Evolving Trailer Technology

Volume • 12 / Issue • 2

Strength from Within

New Bonding Process for Liners, Scuffbands Boosts Durability

Losing Weight, Not Value

New Designs Lower Weight, Increase Productivity

Engineered for the Road Ahead

Tire Technology, Maintenance Practices Could Lower Costs

CALENDAR

July

July 21 – 23
Truckload Carriers' Association (TCA)
Refrigerated Division Annual Meeting
Sunriver Resort
Sunriver, OR

July 27 – 29
Texas Motor Transportation
Association (TMTA) Annual
Conference
Hyatt Hill Country Resort
San Antonio, TX

August

August 26 - 28
Great American Trucking Show
Dallas Convention Center
Dallas, TX

September

September 20 – 23
Technology and Maintenance Council
(TMC) 2010 Fall Meeting
Raleigh Convention Center
Raleigh, NC

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Delivering Quality and Commitment for the Road Ahead

Dear Customer,

Since the development of the industry's first refrigerated semi-trailer, Great Dane Trailers' innovative spirit has never wavered. That same commitment to excellence is reflected in the quality of our products and the service to our customers, which you will find at <location name>.

Whether enhancing the strength of the trailer from the inside out or reducing weight in van and reefer designs, Great Dane's engineers are dedicated to delivering a product you can count on for its durability and dependability.

In this issue of Evolving Trailer Technology, you'll read about two customers that rely on Great Dane trailers to meet the needs of their unique operations and why they continue to turn to Great Dane's reliable and versatile dry vans and refrigerated trailer products.

This innovative spirit, commitment to quality and dedication to customer service is the enduring mark of every Great Dane trailer, and by entrusting us with your business, you can put your trust in that legacy now and in the days ahead.

Regards,

Jim Pines

Table of Contents

Volume • 12 / Issue • 2

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Fighting the ULSD Maintenance Battle

Benefits of Cleaner Fuel Could Be Marred by Threat of Bacteria

The environmental and health benefits of Ultra Low Sulfur Diesel (ULSD), mandated for use in on-highway engines in the fall of 2006, are clear. However, there is now growing concern that bacteria growth in fuel storage tanks may be a developing problem. ULSD has a sulfur level of 15 parts per million or less, dramatically lower than the previous standard for diesel fuel of 500 PPM.

Reports from fleets and fuel providers indicate that bacteria growth could be leading to corrosion in ULSD dispensing equipment and storage tanks. To help determine the extent of what could be a growing problem for fleets, the Petroleum Equipment Institute has been conducting a survey to gather evidence and is increasing its investigation of claims.

This potential problem is one of simple science. In higher concentrations, sulfur in diesel fuel was a natural killer of bacteria that was often present due to contamination. By contrast, significantly reduced sulfur levels in ULSD allow bacteria to survive and grow. Unchecked, these bacteria can create a constant source of contamination. Bacteria can also grow in a vehicle's fuel tank.

For fleets, now that ULSD has become trucking's standard fuel, tank maintenance has taken on even more importance. Among the practices they are employing are to periodically test—every three to four months in some cases—for any excess moisture and bacteria contamination in fuel storage tanks. Many companies are also utilizing biocide to kill bacteria. Biocides can even be added to vehicle fuel tanks to eliminate bacteria colonies and alleviate proliferation.

Some seasonal fuel additives already used by fleets contain biocides. Suppliers, however, often caution against relying only on these routinely used additives to address bacterial contamination. If contamination is present in a storage tank, the general recommendation is for the tank to be emptied, cleaned, dried and treated.

Reputable fuel suppliers can serve as valuable sources of information, testing and supplies in the battle against bacterial contamination in fuel storage tanks. Especially for fleets that operate and maintain in-house fuel storage and dispensing equipment, a relationship a reputable supplier—working only with companies that have a proven record of delivering quality ULSD—is essential.

In the future, environmental and emissions regulations may become even stricter than today's ULSD rules. Those developments would add to the current challenge posed by bacteria growth and possibly bring about a new set of issues for the trucking industry to address.

Fleets, meanwhile, will continue taking a proactive approach, one that determines potential sources of contamination in diesel fuel and implements preventive practices. Through a tried and true method of heightened awareness and effective maintenance, excessive costs can be reduced, vehicles can continue operating at optimum efficiency, and downtime kept to a minimum.

Improving Performance

New Reefer, Dry Van Designs Cut Empty Trailer Weight, Provide Higher Payload Capacity

A range of recent improvements to Great Dane Classic Truckload (CTL) reefers and certain dry freight van models are resulting in reduced trailer weight. The savings, which are now becoming available–and changes that are still undergoing evaluation–will help fleets improve productivity and efficiency.

