# Advanced Lubrication Technologies, Inc.

Brings You The First Major Lubrication Breakthrough in 30 Years

BORON CLS BOND™

# Argonne Labs


Argonne is managed for the U.S. DOE, and is recognized for excellence in connecting basic research to innovative technology's. One of those technology's is the additive, MotorSilk™ developed for use by Advanced Lubrication Technologies, Inc.

# Unique Chemistry

- First worldwide patents in 1995
- Awarded the prestigious **R&D 100 Award**
- Winner, **Environmental Technology Partnership Award**
- Deployed as biodegradable high performance additives and stand alone solutions

# BRIEF SUMMARY OF BORON CLS BOND™ LUBRICATION TECHNOLOGY

In 1995 Advanced Lubrication Technologies, ALT, acquired *exclusive rights* to certain patents based on discoveries made at Argonne National Laboratory a DOE facility. ALT has introduced a line of products known as MotorSilk™, and LubriSilk™, with the patented Boron CLS Bond™.

- Unlike oil conditioners composed of toxic chemicals plus heavy weight oil, Motor Silk™ is a Solid Boundary Lubricant providing 85% the hardness of diamond.
- One treatment is good for 100,000 miles or 4000 hours.
- Motor Silk™ works in gas and diesel engines and can be used with synthetic or mineral based oils.
- Boron CLSBond chemistry provides the following benefits.

**•Reduced wear by 90%**
**•Reduced friction 80%**
**•Reduced fuel consumption up to 20%**
**•Increased power by 5-8%**
**•100% corrosion resistant**

# Unique

- The Only Lubricant That Is
  - ISO 14064 Compliant to Obtain Carbon Credits/Offsets
  - HOCNF Verified (for offshore use)
  - GHG Clean Products Registry lists
  - 300 Tests over 10 years
- 20+ Independent Labs (internationally)
- Thousands of Vehicles Tested
- Millions of Field Test Miles
- Biodegradable (Certified)
- Non-Toxic
- Can. Standards Assn. Certification


ISO 14064 Process Compliant

# GHG CleanProjects™ Registry: Project Details

## Project Details - Mobile Greenhouse Gas Reduction - Engine and Fuel Treatment

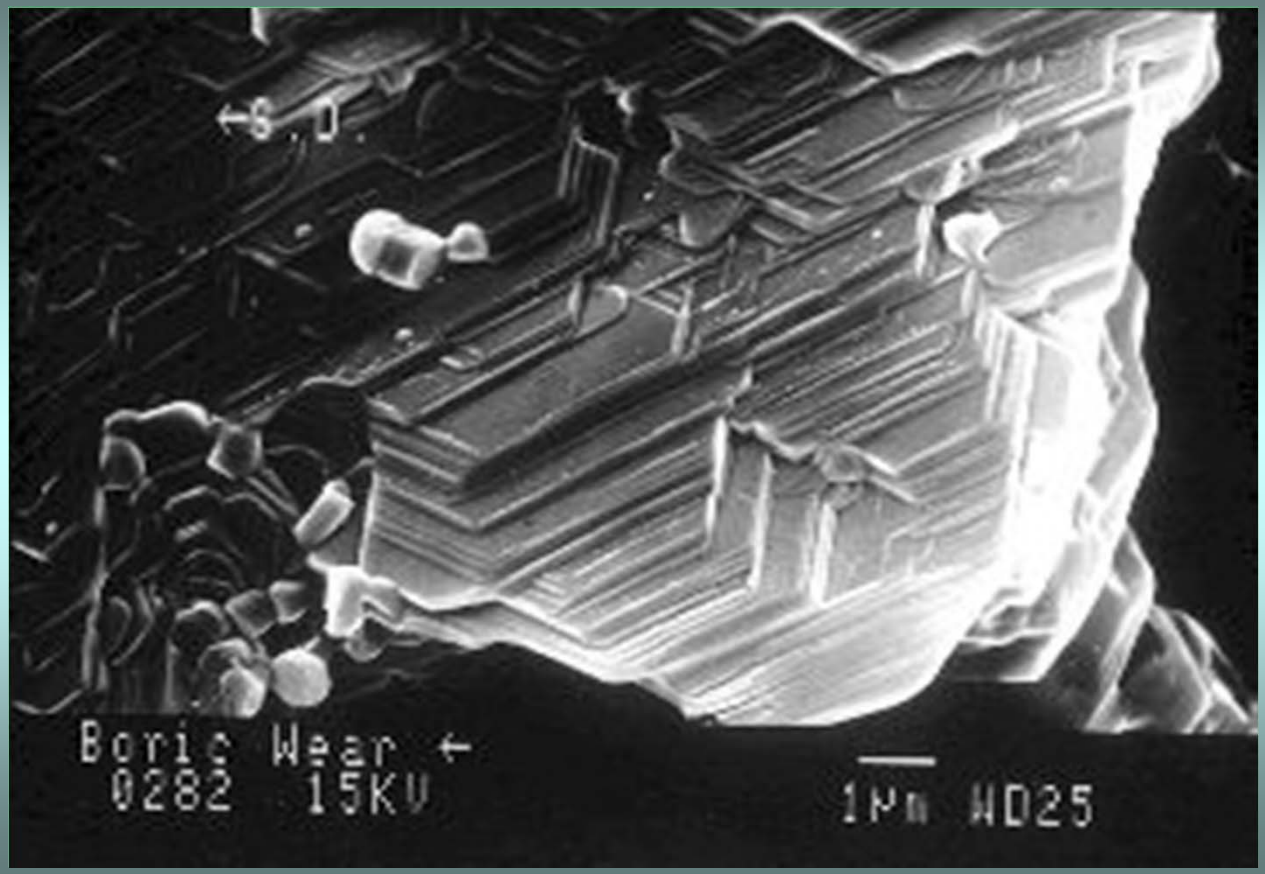
Project Identifier: **6893-4564**
Start Date: 2006-01-01 End Date: 2012-12-31
Project Proponent: Jomini Environmental Inc.
Authorized Project Contact: Mech and Associates
Validator : None defined
Verifier : None defined
**Estimated potential lifetime emission reductions-removals: 5,250,000 t CO2e**
**Estimated potential annual emission reductions-removals: 750,000 t CO2e**
Country of Origin: Various
Location: The project will be implemented by fleets and private vehicles globally by sub project. Latitude and longitude are not relevant to this project as the GHG reductions sources are mobile.

