

INDEX OF KEY FACTS: NORTH AMERICAN RAIL TANK CAR FLEET

THE TANK CAR FLEET CAN BE MADE SIGNIFICANTLY SAFER: Upgrading the North American tank car fleet through retrofits and replacement will reduce likelihood of breach in a derailment.

The likelihood of breach in derailment is dramatically reduced by adopting the HM-251 Tank Car of the Future with a 9/16" shell and other safety elements including a 1/8" steel jacket and thermal protection (HM-251) and appropriate retrofits to the legacy fleet. This can happen without a loss of payload.

Tank car retrofits and the HM-251 Tank Car of the Future can be deployed economically and deliver powerful economic benefits to North American GDP. The entire North American fleet in crude and ethanol will not require an upgrade. For upgrades that do occur, jobs and other beneficial spending directly and indirectly worth double the investment will follow.

- The benefits to safety are demonstrated by the improvement in Conditional Probability of Release (CPR). CPR measures the likelihood of tank car spills in the event of a derailment at different speeds and by different car types. At a derailment speed of 50 mph CPR improves from 45% in bare DOT-111 legacy tank cars to just over 5% with the HM-251 Tank Car of the Future Design (see chart below). This improves CPR by

more than **8 TIMES** from the least-protected tank car to the most-protected tank car. This makes the HM-251 tank car safer at any speed.

- Some have suggested that tank cars with a safer design and lower cargo capacity are actually less safe because this results in more total tank cars in service. Yet, that assertion is factually incorrect, because current designs can accommodate 30,000 gallons, a capacity volume equal to legacy DOT-111 tank cars. Moreover, newly designed tank cars perform much better in a derailment. As noted above, the HM-251 Tank Car of the Future lowers the rate of likely release upon breach by as much as **8 TIMES**—a statistic strongly favoring safer tank car design.

- The HM-251 Tank Car of the Future is **TWICE** as safe as the fully jacketed and insulated CPC-1232 when measured by CPR (see chart above).

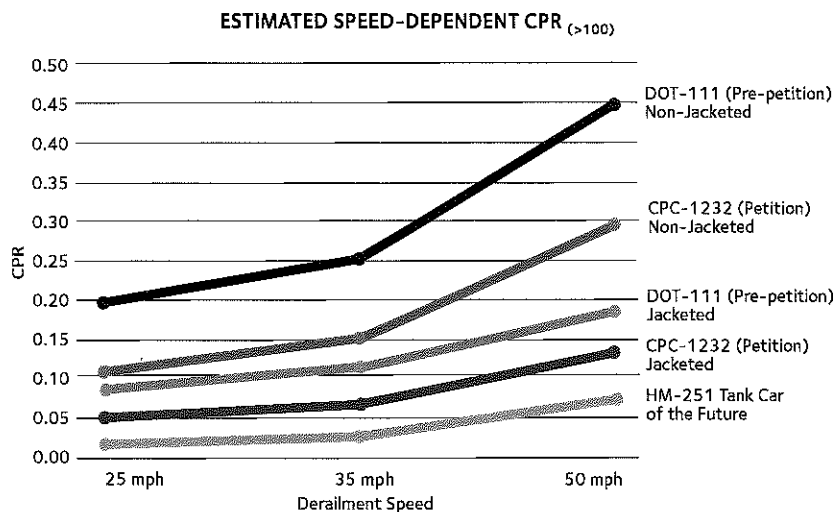
- There are approximately 68,000 tank cars in crude and ethanol service. Because necessary retrofit configurations depend upon tank car type and individual tank car conditions, the range of retrofit costs extends from a low of \$20,000 to a high of \$60,000 in the most extreme example. The proposed HM-251 car is expected to be priced in a range of \$150,000-\$160,000.

- The North American tank car fleet in crude and ethanol service is not identical. Some tank cars do not require substantial modification like jacketing, thermal insulation and head shields. Some tank cars require only relatively minor modifications like pressure relief valves and removable bottom outlet valve handles.

- The average age of tank cars in the North American fleet is 15 years.² Tank cars that are 15 years and older will not likely receive the most extensive and most costly retrofits, since these cars are more likely to be retired

CONDITIONAL PROBABILITY RELEASE STUDIES (CPR)¹

Conditional probability release studies (CPR) measure the likelihood tank car spills by different speeds and car types. This chart shows the likelihood of spilling more than 100 gallons of liquid.



from crude and ethanol service.

