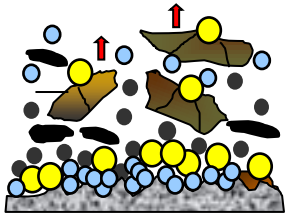
- Silicon oxide
- Aluminum oxide
- Graphite
- Oil

Build up of micro-particles, combustion residues and contaminants on a normal engine surface

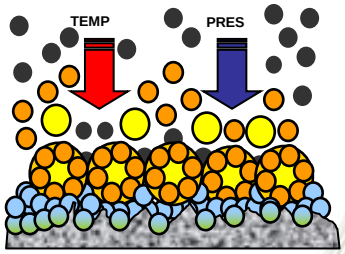
Phase One – Delivered by the system's oil, Al2O3 cleanses the boundaries of the friction surfaces, eliminating damaging micro-particles and combustion residue buildup

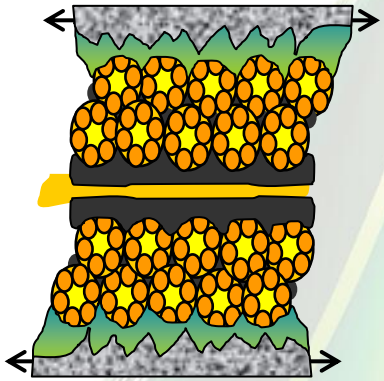




Contaminants are flushed out and trapped in the oil filter and then removed with the oil change

Phase Two – A flexible, thin, elastic layer of nano-particles is formed under heat and pressure on the friction surfaces of the engine, returning them to their original geometry





An anti-friction coating remains in the engine after oil changes, adjusting to operating conditions, effectively renewing itself. This reduction in friction improves engine performance, lowers fuel consumption and emissions while extending the life of the engine

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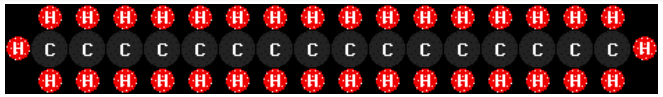
Emissions – the conversion



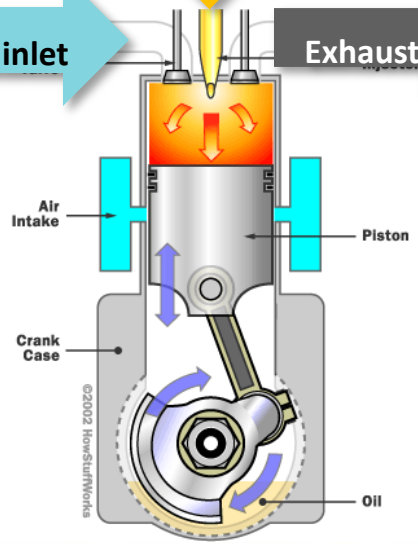
Cetane, or n-hexadecane (C16H34), typical diesel fuel

Air

- N2 - 78%,
- O2 - 21%,
- Helium,
- neon,
- H2O - 0.3%

C16H34

Air inlet



Exhaust

Emissions

- CO2 – carbon dioxide
- CO – carbon monoxide
- NOx – nitrogen oxides
- SO2 – sulphur dioxide
- HC – hydro carbon
- H2O – water
- DPM – diesel particulate matter
- O3 – Ground level ozone
- O2 - oxygen