**Project Description:** **MotorSilk™ Engine Treatment** improves lubricity and greatly reduces mechanical friction in engines, lowering the amount of energy required to operate the engine. MotorSilk™ Diesel Fuel Additive improves combustion efficiency. Use of both MotorSilkTM solutions allows engines to deliver more power for use which in effect decreases fuel consumption and associated emissions.

Note: Assumes oil and fuel additive in a diesel vehicle yielding an average of 15% increase in fuel economy over 100,000 miles. [www.ghgregistries.ca/cleanprojects/masterprojectdetails_e.cfm?pid=723]

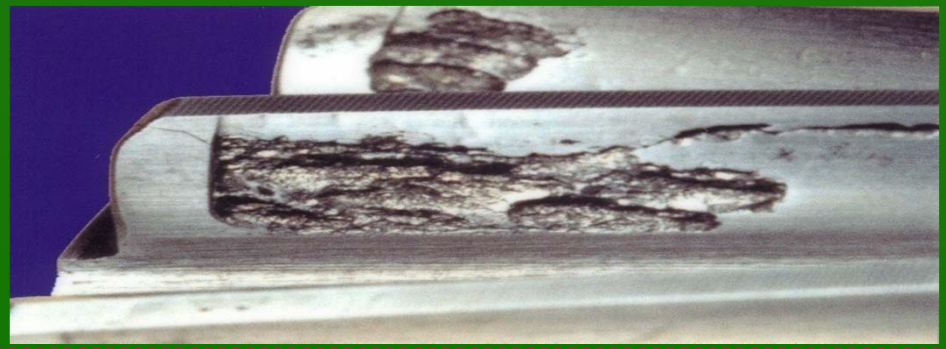
# Crystalline Boric Acid platelets form a Crystal Lattice Structure – (CLS).

**Electron microscope photograph of boric acid Crystal Lattice Structure (15μ field of view).**



# Lubricant Degradation

- Degradation begins with chemical changes from high wear-stress operating conditions.
  - This includes minute metallic wear particles interacting with air, moisture, and, often, compounds in the lubricant itself forming carbon, sulfur and phosphorous based acids.
- These acids react with the metal surfaces creating new asperities (micro pitting) and the process compounds itself.



# Foundry Conveyor Chain Grease Analysis

Herguth Laboratories, Inc.
*People and Data You Can Count On!*

**Certificate of Analysis**

**D14 Roller Run Time 12/03/06 to 01/13/07**
**2 Washer Trial Run**
**GREASE FITTING INSTALLED**

**Fitting Installed**

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These results are submitted pursuant to our current Terms, Conditions and Limitations and Laboratory Pricing Policy. No responsibility or liability is assumed for the manner in which these results are used or interpreted.

