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NANOTECH

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VINTECH NANO MATERIALS

NANO-ENGINEERED
INNOVATIONS FOR
**LUBRICATION
AND COATING**

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Rustom K. Mody P.E.,
CEO



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**Applied
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Review**

*The annual listing of 10 companies that are at the forefront of providing
NanoTech solutions and transforming businesses*

C O V E R
S T O R Y



**NGLIDE TECHNOLOGY HELPS BUILD ROBUST SURFACE
PROTECTING TRIBOFILMS THAT PROVIDE COVERAGE
ON CONTACTING SURFACES-AND CAN WITHSTAND
TREMENDOUS LOAD AND TEMPERATURE RANGES**



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CEO**

VINTECH NANO MATERIALS

Nano-Engineered Innovations **for Lubrication and Coating**

By Rachel Smith

Located in Downtown Springdale, Arkansas you will find the headquarters of Vintech Nano Materials. This is ISO 9000:2015 certified nanotechnology manufacturer of speciality lubricants, protective coatings, and cutting tools that is revolutionizing the surface protection landscape. Chemists, engineering,

and technology teams at the facility develop and test newly developed products in their in-house labs. They have an expert crew overseeing the production processes in their state-of-the-art manufacturing facility. They maintain a strong inventory of finished products, including synthetic valve grease, red grease, dielectric grease, paints, enamels, corrosion inhibitors, and coatings.

VinTech leverages its proprietary technologies to offer nano-engineered tribological solutions ideal for a wide range of industrial and commercial applications. The company's vision is to provide the most advanced surface protection solutions to enhance the productivity and efficiency of equipment operating in harsh environments.

CHANGING THE STATUS QUO

VinTech's nano-engineered additives serve as smarter alternatives to traditional chemical-based lubricants and coatings, owing to their ability to provide superior physical and chemical properties and high surface area to volume ratio. Today's business environment requires higher uptime, improved asset protection and increased efficiency. These additives are instrumental in reducing wear, improving corrosion resistance and increasing performance, and extending the service life of equipment.

VinTech's tribological solutions are composed of not just one material at a nano-scale; they have a hierarchical hybrid nanostructure consisting of organic and inorganic compounds. "Oftentimes, it's challenging to have multi-dimensional characteristics built into one formulation. But at VinTech, we've achieved this feat with macromolecular chemistry, offering multiple components functionalized uniquely for specific applications," says Rustom Mody, CEO of VinTech.

These solutions are designed to solve some of the toughest equipment challenges by getting down to the molecular level while improving production rates and part quality and reducing setup times and costs.

ENHANCING "THE SMALL THINGS" WITH NANOTECHNOLOGY

VinTech's product offerings branch into three primary categories: lubricants, coatings, and coating services. When it comes to lubricants, the company delivers a range of next-gen additive systems powered by its proprietary nGlide technology.

VinTech's self-replenishing nGlide technology enables lubricants to coat surfaces at an atomic level. "nGlide technology helps build robust surface protecting tribofilms that provide coverage on contacting surfaces- and can withstand tremendous load and temperature ranges," adds Mody. It doesn't break down or wash away and never lets the surfaces touch each other. nGlide additives reduce activation time to shorten the machine's break-in period, smoothen wear-inducing asperities, and polish contacting surfaces to reduce fretting wear. Being able to tackle friction at the nano-scale, nGlide protects surfaces from wear and tear and prevents corrosion.

The nGlide-powered industrial-grade products are developed with highly flexible chemistries and can be tailored to fit clients' unique requirements. VinTech has developed two robust product lines by leveraging its nGlide technology—AtomLube and AtomOil—that significantly increase machines' performance, efficiency, safety, and sustainability. The AtomLube products bring the nGlide technology to greases, pastes, and sealants used in commercial and industrial applications.

The nano-engineered lubricating oils in the AtomOil line of products are widely used by automotive, oilfield, and trucking industries. VinTech recently worked with a client that was facing several challenges in their truck maintenance. They had to frequently bring their trucks in for maintenance because the hydraulic oil would oxidize after every 60 hours of operation. After using VinTech's specialized lubricants, the client experienced an increase in equipment productivity, reliability, and maintenance cycles.



