Biodegradable Lubrication Technology Reduces Energy Consumption and Extends Equipment Life; Boron CLS Bond Revolutionizes Industrial Equipment Efficiency

LOS ANGELES--(BUSINESS WIRE)--May 24, 2005--To address the rising cost of energy and protect the capital investment of industrial equipment, Advanced Lubrication Technology's (ALT) Boron CLS Bond(R) is the solution to improve fuel efficiency; reduce friction, heat, wear and corrosion in engines and industrial equipment; and extend engine and machine life. Incorporating technology discovered and patented by the Department of Energy's Argonne National Labs, Boron CLS Bond(R), an extraordinary breakthrough in lubrication technology, is the key ingredient in the MotorSilk(R) and LubriSilk(R) line of engine lubricants and treatments, equipment lubricants, and greases.

Prior to the development of Boron CLS Bond(R), lubricant additives contained graphite, chorine, molybdenum, sulfonates and zinc/phosphorus compounds that did not chemically bond to metal surfaces, and were either toxic or produced toxic byproducts and/or corrosive acids. Boron CLS Bond(R)'s use of biodegradable hydrogen orthoborate (boric acid), allows it to meet the most stringent government standards and mandates worldwide.

According to Pat Desert, PhD, Director of University of Oakland's Product Development and Manufacturing Center, major improvements in lubrication technology only come along every 25 to 30 years and ALT's Boron CLS Bond(R) is an improvement of this magnitude.

"We have subjected Boron CLS Bond(R) to rigorous field and laboratory testing by the some of the nation's leading independent testing authorities," said Tom Foscue, chairman of ALT. "Test results from Herguth Labs and the Product Development Center at the University of Oakland indicate that our new lubrication technology can be a superior replacement for environmentally unfriendly, extreme-pressure and friction reduction additives."

Boron CLS Bond(R) Performance

Analyses from independent laboratory testing substantiate that Boron CLS Bond(R) provides numerous benefits including: increased mechanical efficiency, decreased equipment downtime, extended life, increased fuel efficiency (3.5-30 percent), reduced mechanical wear (up to 80 percent), increased engine efficiency, reduced friction (up to 85 percent), reduced friction-related heat (20-40 percent), and lower exhaust emissions

(combined urban and highway up to 35 percent). Numerous field tests with state Department's of Transportation, construction companies and commercial fleets consistently show average improvements in fuel economy in the range of 10 to 50 percent.

Industrial Market Success

Work with Canadian National (CN) Rail began with an environmental and lubrication problem related to rail switches. Historically, used engine oil was applied once a week to all switches to lubricate them and make them easier to switch. Typically these switches required hand lubrication every week and the high traffic switches in the inter-model yards (which average 1,200 switches per day) required hand lubrication every hour.

A special version of Boron CLS Bond(R) was developed for CN Rail to meet their particular needs. After applying ALT's lubricant, the normal switches only require lubrication every six weeks and the high traffic switches have gone from every hour to once a week. Furthermore, ALT reformulated the Boron CLS Bond(R) lubricant into an all weather highly visible lubricant that can readily be seen where the applications are most heavily worn.

Products made by ALT using Boron CLS Bond(R) include both finished lubricants and lubricant treatments in the form of and/or for addition to the following: motor oils, gear oils, turbine oils, high temperature lubricants, greases, hydraulic fluids, aerosol thin/dry film sprays, diesel fuel and gasoline, mold release fluids, cold forge fluids, and many other custom formulated products to address specific needs.

How Boron CLS Bond(R) Works

In practical application, the Boron CLS Bond(R) technology chemically seals the host metal surfaces with a metallic boroxide to prevent corrosion of the metal and metal induced oxidative breakdown of the fluid lubricant. Bound to this boroxide seal is a 200 nanometer thick layer of near frictionless crystalline boric acid platelets that create a solid boundary layer lubricant. This extreme low friction boundary layer works synergistically with the lubricant delivery and/or dispersal vehicle (ex. motor oil, automatic transmission fluid, gear oil, etc.), greatly improving the performance of the fluid lubricant. The crystalline platelets chemically react with metal to create a nearly permanent, self-replenishing, lubricant on virtually any metal surface. The boroxide coating is covalently bound to the metal surfaces and molecules in each platelet have strong macromolecular bonds, giving the boundary layer the equivalent of 85 percent of the hardness of diamonds.

About Advanced Lubrication Technology (ALT)

During government sponsored research into advanced lubrication concepts, a discovery in 1991 by a prominent scientist at the U.S. Department of Energy's prestigious Argonne National Laboratory redefined the potential of lubrication technology. Following the issuance of the initial patent in 1995, ALT (as exclusive worldwide licensee) invested millions of dollars over several years to develop both additive and fully formulated products incorporating the key technology discoveries that now provide a previously untapped potential to a worldwide equipment market seeking greater productivity, fuel efficiency and extended useful lives. ALT has already established the capabilities of the Boron CLS Bond(R) technology through development of diverse applications for the automotive aftermarket and a host of major industrial companies.