On the CTL reefer, Great Dane recently removed about 100 lbs from base models without impacting structural capability. The ongoing process involves evaluating weight-saving opportunities, and planning both changes that remove large amounts of weight and others that result in smaller but significant savings. Some of the changes may also be extended to the Classic line of reefers in the future.

In the design of the CTL, larger weight savings will result from changes in roof construction and in interior sidewall linings that are stiffer and stronger and are bonded more effectively to insulation. Recently incorporated is a new construction design for rear swing doors and a standard, 10-inch high, heavier-duty scuffband that reduce weight.

Many smaller weight-saving features are also now incorporated in or planned for the CTL. These include redesigned cove moldings for the upper wall-to-ceiling connection, and the replacement of some steel with aluminum components in the front wall.

Other changes in the CTL that are saving weight include revisions to mud flap mounting angles, a design that has the added benefit of allowing replacement of left or right sides without having to change the entire assembly. Electrical and air line conduit on the CTL is also now lighter yet larger to accommodate aftermarket components like liftgate cables and electrical cables used to provide shore power to refrigeration units.

Great Dane is also embarking on a project to build a test version of a light weight dry freight van that incorporates a high base rail and lightweight sidewall, front wall and roof, and a lightweight rear frame. While the lighter components will cut trailer weight, the high base rail will enable customers–such as beverage haulers that carry heavy loads–to also specify high floor ratings, required in operations where frequent loading and unloading of heavy pallets takes place.

Across its product line, Great Dane continues to focus on ways to remove weight without sacrificing strength, durability or reliability. The innovative changes already incorporated on some models and those undergoing evaluation on others will continue to help support customers' needs.

Ensuring Quality

New Bonding Process for Linings, Scuffbands Meets Customer Needs for Highly Durable Reefer Walls

At the Great Dane CPP plant in Brazil, Ind., a new bonding process is at work joining reefer wall linings and scuffbands for Classic and Classic Truckload (CTL) reefers. Industry trends and feedback from customers drove the development of specialized equipment, which ensures consistency and reliability while creating a high quality and highly durable connection.

To create reefer walls with linings and scuffbands joined together as one integral unit, the new, automated Great Dane process dispenses the proper volume of adhesive and accurately locates the scuffband on the sidewall panel. Once located, the manufacturing equipment presses the lining and scuffband together, a process that controls the bond line and helps cure the adhesive.

Reefer walls featuring integral liners and scuffbands are growing in popularity among fleets. Less prone to damage during loading and unloading, the integrated assembly offers a snag-resistant top edge for added cargo protection. In addition, being less prone to damage, the new Great Dane design promises customers longer service life and fewer repairs.

Reefer wall sections have been built using the new scuffband and liner bonding technology since the spring of this year. They are stored in the CPP facility until they are ready for transfer to the Brazil plant's production line for foaming.

The new integral wall sections for reefers are a perfect fit with two Great Dane exclusive offerings for refrigerated trailer walls. The thermoplastic-based PunctureGuard and ThermoGuard liners already offer superior puncture resistance and extended useful life compared to traditional styles.

ThermoGuard is Great Dane's glass-reinforced thermoplastic interior liner that enhances thermal efficiency by significantly reducing the thermal degradation that occurs with conventional reefer linings. PunctureGuard is a thin and highly puncture-resistant liner that minimizes damage.

The combination of these technologies and the new bonding process for linings and scuffbands in reefers offers the benefits of highly durable reefer walls, and clearly demonstrates how Great Dane is continually working to provide sound solutions to customer needs.

Where the Rubber Meets the Road

Tire Engineering Developments, Effective Maintenance Practices Leading to Lower Costs

For virtually every type of trucking operation, tires represent one of the highest single costs. Several factors in a tire's design impact those costs, leading to the ongoing effort by tire manufacturers to continually improve their products.

Tires contribute greatly to the fuel efficiency of heavy-duty combination vehicles. About 35 percent to 50 percent of a tire's rolling resistance comes from the tread, for example, so it follows that tread design has a significant impact on fuel economy.

Typically, shallow treads are more fuel efficient than deep ones, and rib designs tend to be more fuel efficient than lug or block designs. By incorporating continuous shoulder ribs in newer-generation tires, however, tire designers have found they can be more flexible in selecting tread rubber compounds. The result is that certain closed-shoulder tires offer overall fuel economy equal to or even better than some rib designs.