- Retrofit capacity **WILL BE AVAILABLE**. For its part, Greenbrier recently announced it is teaming with Watco to build upon a network of 38 repair shops from coast-to-coast including 14 AAR certified tank repair and recertification facilities with plans to certify more tank repair shops.³

- Greenbrier believes the **TRUE TOTAL COST OF FULL TANK CAR SAFETY COMPLIANCE** will be approximately **\$3 billion**.⁴

FOOTNOTES

¹ RSI-AAR Railroad and Car Safety Research & Test Project, April 2014.

² A Closer Look: North American Rail Tank Cars, Alltrantek LLC/FTR Associates, October 2013

³ Greenbrier and Watco announce railcar repair joint venture GBW Railcar Services, June 4, 2014

⁴ Internal Greenbrier analysis relying on industry data developed by the Railway Supply Institute and other sources

REPLACEMENTS AND RETROFITS CREATE ECONOMIC VALUE/JOBS

- Money spent on new cars or retrofits has a multiplier effect throughout the economy. There are direct economic impacts and most importantly, jobs created to perform tank car retrofit and replacement—and these jobs will be located in regions large and small throughout America. There are indirect impacts including supply chain spending. Finally there are the multiple induced economic impacts from expenditures generated as a result of one of the largest single railcar retrofit and replacement programs in US history.⁵

ENERGY RENAISSANCE POWERS U.S. ECONOMIC RECOVERY

- The recovery from the Great Recession has been slow—a recovery that has been substantially buoyed by the 50% annual increase in US shale gas and oil production since 2007 and the 1.7 million jobs created across the economy from shale energy development.⁶
- Total annual GDP impact of energy renaissance will nearly double from \$284 billion in 2012 to \$533 billion in 2025 producing over \$1.6 billion in government revenues from 2012–2025.⁶
- By 2015, 3.2% of all US manufacturing jobs will be linked (directly or indirectly) to shale energy development, supporting close to 400,000 manufacturing jobs. By 2025 this share will jump to 4.2% and over 500,000 jobs.⁷
- This expansion is at risk if crude by rail shipments are slowed substantially or unnecessarily curtailed.

NETWORK-WIDE SPEED RESTRICTIONS AT 30 MPH HAVE BROAD NEGATIVE IMPACTS

- The negative impacts to velocity and capacity from slowing train speeds to 30 MPH, under review, would be severe and will impact the entire rail network and all commodities.⁸
- Class I railroads with the support of DOT have already undertaken risk-reduction efforts including imposing a 50 mph speed restriction for all unit trains carrying crude oil with 20 tank cars or more. This was followed by a 40 mph municipal speed restriction in May 2014 for key trains containing DOT-111 cars traversing High Threat Urban Areas. Together these actions combine to reduce kinetic energy inherent in a derailment by 56%.⁹
- BNSF handles a considerable amount of the nation's crude oil

transported by rail, especially Bakken crude. BNSF anticipates it would take about four years to overcome the loss of capacity caused by slowing the loaded crude trains beyond restrictions already placed into effect by agreement between Class I railroads and the DOT. BNSF reports the financial impact to it alone from the impact of slowing crude traffic would be approximately \$2.8 billion.¹⁰

- The Association of American Railroads anticipates a 10% negative impact on overall rail network velocity and a 10% negative impact on railroad capacity with a 30 mph speed restriction placed on unit trains carrying crude oil.¹¹
- The imposition of significant maximum allowable train speed reductions for loaded crude trains will have a profound effect on railroads' ability to serve their customers. Major lines of business including grain, intermodal, stone, gravel and sand, chemicals, forest products, other agricultural products and automobiles would suffer delays as a result of lowering train speeds.¹²
- These impacts also threaten to move hazardous material traffic to other modes of transportation that are not as safe or reliable as rail such as diversion to highways.¹³ Modal shift will result in other consequences like additional damage to highways and bridges.
- DOT can and should act now to publish tank car design standards which have now been postponed for almost 4 years. DOT should carefully study any additional mandatory speed restrictions in light of the potential severe negative consequences to the economy, taking time to consider the most effective railroad operating requirements that complement improved tank car design, including the HM-251 Tank Car of the Future.