DIVERSIFYING THE NANO-ENGINEERED EXPERTISE

Surface protection goes far beyond just lubricating equipment's moving parts; it entails preventive coating to ensure the machine's mechanical integrity. VinTech offers an array of premium coating solutions under the GuardX brand that provides superior protection to equipment in harsh environments. By utilizing the GuardX line of products, which encompasses durable paints and coatings, clients benefit from unmatched adhesion, chemical, and corrosion resistance. The nano-scale additives ensure sustainable protection, increased service intervals, and extended total

asset life.

GuardX solutions' core competency lies in their material composition, nano-engineered for multilayer architecture. By making fast curing possible at room temperature, VinTech enables clients to accelerate their coating operations and reduce equipment downtime.

VinTech's nGuard is a multifunctional textile protection formula that offers antibacterial, antifungal, hydrophobic, and insect-repelling characteristics. It can add protection to textiles for performance in harsh industrial environments, military combat, and hospitals. The company also provides TuffTek, a suite of nano-engineered surface technology products with an unrivaled hard-surface coating that increases the durability and productivity of the cutting tools. It offers incredible toughness and thermal and abrasion resistance to tools and is useful in machining exotic materials, especially in the aerospace and oil & gas industries.

A NANO-LEVEL CUSTOMER SERVICE APPROACH

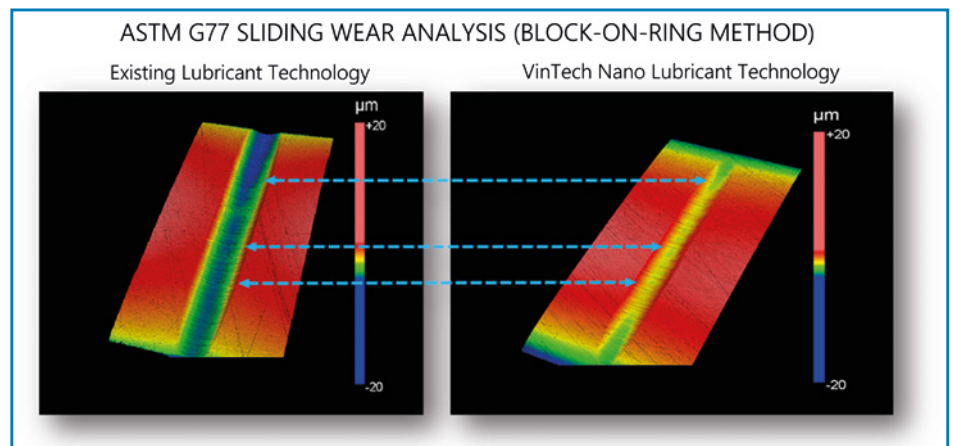
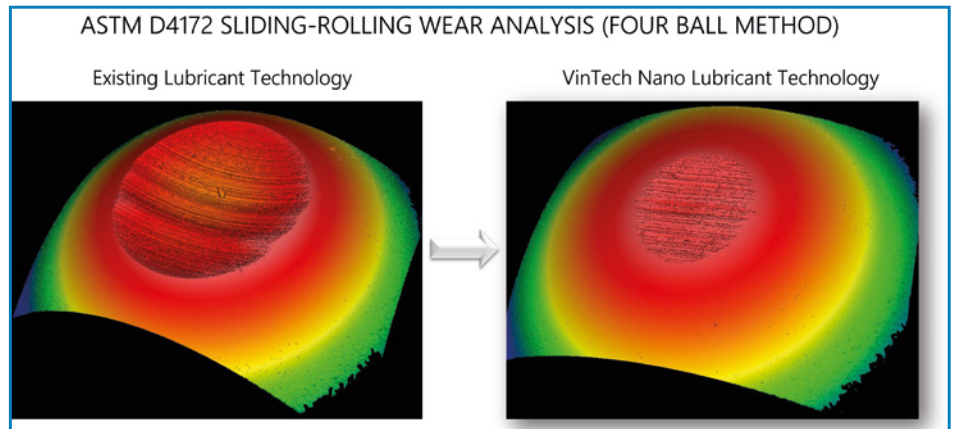
Instead of offering off-the-shelf solutions, VinTech follows a meticulous approach to provide custom products designed for the client's specific applications. A typical client engagement begins with the company's engineers closely interacting with customers' technical teams to identify the problem statement and the root cause of their challenges. Based on this information, the company designs a tribological solution that includes all necessary properties to address the client's requirements. This is followed by the testing phase, where VinTech evaluates the solution's efficacy in simulated environmental conditions. After observing the outcomes, the company provides clients with the in-house test results and a batch of prototypes for field trials.