123802 ppm of iron

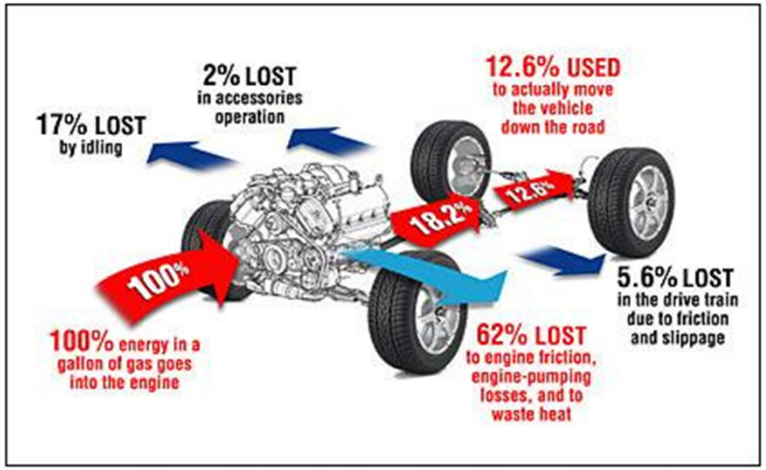
No damage to bearing

Boron CLSBond boundary lubrication protection under severe iron contamination

# "Half of the World's Energy is Lost to Friction." Department of Energy

**FRICTION CAUSES**

- Loss of horsepower
- Decrease in fuel economy
- Oil oxidation prohibiting extended drains
- Accelerated component wear
- Increased emissions
- Higher maintenance cost
- Higher labor cost
- Increased heat
- Loss of compression



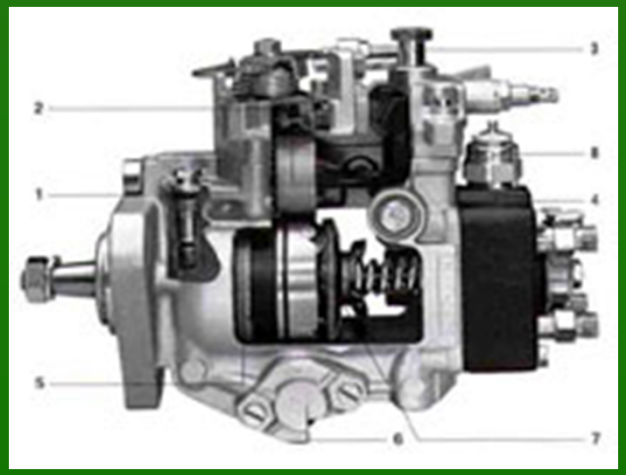

This diagram illustrates the paths of energy through a typical gas-powered vehicle in city driving.

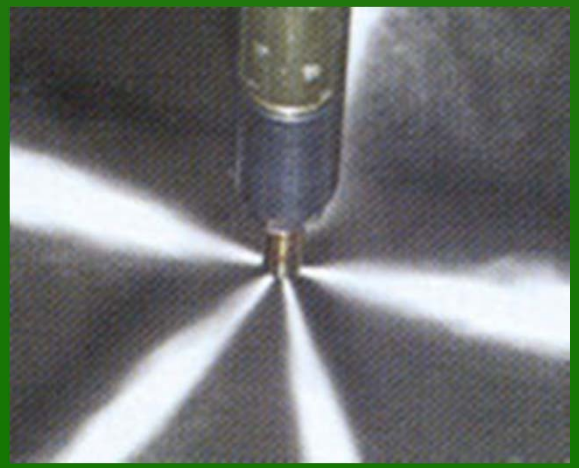
# MotorSilk Diesel & Bio-Fuel  Treatment

MotorSilk® Diesel Fuel Treatment is a formulated additive for today's diesel fuels including ULTRA low-sulfur diesel fuels and all bio-fuels.

This unique technology provides a high level of lubricity to diesel fuel systems due to an active chemical process which creates a nano thickness layer of an extremely low coefficient friction of less than 0.01.