Manufacturers also use different tread compounds in each tire to achieve lower rolling resistance and better fuel economy. In the past, more fuel efficient rubber compounds might not wear very well, but engineers have devised ways to improve rolling resistance without causing a significant loss in other important characteristics, such as durability and tread mileage.

Using specialized synthetic rubber with engineered properties, together with a specific tread design, is giving today's tires long wear characteristics. In particular, new rubber mixes that generate less heat when flexed are under development. Some compounds, especially those incorporating silica or using special formulas that combine natural and engineered-structure synthetic rubber, can help lower tire temperature and in turn promote longer casing life.

Tire manufacturers are also working on ways to reduce tire noise. One practice is called "pitching," which involves slightly changing the length, usually in a random sequence, of basic tread elements around the tire circumference.

Uneven, or irregular, tread wear nearly always increases tire noise levels, often before the wear patterns become obvious. This is an added incentive to maintain proper alignment, inflation pressure, and dual tire matching and suspension components. Tire suppliers agree that improved tire costs result in part from maintenance programs and practices that maintain proper inflation and alignment and balance.

On trailers in particular, a larger number of fleets are now utilizing on-board tire monitoring and inflation systems. Automatic tire inflation systems connect all tires on the trailer to a controlled air supply to fill and maintain tires at the desired pressure setting, even while the vehicle is moving. As air pressure drops below the tire manufacturer's recommended level, air is automatically routed to refill any underinflated tires.

At least half of fleet tire problems are caused by improper inflation and the problem is more widespread than many fleets realize. The Federal Motor Carrier Safety Administration (FMCSA) reports that only 44 percent of all truck tires are within 5 PSI of their target inflation (FMCSA PSV-04-0002). Other studies show that approximately 20 percent of all tractor dual tire assemblies and 25 percent of all trailer dual tire assemblies differ in pressure by more than 5 PSI. Put another way, this pressure difference creates a 5/16-inch difference in circumference, causing the smaller tire to be dragged 13 ft per mile, or 246 miles when driven 100,000 miles.

The Technology & Maintenance Council (TMC) of American Trucking Associations also weighs in on this subject. Even as little as 20 percent under-inflation, according to TMC RP 235, causes tire casing life to be reduced by 30 percent and tread life to drop by 25 percent. In addition, 20 percent under-inflation lowers fuel mileage by 1 percent to 2 percent.

Adding it all up, the answer is clear—a combination of effective tire designs and maintenance programs are what it takes to lower one of trucking's highest costs

CASE STUDY

Smithway Transport

Great Dane Classic Dry Freight Vans Handle Fragile Cargo Reliably and Efficiently for Carrier

"Having the right trailer to start is essential to being able to build the highly specialized units we provide to our customers," says Rocky Smith of Smithway Transport. "Great Dane Classic dry freight vans are our choice because they allow us to meet our customers' needs for efficient, reliable and productive trailers."

Since 1975, Smithway Transport has been an innovative leader in designing and outfitting trailers used by major chicken products producers across North America and internationally to transport day-old baby chicks from hatcheries to farms. The Fairview, N.C.-based company has bought 250 Great Danes in the past 10 years and currently averages about 25 to 30 per year.

The 48-ft by 96-inch insulated Great Dane Classic dry freight vans are used by Smithway to build its transporter units, including its exclusive "Chicks On Wheels" models. The latter are equipped with a pallet handling system that puts wheels under the load to speed up and take the work out of deliveries.

Each pallet loaded onto a Smithway Transporter can move up to 12,000 chicks directly from the hatchery floor to the farm. Nine pallets can be rolled directly into each unit, and once moved, unloaded and taken inside with a Moffett Forklift, which is attached to the rear frame.

"If we had to name the main reasons we start with Great Dane trailers," Smith says, "they would be the quality of the base unit and the company's ability and willingness to understand our customers' application. Proper specs are very important because these units not only carry fragile cargo on the highway, they also have to operate reliably off road getting into and out of farms."

Among the specifications for Smithway's Great Dane Classic vans that help address operational needs are carbon steel rear frames designed to handle the weight and stress of carrying the rear mounted 5,000 to 6,000-lb forklifts. Spray foam insulation in walls and roofs, and block foam in floors, helps maintain climate properly. Units are air conditioned and are heated with electric duct heaters, powered by diesel generator sets, with an emergency backup generator as standard equipment.