ACTION IS NEEDED NOW ON TANK CAR DESIGN; BIFURCATE THE RULE

- The design that best improves safety is now known—the time to adopt it is now. Current industry backlog is 55,400 tank cars¹⁴ and growing, with plans to increase capacity.¹⁵
- A new design standard will reassure the tank car market and allow for thoughtful capital planning and purchasing processes.
- The implications of speed restrictions are complex. The most important contribution to the safer transportation of hazardous materials by rail is to get the properly classified commodity in the best designed tank car. A rule on tank car design can be published now and rules regarding railroad operating practices can follow.
- Tank car design rules should proceed without any further delay.

FOOTNOTES

⁵ Assumptions based on analysis in PIH Tank Car Crashworthiness Performance Standards NPRM by Pipeline and Hazardous Materials Safety Administration, March 19, 2008, and standard economic principles

⁶ Game changers: Five opportunities for US Growth and Renewal, McKinsey Global Institute, July 2013

⁷ America's New Energy Future: The Unconventional Oil and Natural Gas Revolution and the US Economy, IHS Economics, February 2014

⁸ Assumptions based on analysis in PIH Tank Car Crashworthiness Performance Standards NPRM by Pipeline and Hazardous Materials Safety Administration, Sect. 11.7, et seq., March 19, 2008

⁹ Data supplied by BNSF

¹⁰ Calculating Railroad Capacity and Performance Impacts that Result from Changing the Maximum Speed of Specific Train Types, as submitted by BNSF to OIRA, June 10, 2014

¹¹ Statement of Edward Hamberger, President & CEO AAR before Crude by Rail Conference, Arlington, VA, June 12–13, 2014

¹² Speed Restriction Impacts to Train Performance & Railroad Capacity, as submitted by BNSF, CSX and Union Pacific to OIRA, June 10, 2014.

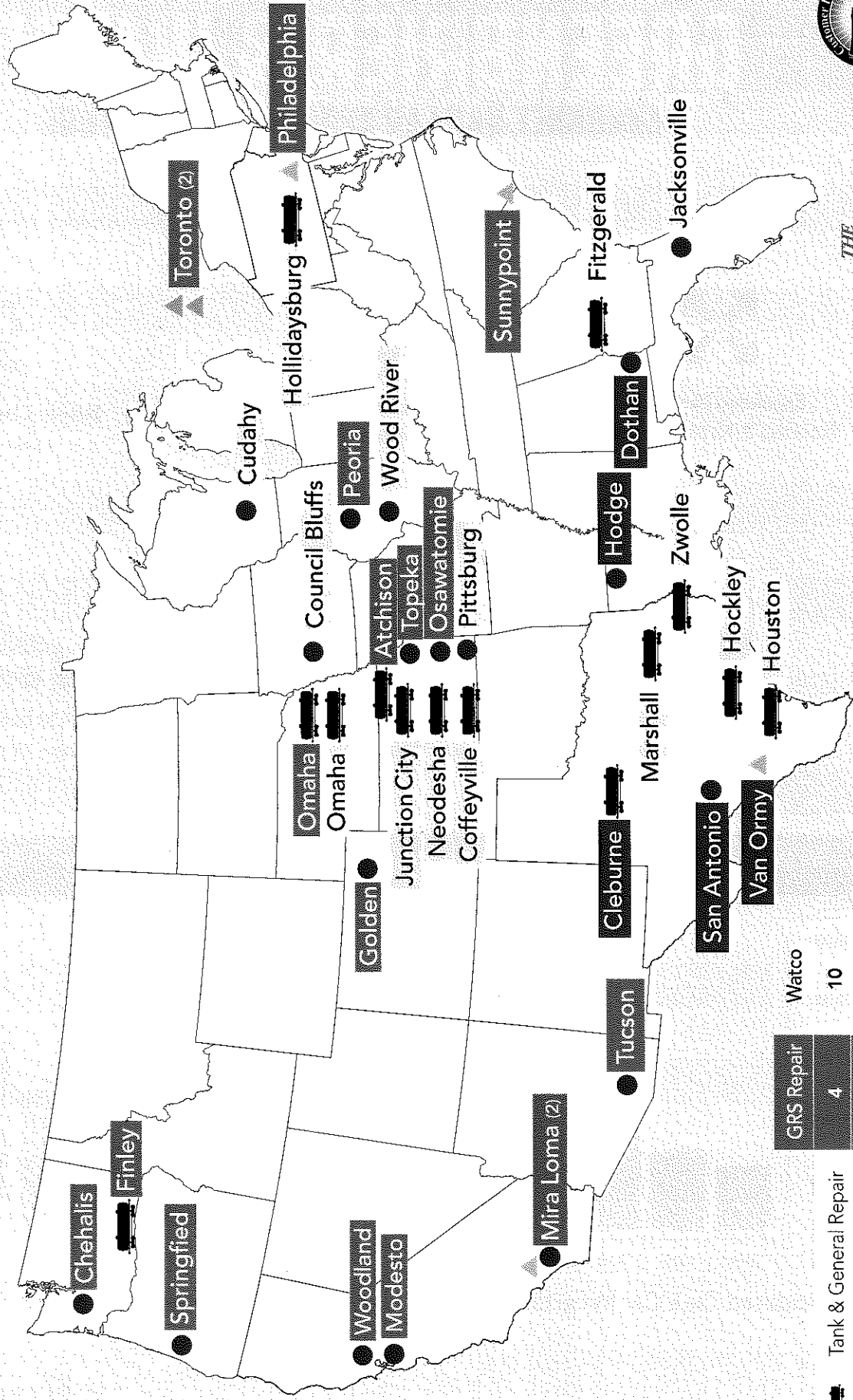
¹³ Assumptions based on analysis in PIH Tank Car Crashworthiness Performance Standards NPRM by Pipeline and Hazardous Materials Safety Administration, Sect. 11.3, March 19, 2008