Customers can now directly order VinTech's products online from anywhere in the U.S. The company recently launched a new distribution channel through Amazon (<https://www.amazon.com/atomlube>) to cater to trucking companies and small businesses that prefer purchasing at a distributor level. This is part of VinTech's efforts to expand its direct-to-customer distribution further. VinTech also gathers clients' feedback to bolster its product improvement efforts.

DRIVING EXCELLENCE THROUGH INNOVATION

As a technology-first company, VinTech relentlessly innovates to improve its solutions and develop new products to meet clients' evolving needs. The company's carbon-based additive technology is one of its recent developments. It's a simple yet powerful formulation that uses nano-engineered graphene to provide advanced protection against various factors, whether it's tribological, extreme pressure, or corrosion.


Another innovation from VinTech is its ARMOR GFC Coating, which offers galling, friction, and corrosion protection in one formulation. It is an advanced nano-engineered tribological coating for



preventing chemo-mechanical damage from aggressive wear, galling, and adhesive friction in corrosive environments. This ground-breaking, multi-component solution allows for ease of application and offers flexible curing options in ambient conditions and accelerated thermal curing.

ARMOR GFC's ambient curing ability makes it ideal for onsite and offsite coating of multi-dimensional configuration components without disassembly or downtime. The solution eliminates the need for clients to rely on complex and costly third-party curing services. ARMOR GFC offers unrivalled resistance against UV deterioration and develops early moisture and chemical resistance for interior and exterior applications in corrosive environments. It works even in sub-zero and low temperatures and can have built-in antimicrobial treatments.

With undivided attention to individual customer challenges, coupled with its proven nano-engineered product lines and technologies, VinTech has grown steadily over the years. Backed by a large corporation, Vinmar International, and affiliated with the University of Arkansas, the company has access to all the necessary resources and sophisticated, up-to-date lab equipment. VinTech has also joined hands with strategic lab partners who often run evidence-based tests to constantly enhance product efficiency.

Driving VinTech's success is a dedicated team of industry experts who share the same vision of offering exceptional products to clients and disrupting the equipment protection space with nanotechnology. "We're the best-kept secret in the nanotechnology space and our goal is to leverage our deep-rooted expertise to set a new standard in the industry while becoming the go-to partner for our clients," says Mody. 

VinTech Nano Materials

GUARDx Armor GFC Offers Proprietary Multi-Dimensional (Quality, Productivity, Cost Savings) Performance Enhancements

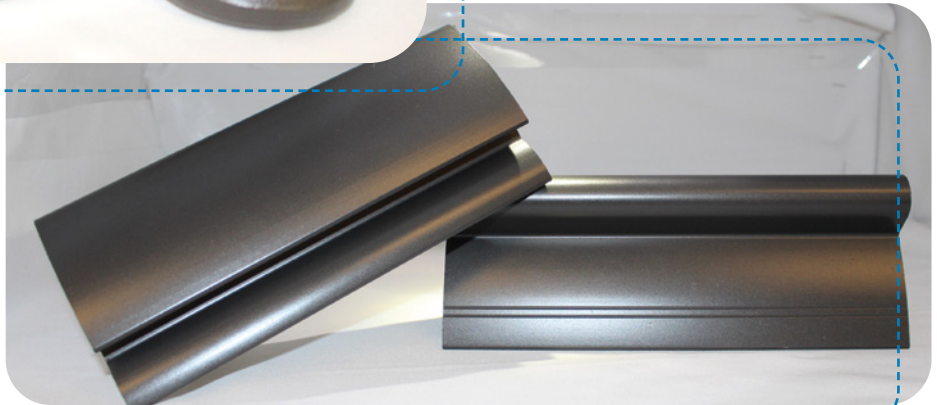
GUARDx® Armor GFC (Anti Galling, Friction Reducing, Corrosion Protection), a nanographene-textured fluoropolymer coating, was recently tested against Xylan and Ever-slik solid film lubricant coatings by one of the top three global oilfield service companies. The results were eye-opening.