Making it easier to handle loads with the Great Danes are several standard and optional items that can be specified for the Classic vans. All units are offered with a choice of curbside or roadside doors—as large as 72 inches wide—for ease of loading and unloading. Rear swing doors can be specified, as can Whiting 1.5-inch Tempguard roll-up rear doors. Floor specs call for 1.31-inch aluminum, heavy-duty smooth dry cargo floors over a 0.060-inch GRP (Glass-Reinforced-Polyester) subfloor.

Also standard on the Great Dane Classics are sliding Hendrickson tandem axle and air ride suspension systems with Quick Draw II Air Assist Pin Pullers, Meritor WABCO ABS, Bridgestone R195F tires and Grote Long Life Light Systems with LED lamps.

"For meeting our customers' needs," Smith states, "Great Danes are 'built better to last longer.' Smithway's customers are able to operate more efficiently, reliably and productively because Great Danes Classic dry freight vans are the right trailer for their operations."

> "Great Dane Classic dry freight vans are our choice because they allow us to meet our customers' needs for efficient, reliable and productive trailers."
>
> *Rocky Smith*
> *Smithway Transport*

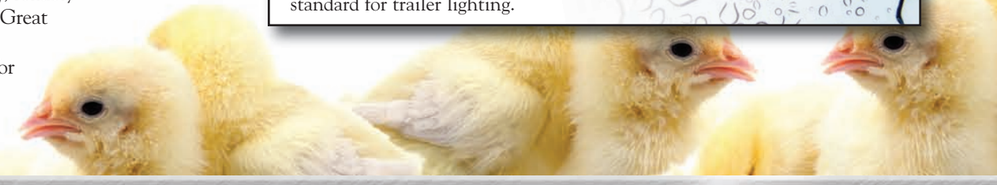
Preventing Moisture Intrusion

Grote
The first name in vehicle safety systems®

The Grote LongLife Light System with LED lights is a completely sealed system designed to help prevent damaging moisture intrusion. Available on all trailer models, this premium offering is a modular and maintenance-free system that combines the flexibility of a custom wiring solution with the durability, reliability and simplicity of a fully sealed harness.

Features of the LongLife Light System include gaskets on all connection points and the use of dielectric grease to prevent moisture and contaminants from getting in. Additionally, a full ground return ensures system integrity. Sealed from the lamp connectors to the nose box, the ground return replaces previously used pigtails that left a connection exposed to the atmosphere.

The lamps and harness of the Great Dane LongLife Light System were put through rigorous evaluations, including submersion in a saltwater bath while powered. At the same time, the system was vibrated to simulate worst-case actual road conditions. All tests confirm that this is the system that sets the standard for trailer lighting.



Transtex Composite
Maximum Flex Skirt

Cost-Effective, Flexible Trailer Side Skirts Offer Fuel Savings, Durability

Designed for easy installation on all types of trailers, Transtex Composite's Maximum Flex Skirt (MFS) offers trucking operations the ability to reduce fuel consumption and contribute to emissions reductions. Transtex Composite is Great Dane's standard supplier for this aerodynamic device.

According to the manufacturer and based on SAE Type II J1321 track testing, fuel savings of up to 7 percent can be achieved in on-highway with the trailer side skirts. The projected savings include 0.84 US gallons of fuel every 100 miles when traveling at 60 MPH, leading to a payback period of six to 12 months in most applications.

Impact-resistant and extremely resilient, the Transtex MFS is made of lightweight reinforced thermoplastic composite panels. Designed to last the life of the trailer, the 100 percent recyclable panels will not rust or corrode and won't require any maintenance in the life of the trailer.