¹⁴ According to American Railway Car Institute data

¹⁵ Greenbrier Reports Second Quarter 2014 Results; Backlog Grows to 15,200 units, April 3, 2014

GREENBRIER & WATCO

OUR NEW NETWORK



GRS Repair	Watco
4	10
13	5
6	0

Tank & General Repair
 General Repair
 Ramp Repair



THE GREENBRIER COMPANIES

GREENBRIER & WATCO

ANNOUNCE RAILCAR REPAIR JOINT VENTURE

BENEFITS



Expanded Tank Car
Expertise & Network Reach



Complementary
Capabilities & Geographies



Best-in-Class Leadership
in Jim Cowan

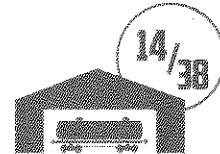
KEY TERMS



50/50 joint venture to form
GBW Railcar Services

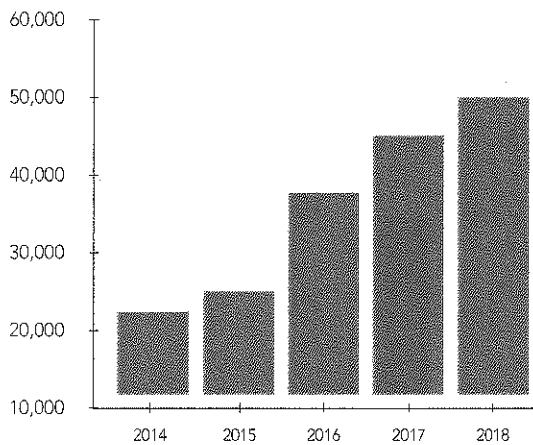


GBX's 23 locations combined
with Watco's 15 locations

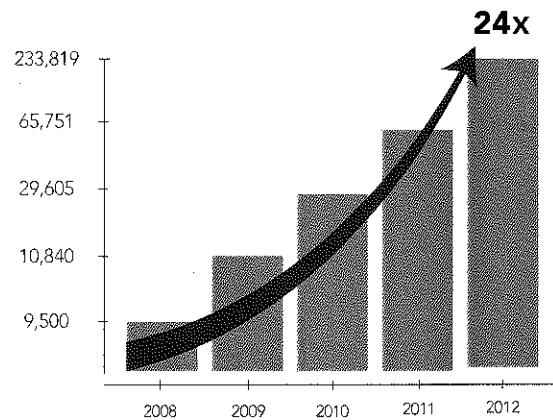


Out of 38 locations, network
will feature 14 tank car locations

TANK CAR SERVICE OPPORTUNITY



Anticipated Tank Car Recertifications



Crude Oil & Ethanol Car Loads

THE
GREENBRIER
COMPANIES



Quick Facts

The Greenbrier Companies, Inc. is headquartered in Lake Oswego, Oregon.