Emissions – impact

Emissions

- CO2 – carbon dioxide
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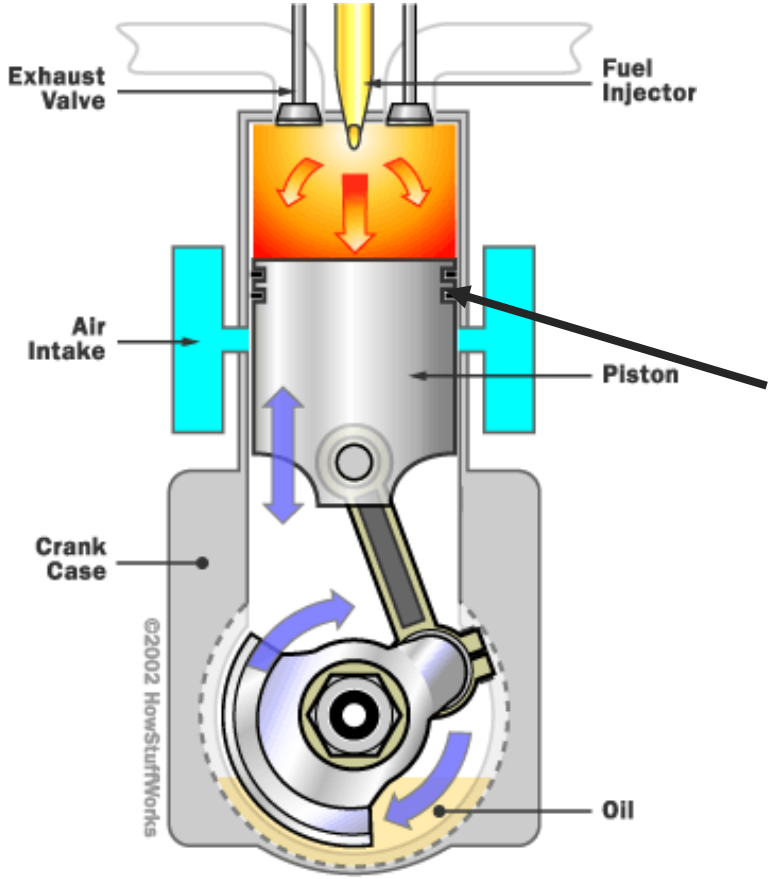
Dangerous to the environment

CO2,
CO
SO2
NOx
H2O

Dangerous to the people

NO2
CO
HC
DPM
O3
SO2

Emissions – where they come from

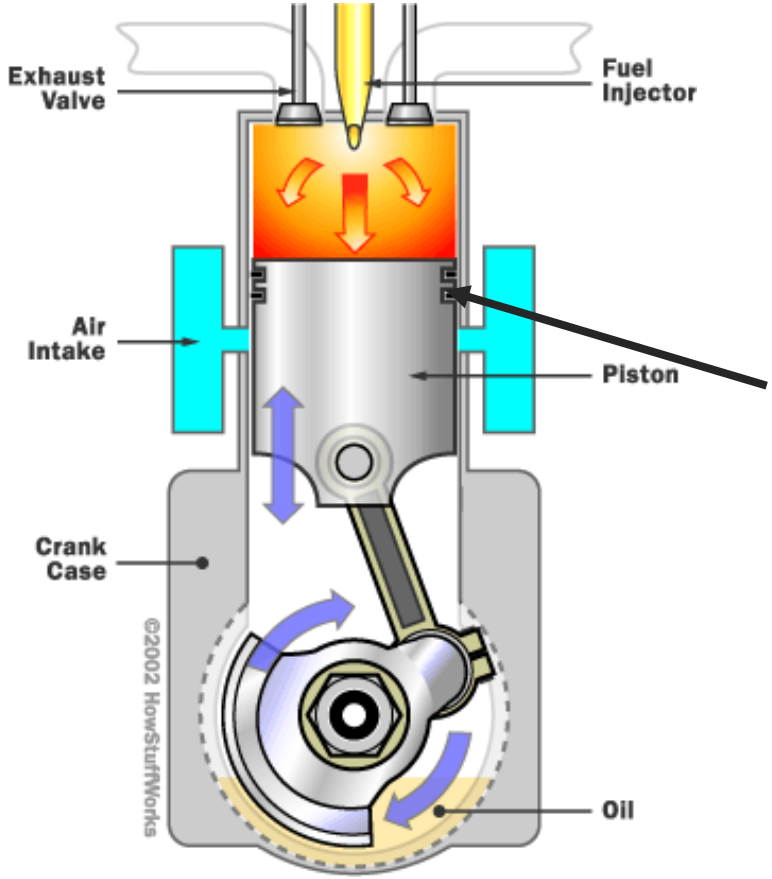


Where does it all go wrong?

Burnt oil causes volatile organic compounds, diesel particulate matter, oxides of nitrogen, carbon monoxide.

Crud such as micro-particles, combustion residues and contaminants deposits cause wear and tear to engine, transmission and differentials, in turn leading to lesser performance.