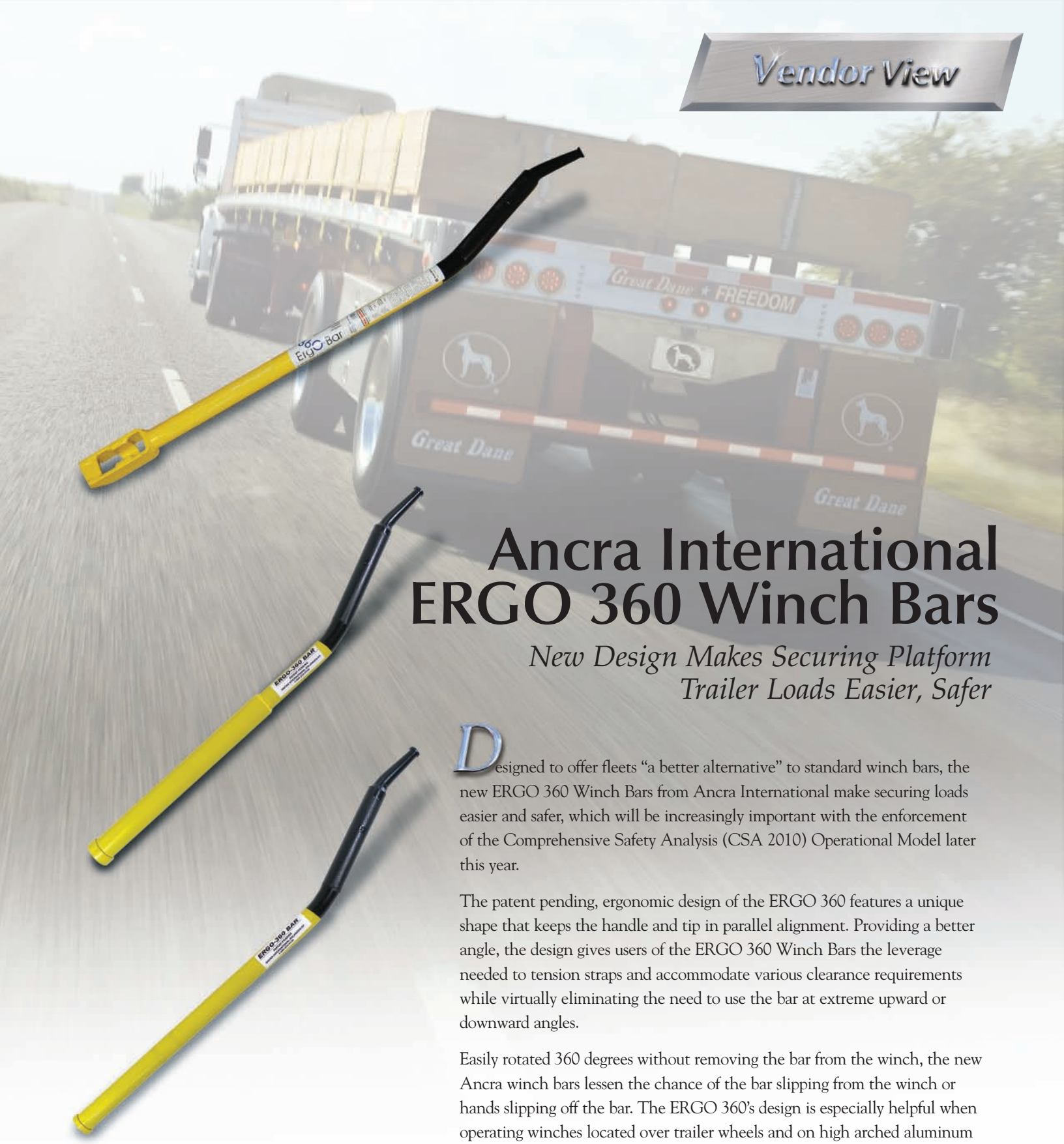
Transtex MFS panels are waterproof and resist ice and snow accumulation. These attributes, the company notes, help increase the driver's visibility along the sides of the vehicle due to reduced splashing.

Transtex MFS fairings are installed using the manufacturer's patent pending support system. The support technology and the highly flexible composite panel materials are both designed to flex and retain their shape, preventing damage if they come in contact with an obstacle.

Easily modified to any length and height, Transtex Maximum Flex Skirt trailer side fairings are available for installation on Great Dane trailers.

The Transtex side skirts are EPA SmartWay verified and are in the advanced category, making this skirt CARB (California Air Resource Board) compliant and the only aerodynamic product needed to qualify in California.

TRANSTEX COMPOSITE



Ancra International ERGO 360 Winch Bars

New Design Makes Securing Platform Trailer Loads Easier, Safer

Designed to offer fleets "a better alternative" to standard winch bars, the new ERGO 360 Winch Bars from Ancra International make securing loads easier and safer, which will be increasingly important with the enforcement of the Comprehensive Safety Analysis (CSA 2010) Operational Model later this year.

The patent pending, ergonomic design of the ERGO 360 features a unique shape that keeps the handle and tip in parallel alignment. Providing a better angle, the design gives users of the ERGO 360 Winch Bars the leverage needed to tension straps and accommodate various clearance requirements while virtually eliminating the need to use the bar at extreme upward or downward angles.

Easily rotated 360 degrees without removing the bar from the winch, the new Ancra winch bars lessen the chance of the bar slipping from the winch or hands slipping off the bar. The ERGO 360's design is especially helpful when operating winches located over trailer wheels and on high arched aluminum platform trailers.

Ancra ERGO 360 Winch Bars, which feature a standard mushroom tip to help keep the bar firmly in the winch cap, are available in Standard, Combination and Box End Combination models.