History

- Bill Furman and Alan James (deceased) started their partnership together in Bill's Lake Oswego basement in 1973, each investing \$5,000, and naming it James-Furman & Company. They invested in manufacturing businesses and gained scale as a private company by remarketing rail freight cars and commercial jet aircraft for major financial institutions.
- James-Furman purchased Greenbrier Leasing Corp. from Commercial Metals in 1981, which, at the time, consisted of five employees and 169 special purpose freight railcars used to ship rubber for Goodyear Tire and Rubber Co.
- Gunderson was founded in 1919 and had been acquired by FMC Corporation in the 1960's. In 1985, it was purchased by Greenbrier. The name Gunderson was restored to the railroad industry and Portland waterfront at the same time.
- A special team of Gunderson and Greenbrier employees designed an improved, highly successful double-stack railcar. Greenbrier today is the largest builder of such cars in the world, having built almost 100,000 units, valued at nearly \$4 billion.
- Gunderson Marine resumed building ocean-going marine barges in 1994.
- Greenbrier's Initial Public Offering (IPO) was in 1994, through listing on the NYSE (GBX).
- Greenbrier's first manufacturing plant in Mexico, Gunderson-Concarril, opened in 1998, through a joint venture with Bombardier. Greenbrier added a second Mexico manufacturing plant in 2006, Gunderson-GIMSA.
- Greenbrier produced its first tank car in 2009 at their Gunderson-GIMSA plant.
- Greenbrier Leasing began managing 4,000 W.L. Ross railcars in 2010. Additionally the Greenbrier expanded their Gunderson-Concarril facility plant, increasing overall production.
- Greenbrier's Multi-Max™ automotive railcar was first produced in 2013. The first on-site adjustable deck automotive rack in the industry.
- Construction of Greenbrier's fourth railcar manufacturing facility began in 2014.

Financial Profile

- Greenbrier operates an integrated business model--including manufacturing, leasing, management services and freight car repair and refurbishment--to provide transportation solutions to the railroad, shipper, and lessor marketplace.
- Greenbrier's 2013 revenues for the year ending August 31 were \$1.8 billion; excluding Special Items, net earnings were \$63 million; and EBITDA was \$157 million.
- Greenbrier's new railcar backlog of 15,200 units as of February 28, 2014, was valued at \$1.54 billion.

Corporate Operations

- Greenbrier Management Services (GMS) manages in excess of 230,000 railcars.
- Greenbrier's company-owned lease fleet totals approximately 8,300 railcars.
- Greenbrier Rail Services (GRS) repairs and refurbishes freight cars and provides wheels and railcar parts at over 30 locations across North America.
- Including Gunderson in Portland, Greenbrier Manufacturing Operations (GMO) has four railcar manufacturing facilities; other facilities include two in Mexico and one in Poland.
- Greenbrier has enjoyed a 60% cumulative market share of the double stack car market since the introduction of the technology in the early 1980's. Greenbrier has developed a variety of innovative, railcar products in response to changing market conditions and customer requirements.
- In recent years, Greenbrier has diversified its manufacturing base, addressing efficient low-cost shops in Mexico and diversifying its products into high-margin tank cars and automotive cars. It makes a variety of freight cars, with the exception of coal cars.
- Greenbrier is a leader in the production of railcars and racks for automotive transport by rail and introduced its proprietary Multi-Max, adjustable rack design in May 2013.
- Greenbrier employs approximately 10,500 worldwide, over 2,400 people in United States, including approximately 800 in Oregon.

Other

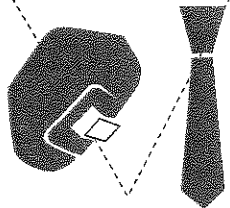
- Over the last year, Greenbrier has been focusing on enhancing shareholder value, increasing market transparency, and improving margins, along with more efficient use of capital.