For decades, industrial manufacturers have turned to MoS₂ and PTFE-based solid lubricant dry-film coatings for the prevention of friction, galling wear and corrosion. The typical application process requires that inventory be shipped to third party coating applicators who coat a variety of substrates through multi-phase application and heat curing. The coated parts are returned to the manufacturer for assembly. The OEM and service provider who challenged Armor GFC, sought to increase their speed to market through use of a coating that did not require third party application or heat curing, but provided long-term indoor and outdoor protection from galling, friction, corrosion, UV, downhole fluids, hydrocarbons, acids and high concentrations of hydrogen disulfide and carbon dioxide. They further challenged Armor GFC by requiring that the coating be able to repair surfaces previously coated with MoS₂ and PTFE coatings made by Xylan, Ever-slik and others. GUARDx® Armor GFC was specifically designed by engineers at VinTech to reduce friction, prevent wear, resist tribo-corrosion, and improved thermoelectric properties, while offering end users the time-saving benefit of non-complex in-house application.

The challenge for Armor GFC began by confirming a variety of physical properties compared to benchmark Xylan and Ever-slik coating products. The lab tests confirmed Armor GFC provided equal or better protection performance compared to Xylan 1425, Ever-slik 1201/Everslik 1301 systems. Armor GFC measured lower coefficient of friction as compared to both benchmark products to alleviate friction-induced adhesive wear and galling. While both Xylan and Ever-slik products have enhanced ability at lower temperatures, Armor GFC showed enhanced high temperature stability reaching up to 450 °F. When UV protection was evaluated, Armor GFC proved capability that the benchmark coatings could not. Armor GFC utilizes a hybrid polymer binder system which delivers high UV resistance as compared to epoxy-based Xylan and Ever-slik coatings that have a tendency to crack after prolonged UV exposure. Armor GFC is designed for enhanced surface protection in both dry and wet corrosive environments.

To test galling resistance, the oilfield OEM engaged the Texas A&M University Engineering Experiment Station (TEES). TEES conducted standard and modified tests that measured the resistance each coating provided to galling caused by extreme pressure and adhesive wear during make and break assembly. Armor GFC, Xylan and Ever-slik coatings demonstrated repeated performance under applied loads up to 75k psi and max loads up to 77k psi.


After performance was evaluated, calculating the efficiency of Armor GFC was the final step. The overall goal of this



challenge was to identify product performance that could lead to greater asset protection and reduced NPT. As VinTech CEO, Rustom Mody explains, “Our customers tell us that increased productivity is an operational objective that ranks second only to safety. GUARDx® Armor GFC was developed to provide enhanced galling, friction, and corrosion protection with the benefit of reduced downtime associated with outsourcing assets for third-party coating.”

To test the efficiency that Armor GFC claimed, four major coating applicators provided estimates to apply Xylan or Ever-slik coating to a common oilfield flange. In each case, cost for material, labor and freight were captured as well as process timing. From those estimates, GUARDx® Armor GFC demonstrated a tremendous cost savings with the in-house

application as compared to the out-sourcing to a vendor for a coating application. Guardx Armor GFC provides cost savings benefit of application, superior protective coating, and in-house management of the service.

GUARDx Armor GFC manufacturer, VinTech, provides the most advanced surface protection technology available. VinTech Nano Materials provides protective lubricants and coatings with proprietary nanoscale additives that increase production rates and improve part quality, while reducing setup time and reducing operation cost. For more information on the superior lubricant performance and surface coating protection that VinTech products provide, visit <http://www.vintechnm.com>. 

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