ANCRA INTERNATIONAL

Coastal Pacific Food Distributors

Great Dane Composite Dry Vans, Super Seal Reefers Meet Demanding Needs of Military Commissary Distribution Operation

"We needed trailers that were more durable than our previous units, that would hold up for the life of the lease."

Peter Hawkes, General Manager, Coastal Pacific Food Distributors Ontario, California Distribution Center

"We challenged Great Dane, and the company came through for us," says Peter Hawkes, general manager at the Ontario, Calif., distribution center of Coastal Pacific Food Distributors. "Last year we started switching our trailer fleet over to Great Dane Composite dry freight vans and Super Seal reefers because the quality of these vehicles is what we need for our operation."

Coastal Pacific Food Distributors (CPFD) was founded in 1986 as a military distributor to overseas bases located in the Pacific Rim. Today, CPFD is the military's premier distributor for the entire West Coast of the U.S. and the Far East. The company distributes products to military commissaries from full-service distribution centers in Ontario and Stockton, Calif., and Fife, Wash., including a new 90,000-sq ft facility with 50,000 sq feet of freezer space in Ontario that is due to open in August 2010.

CPFD's Ontario fleet of 68 trailers now includes 18 Composite dry vans. The company has also ordered 10 Super Seal reefers. All of the fleet's equipment is leased from Penske Truck Leasing, which also handles maintenance for the operation.

"We needed trailers that were more durable than our previous units, that would hold up for the life of the lease," Hawkes states. "Frequent loading and unloading of our trailers subjects them to damage from forklifts, especially in the front corners and along the bottom of the side and front walls. We also operate in some extremely high temperature areas in southern California, Arizona, Nevada and Utah."

The trailers that CPFD had been operating, Hawkes reports, were often in poor condition, especially in the floors, with scuffbands that were loose and pushed into walls, and in reefers there were issues with insulation. "They become costly to return at the end of a lease," he says. "Great Dane and Penske worked with us closely to identify those problems and to suggest specifications that could alleviate them."

Among the Great Dane design features that impressed CPFD were the way front corners are manufactured using an extruded aluminum radius with a corner cap, the side post and base rail design on Composite vans for added strength, and several scuffband options on the interior for greater impact resistance. "Side by side," Hawkes adds, "the structural differences and fit and finish clearly show that the Great Dane models are better quality trailers. In addition, we liked the way that the Composite vans have cleaner sides that help promote a positive image of our company."

Specifications for Great Dane Composite plate trailers at CPFD include two rows of scuffband on sidewalls consisting of a six-inch extruded aluminum band at floor level and a seven-inch, 18 gauge galvanized steel band over it. The units also have laminated hardwood floors with Prolam WAXIN coating, which helps reduce surface wear and resist delamination from moisture intrusion.

The 10 Super Seal reefers ordered recently by CPFD include two units with roll-up doors and liftgates and eight with swing doors. The dual compartment models feature Carrier refrigeration units, PunctureGuard front wall linings and either swing doors with a Triple Seal Gasket and aluminum cover sheets or Whiting Coldsaver III aluminum roll-up doors and a Maxon Railgate.

Scuffband on the reefers consists of a 16-inch extruded aluminum band flush with the sidewall's embossed Armortuf liner and a 24-inch, 0.625-inch one-piece plastic scuffband placed directly over it. Floors are 1.32-inch flat aluminum Heavy-Duty Concentrated-Load Safety-Grip models.