THE GREENBRIER COMPANIES

A LEADER IN THE FREIGHT TRANSPORTATION INDUSTRY SINCE 1973

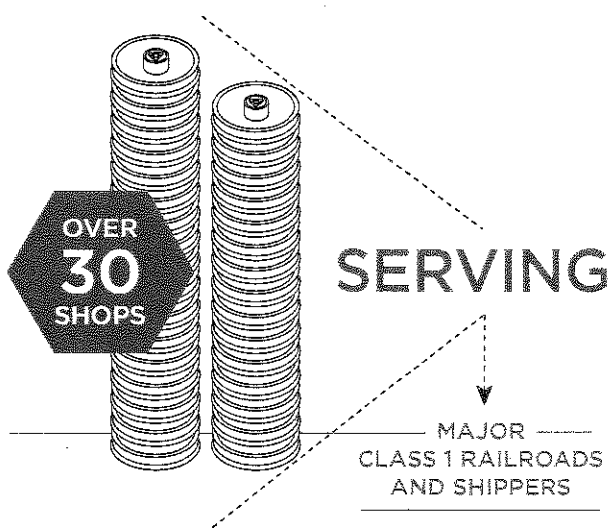
By The Numbers

OUR PEOPLE

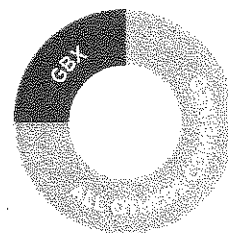


MORE THAN
7,900
EMPLOYEES
— IN —
17 STATES
AND —
5 COUNTRIES

REPAIR SERVICES

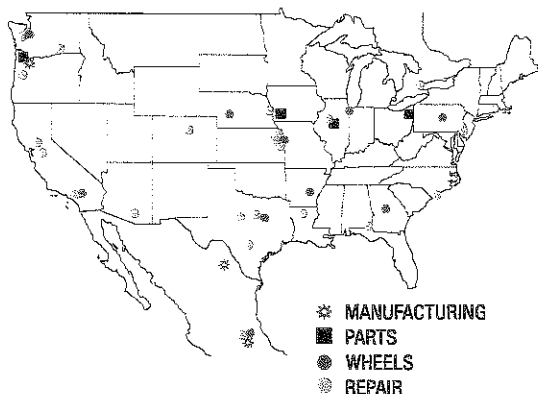


MANUFACTURING



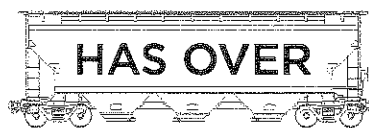
GBX BUILDS
ABOUT
25%
OF ALL
FREIGHT
RAILCARS
IN
N. AMERICA

N. AMERICAN OPERATIONS



LEASING

LEASE FLEET



HAS OVER

8,000

RAILCARS

MANAGEMENT SERVICES

GBX MANAGES
OVER

230,000

CUSTOMER RAILCARS

MARINE CONSTRUCTION & DESIGN

HAS DESIGNED & BUILT
MORE THAN **60**



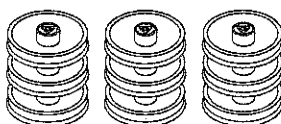
LARGE
MARINE VESSELSⁱⁱ

WHEEL GROUP

DELIVERS OVER HALF A

MILLION

WHEELS PER YEAR



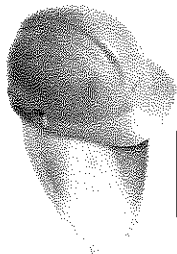
TTX EXCELLENT
SUPPLIER
AWARD

GREENBRIER HAS RECEIVED THIS
AWARD FOR **20** YEARS

THE
GREENBRIER
COMPANIES

i. Since 2010. ii. Since 1995

All information current as of 8/31/2013 – 2013 Annual Report (10-K) REV 12/02/13



New Tank Car Design

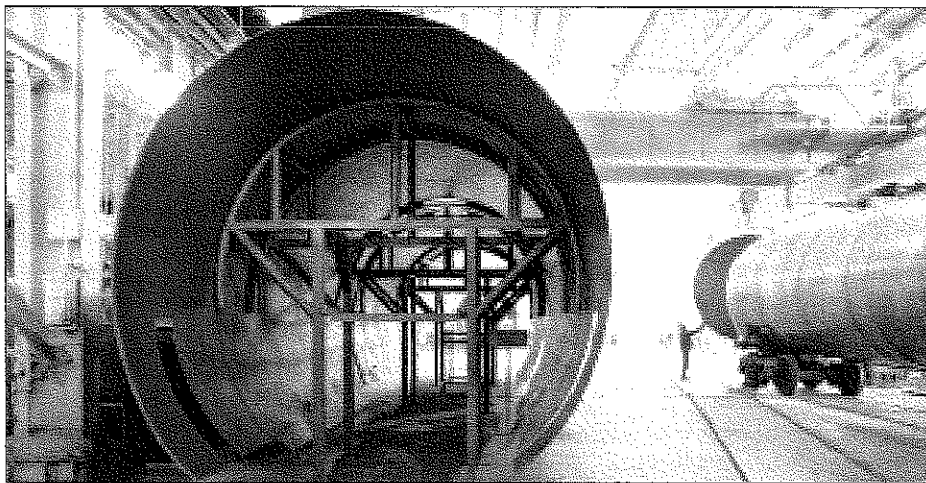
Greenbrier Introduces 'Tank Car of the Future' for Rail

The Greenbrier Companies announced Feb. 5 that it will design a new generation of tank cars for rail transport of hazardous freight, including flammable crude oil and ethanol.