- Reduced starting time
- Lower emissions
- Reduced injector pump wear
- Reduced fuel consumption





# Improved Fuel Economy Summary Table

| Company | Test Performed By: | Gasoline MSOA | Diesel Vehicles MSOA | Diesel Vehicles MSOA & MSFA |
|---|---|---|---|---|
| Disney | PDM Ctr., Univ. of Oak. | | | 16.9% |
| Food Lion | Food Lion | | 8.0% | |
| Nestle Waters | Nestle Waters | | 7.7% | |
| Carquest | Carquest | 13.3% | | 11.3% |
| Mississippi DOT | Mississippi DOT | 14.3% | 16.5% | |
| Montgomery Co. | Montgomery Co. | | 13.5% | |
| MiJack Products | MiJack Products | | | 12.3% |
| Kraft | Kraft | | 9.1% | |
| Technion | Technion | 13.5% | 5.0% | 7.5% |
| Oakville, Ont. | Oakville, Ont. | | 10.0% | |
| BNM Research | BNM Research | | 10.1% | 17.3% |
| St. of WA DOT | St. of WA DOT | 9.6% | | |
| Van Dyne Engineering | Van Dyne Engineering | 12.1% | | |
| Fed Ex | Clean Air Technologies | | | 27.2% |
| Touchstone | Touchstone | | | 22.5% |
| AAA of So. California | AAA of So. California | 3.7% | _____ | _____ |
| Average Fuel Economy | | **11.1%** | **10.0%** | **16.4%** |

# Gasoline Fleet Results 6,100 Vehicles
# 1st Qtr 2008 v. 1st Qtr 2007

| | | |
|---|---|---|
| **Miles Driven:** | **2007** | **27,126,464** |
| | **2008** | **30,085,972** |
| **Gallons Used:** | **2007** | **1,430,167** |
| | **2008** | **1,384,921** |
| **MpG** | **2007** | **18.97 mpg** |
| | **2008** | **21.72 mpg** |
| **Percent Improvement** | | **14.5%** |
| **ProForma 2008 (‘08 miles at ’07 mpg)** | **1,586,199** | |
| **Fuel Saved** | **2008** | **1,384,921** |
| **Gallons Saved in Qtr.** | | **201,278** |
| **Annualized Fuel Savings (Gallons)** | | **805,111 ($2.8 Million)** |
| **GHG Reduction for 2008** | | **7,810 Tons** |

# Realized Solutions

- **SAVE**
  - REDUCE FUEL EXPENSE (5% - 15%)
  - REDUCE GHG EMISSIONS (5%- 15%)
  - REDUCE FRICTION (80%)
  - REDUCE WEAR (90%)
  - REDUCE MAINTENANCE (50% - 75%)
  - REDUCE DOWN TIME/LABOR COSTS
  - ELIMINATE CORROSION / MICROPITTING / OXIDATION
  - REDUCE ENERGY REQUIREMENTS
  - REDUCE OIL CHANGES 50% - 75%
- **QUALIFY TO SHARE IN:**
  - CARBON CREDITS / OFFSETS
- **LOWER OPERATING TEMPERATURE (20% - 30%)**
- **EXTEND LIFE OF ENGINES & EQUIPMENT**

# Energy Products That Save

**Motor Silk Engine & Fuel Treatments – Gas Trucks/Vans**
**Based on Fuel Consumption @ Ave. 18 MPG; $0.045GAL. Product Cost (cost savings @ 10% Deduction)***

| | 50 Trucks @ 40,000 MI/YR | | 50 Trucks @ 80,000 MI/YR | |
|---|---|---|---|---|
| | $2.50/GL | $3.00/GL | $2.50/GL | $3.00/GL |
| Cost Fuel/Yr. | $277,750 | $333,300 | $555,500 | $666,600 |
| Savings @ 10% | 27,775 | 33,330 | 55,550 | 66,650 |
| Est. Product Cost @ $0.045/GL | 5,000 | 5,000 | 10,000 | 10,000 |
| Net Savings Yr. | 22,775 | 28,330 | 45,550 | 56,650 |
| Break Even/Wks | 9.0 | 7.5 | 9.0 | 7.5 |
| ROI | 455% | 565% | 455% | 565% |

# Unique Performance Characteristics Summary

- Self Renewing
- One Treatment Good for 100,000 Miles
- Coefficient of Friction 0.01
- Fuel Improvement 5 -15 Percent
- Decreases Emissions
- Biostat / Anti-Corrosive / Anti-Oxidant
- Displaces Varnish , Carbon & Sludge
- Prevents Deposits Formation in New Equipment
- 100% Biodegradable
- Compatible With Any Oil

# Advanced Lubrication Technologies Family of Products

- Motor Silk™ Engine Treatment
- Motor Silk™ Diesel Fuel Treatment
- Motor Silk™ Gasoline Fuel Treatment
- Motor Silk™ Automatic Transmission Treatment
- Motor Silk™ Gear Fluid Treatment
- Motor Silk™ Marine Engine Treatment
- Motor Silk™ Marine Gear Fluid Treatment
- LubriSilk™ Synthetic Grease
- LubriSilk™ Chain Lube
- LubriSilk™ Gun Oil