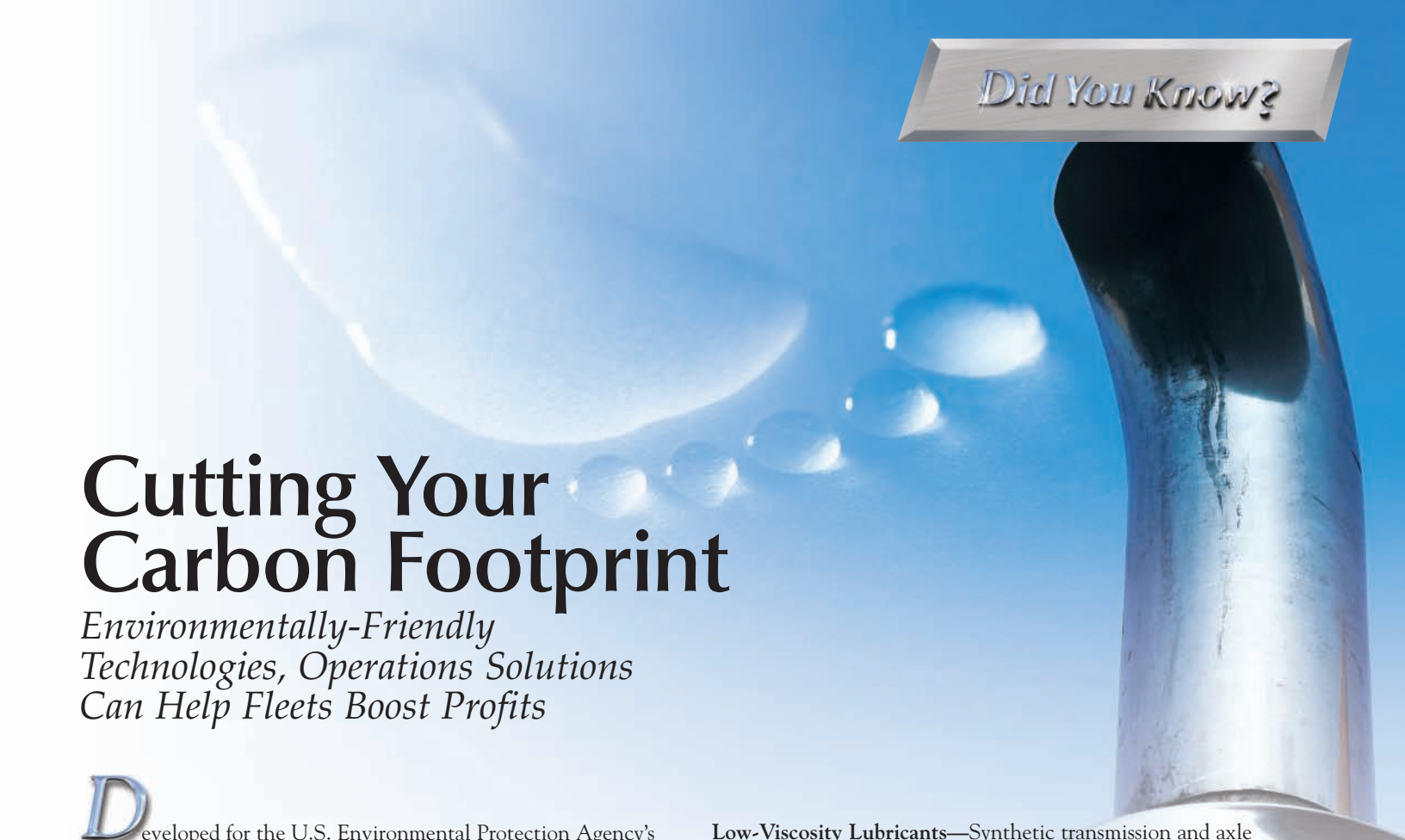
Other CPFD specs for both reefers and dry vans call for Hendrickson tandem, air ride sliding suspensions and axles with Quick Draw II Air-Assist Pin-Pullers. Meritor WABCO ABS, Accuride wheels and Goodyear G316 LHT Fuel Max tires are standard as well.

"These are the right specs and the right trailers for our fleet," Hawkes says. "As our current leases expire we are planning to switch our entire trailer fleet to Great Danes. With Great Dane, we know we'll have quality equipment for its entire service life in our operation."

Protecting Trailer Floors

WAXIN, a process offered by Prolam for trailer floor protection makes floors highly water resistant and helps preserve the wood's effectiveness–even as the floor surface thins due to normal wear. Incorporating solid paraffin wax into the hardwood, the process creates a virtually waterproof barrier at the rear of the trailer, the area most exposed and vulnerable to inclement weather.

With WAXIN, the hardwood floor is heated to expand its fibers and allow paraffin wax to penetrate the wood surface (0.060 to 0.120 inches deep). The wax then adheres to the wood fibers and when the mix cools the paraffin hardens and coats the wood.



Cutting Your Carbon Footprint

Environmentally-Friendly Technologies, Operations Solutions Can Help Fleets Boost Profits

Developed for the U.S. Environmental Protection Agency's SmartWay Transport partnership—the collaboration between the freight industry and government designed to reduce greenhouse gas emissions and improve fuel efficiency—is a list of technologies and strategies that can help reduce fuel consumption and in turn, improve efficiency and profitability. On that list of technologies are the following:

Idle Reduction—Several technologies, including auxiliary power units, can be used to reduce prolonged idling of long-haul trucks, potentially saving up to 1,000 gallons of fuel per truck each year.