Greenbrier said it also will introduce retrofits to significantly enhance the safety of the existing legacy fleet of older DOT-111 tank cars in response to safety criticisms levied at the DOT-111s and to extend their service.

The new car design, which Greenbrier calls "the Tank Car of the Future," is intended to meet anticipated new industry and government standards for tank cars transporting certain hazardous material. The company said in a press release that the new tank cars will be designed to be able to better withstand the additional demands associated with operating unit trains.

"We anticipate our design plan to be complete in the next few months, assuming we get standards soon from the railroads and the government," the company said in written answers to



The Greenbrier Companies is one of the leading designers, manufacturers, and marketers of railroad freight car equipment, such as this tank car jacket, in North America and Europe.

BioFuels Journal's questions. "We believe the first of these cars can be delivered in approximately 12 to 18 months, ideally sooner, subject to material supply and other factors."

The Greenbrier Companies, headquartered in Lake Oswego, OR (503-684-7000), supplies transportation equipment and services to the railroad industry. It builds new railroad freight cars at its four manufacturing facilities, including one in Portland, OR; two in Mexico; and one in Poland.

Repairs and Refurbishes

Greenbrier also repairs and refurbishes freight cars and provides wheels and railcar parts at 37 locations across North America. It also builds new railroad freight cars and refurbishes freight

cars for the European market through both its operations in Poland and various subcontractor facilities throughout Europe.

Greenbrier owns approximately 8,600 railcars and performs management services for approximately 224,000 railcars. William Furman, Greenbrier's chairman and CEO, said that statistics from the Association of American Railroads (AAR) show that 99.9977% of all rail-carried hazardous material arrives at its destination without incident.

"However, recent high-profile derailments have clearly demonstrated the need for updating the North American tank car fleet to the highest practical safety standards," he said.

In North America, Greenbrier can build tank cars at a rate of 4,000 cars a

"Recent high-profile derailments have clearly demonstrated the need for updating the North American tank car fleet to the highest practical safety standards."

- William Furman, Greenbrier

year and is increasing its capacity because of higher demand for tank cars related to the increase in energy production in North America.

As of Nov. 30, 2013, 47% of Greenbrier's backlog consisted of tank cars which are almost entirely the more advanced and safer CPC-1232 tank cars and pressure cars. Greenbrier no longer produces the legacy DOT-111 tank car for use in flammable service.

The retrofit alternatives that Greenbrier is offering include the company's most recently built CPC-1232 tank cars.

The CPC-1232 tank car has head shields, skid protection, top-fitting rollover protection, half-inch thick tank steel for unjacketed applications, and double-shelf couplers.

Industry research has shown that bottom and top appurtenances, or additional accessories attached to a railcar, on the legacy DOT-111 tank cars are impacted in high-speed derailments, the company said.

Greenbrier's proposed retrofit aims to improve these tank car features and adds head shields to achieve better performance in a derailment event.

Enhanced Head Shields

The enhanced head shields cover either the full or half-height of the end of the tank car. Extra steel provides an extra layer of protection on both ends of the tank to reduce the likelihood of penetra-

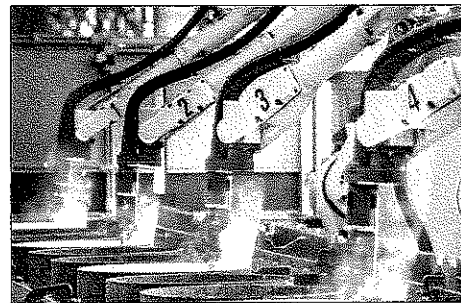
tion of the tank car, the company said. Furman said the retrofits and the new tank car design will allow the industry to take immediate steps to improve public safety. It also preserves the massive investment that shippers and railroads have in tank cars now in service, he stated, by extending the time these cars can be used in hazardous material transportation as they ultimately transition over time to less hazardous service.

The U.S. Department of Transportation (DOT) has yet to rule on industry recommendations to adopt the newer and safer CPC-1232 standards submitted to them in March 2011, Furman noted. These newer standards were subsequently mandated by the AAR on tank cars ordered after October 2011.