OptiMotor – where it works



NanoVit / OptiMotor works where it is needed:

✓ Nano compound lines wear surfaces reducing friction and lowering engine temperatures reducing DPM, CO_2, HC and NOx;

✓ Lower friction results in increased pressure, reduced fuel usage and longer lifespan of components.

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The Benefits

- ✓ Extended performance due to increasing compression and decreasing friction;
- ✓ Considerable reduction of emissions NOx, HC, CO and CO_2 of > 30%.
- ✓ Fuel savings ranging from 6% – 12.5%.
- ✓ Purifies the engine, reduces vibrations and noise;
- ✓ Increasing the lifecycle of oil and reducing the maintenance cycle;
- ✓ Increases truck and engine lifecycle, maintaining resale value for longer.

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Our Credentials

- ✓ Researched and developed over the past 10 years in Germany and produced in Germany to the highest quality standards;
- ✓ TÜV test results and certification confirming product benefits;
- ✓ In operation since 2007, used in cars, ships and trucks;
- ✓ No incidents or claims ever;
- ✓ No effect on manufacturers warranty;
- ✓ A € 10 million product liability insurance with Allianz;

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Our Credentials - continued

NanoVit / OptiMotor has been extensively researched and certified by global leading certification agencies (according to DIN and other international standards) and research institutions, including, but not limited to:

- ✓ TUV Thüringen;
- ✓ St Petersburg University – (full laboratory engine test bench analysis);
- ✓ Lubeck University;
- ✓ Schmalkalden University;
- ✓ Various clients including Walmart (USA), De Beers Diamond mines (SA)

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The Financials – Truck Scenario

Assumptions for truck - financial scenario

Average fuel consumption truck: 0.3 L/km, diesel € 1.40/L
Average distance per year: 120,000 km (36,000 L)
Oil change every: 30,000 km (4 times/year)
Cost oil change € 120.- (materials) + € 120.- (wages) = € 240.-

Lifespan NanoVit: at least 150,000 km
Cost NanoVit engine treatment + transmission +differential first year : € 1335
Cost NanoVit engine treatment + transmission +differential as from second year : € 925
Savings oil: 2 oil changes
Savings fuel: 10 %

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The Financials – continued

Savings per truck per year

Fuel:	3,600 L x € 1.40	= € 5,040.-
Oil change:	2 x € 240	= € 480.-
Total savings:		= € 5,520.-
Initial cost per truck engine first year:		= € 1,335.-
Net savings first year:		**= € 4,185.-**
Cost per truck engine as from second year:		= € 925.-
Net savings as from second year :		**= € 4,595.-**

Based on a truck fleet of 200 Units , the overall estimated savings figure up to : € 837.000 !

*Above are average prices and savings based on fuel consumption alone. Added to this net financial saving are:

- ✓ extended life of engine and truck (resale value)
- ✓ reduction of harmful emissions
- ✓ no local limitations on city entry
- ✓ lower carbon footprint

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We hear the grass grow…

NanoVit / OptiMotor is looking for a reliable partner with whom to trial the results of the product in a representative sample of the fleet.

Hasenkamp's goal is to provide environmentally friendly services to their clients and is dedicated to being at the forefront of technological changes that can reduce the company's carbon footprint.

This is why we believe Hasenkamp to be the ideal partner to support us in our aim of meeting the global challenge to improve energy efficiency.

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Our Proposal

We propose adding NanoVit / OptiMotor to 2 – 4 trucks of client's choosing at next scheduled servicing in accordance with an agreed protocol. This trial will be carefully monitored and followed up to prove the following success factors:

- ✓ **Success factor 1:** The engine oil life remains within "as new status" specification for 10 000km or 200 operating hours;
- ✓ **Success factor 2:** The average emissions reduction before and after OptiMotor will be >10%;
- ✓ **Success factor 3:** The average fuel consumption reduction over the period will be >5%.

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Our Proposal - continued

Should the above success factors be achieved it is expected that Hasenkamp will roll out OptiMotor into the rest of the fleet on an agreed schedule basis if Hasenkamp feels comfortable that the trial will represent the results that will be achieved in the rest of the fleet.

The roll out to the fleet will be dependent upon it being proven that the use of OptiMotor will have a return on investment in alignment with Hasenkamp accepted criteria. These criteria will be agreed prior to starting the trial. The OptiMotor impact on emissions will also be taken into account in the decision.

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