Aerodynamics—A streamlined profile tractor with aerodynamic devices (roof fairing, cab extenders and side fairings) can reduce fuel consumption up to 600 gallons per year compared to a typical tractor. Aerodynamics can also be improved by reducing the tractor-trailer gap, and by adding side skirts and belly fairings to trailers.

Automatic Tire Inflation Systems—By maintaining proper tire pressure even when the truck is moving, automatic tire inflation systems can extend tire life, lower replacement costs, and reduce fuel consumption by over 100 gallons per year for a typical combination vehicle.

Wide-Base Tires—Reduced rolling resistance leading to improved fuel economy can result from the use of wide-base single tires compared to equivalent dual tires. By using wide-base tires, a typical long-haul truck could save over 400 gallons of fuel per year.

Low-Viscosity Lubricants—Synthetic transmission and axle lubricants can improve fuel economy by at least 0.5 percent in the summer and 2 percent in the winter. The combined effect of low-viscosity synthetic engine oils and drivetrain lubricants can improve fuel economy by about 3 percent, saving nearly 500 gallons of per year for a typical vehicle.

Lightweight Components—Using components made of aluminum or other lightweight materials can reduce empty weight, improving fuel efficiency. In tractors, weight can be cut with components such as aluminum wheels and hubs. The potential for weight savings is even greater in the trailer by specifying aluminum posts and crossmembers. Overall, lightweight components could save 200 to 500 gallons of fuel annually.

SmartWay also offers several ideas for improving operations and in turn cutting fuel use and boosting profits. Strategies and software for better load matching, more efficient routing and scheduling, and improved receiving policies help reduce fuel use by cutting vehicle miles and idle time. For a long-haul carrier that operates 15 percent of its miles without a load, reducing empty mileage by just 1 percent can save over 100 gallons of fuel per truck each year.

Driving practices have a large impact on truck fuel economy. Even highly experienced drivers can enhance efficiency by using cruise control, limiting use of cab accessories, employing smooth and gradual acceleration and progressive shifting practices, and by limiting truck idling. In addition, a typical long-haul vehicle that reduces its driving speed from 70 MPH to 65 MPH could save nearly $1,500 in fuel costs each year.

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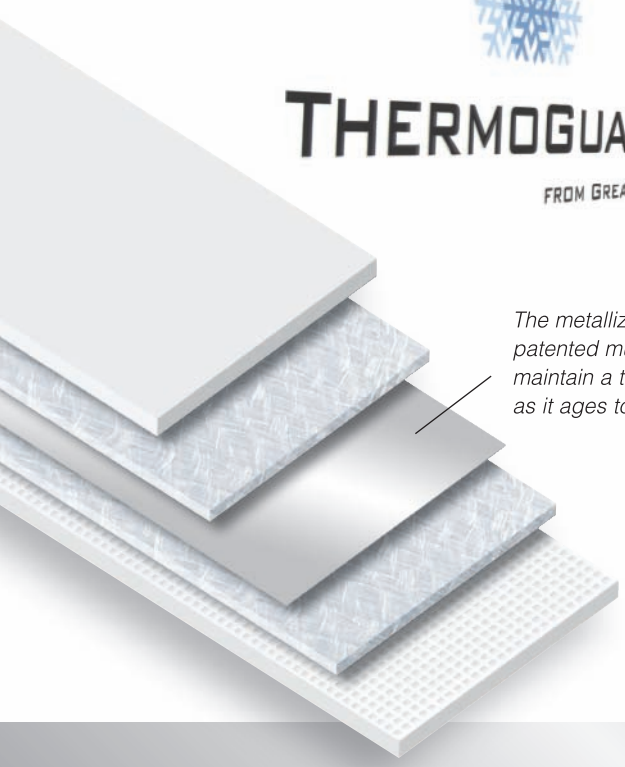

The metallized layer in Great Dane's patented multi-layer design helps maintain a trailer's thermal efficiency as it ages to extend its useful life.

Only one reefer interior liner has proven it can help you profit from less maintenance downtime and extended insulation performance. **ThermoGuard**, using Great Dane's exclusive, revolutionary patented multi-layer design, adds years to the useful life of a trailer by helping maintain thermal efficiency as it ages, and reduces cooling unit run time for greater fuel efficiency. But the results speak for themselves. In-service reefers equipped with **ThermoGuard** after five years showed a loss of thermal efficiency comparable to what many trailers experience in just one year. When put to the test, the only reefer liner that's proven it's no gimmick is **ThermoGuard**.

Great Dane

To learn more about the proven results, visit us online at **www.greatdanetrailers.com/thermoguard**