In order to respond to immediate safety concerns, and in anticipation of future action by the DOT, Greenbrier is also introducing retrofits for legacy DOT-111 cars and newer cars that meet the current CPC-1232 standard mandated by AAR. As of November 2013, there were 272,100 DOT-111 tank cars in service in North America. Of those, 255,000 had the older legacy design. Among those tank cars, 170,000 were in hazardous transport with 68,000 tank cars in crude oil and ethanol service.

Retrofit Options

Retrofit options for the legacy DOT-111 tank cars will include high-flow pres-



Welding robots perform railcar construction tasks at one of the Greenbrier Companies' manufacturing locations.

sure relief valves, head shields, top fittings protection, and thermal protection. Greenbrier's proposed retrofit also adds head shields to achieve better performance in a derailment event.

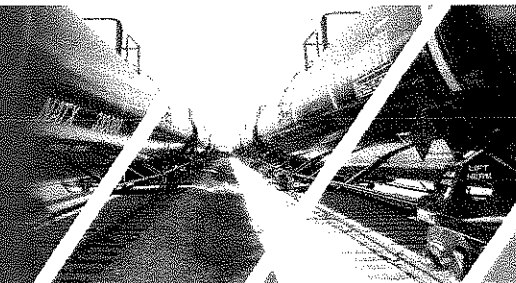
It is expected that appropriate retrofit choices could allow extended service for DOT-111 tank cars as these cars are placed in lower risk service over time.

Greenbrier will also provide retrofit offerings for newer tank cars built under the AAR's CPC-1232 standards, which applies to all tank cars ordered after October 2011. Greenbrier's retrofit package for newer CPC-1232 cars includes high-flow pressure relief valves and improved bottom outlet valve handles for any CPC-1232 cars in crude and ethanol service which were not originally equipped with these features.

Jerry Perkins, editor

Reprinted from First Quarter 2014 BIOFUELS JOURNAL

**THE
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Greenbrier rallies behind effort to avoid railcar explosions

Matthew Kish
Staff Reporter- Portland Business Journal

The Greenbrier Cos. Inc. on Friday threw its weight behind a Canadian effort to mandate safer railcars in the wake of several oil train disasters.

The Lake Oswego-based maker of railcars and barges last year introduced a "Tank Car of the Future" that's designed to be safer than existing railcars.

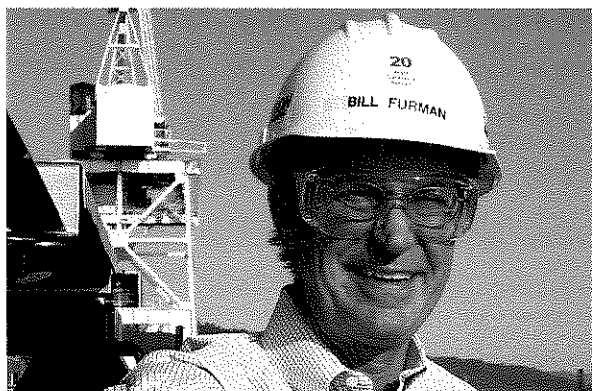
On Friday, the company "commended" the Canadian government's new rail safety measures.

"We are encouraged that Transport Canada has taken critical next steps to support the safe passage of dangerous goods," said Greenbrier CEO Bill Furman, in a news release. "These are important standards for North America and we applaud the Government of Canada for its leadership in implementing them."

The U.S. also is expected to pass new safety measures for railcars, according to The New York Times.

"Safety is paramount to our customers and within the rail industry," Furman said. "Our recent announcement that we are doubling Greenbrier's tank car production capacity will help the rail industry as we move toward greater regulatory certainty on tank car standards and address the measures announced yesterday by (Canadian) Minister Raitt."

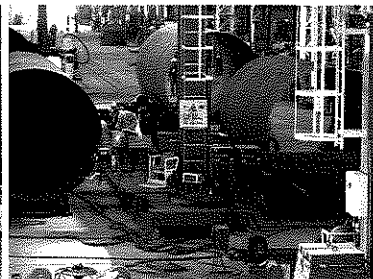
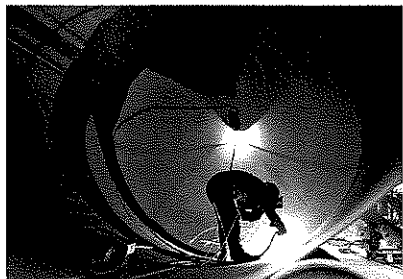
Greenbrier's sales will likely hit \$2 billion as companies ramp up purchases of new railcars in order to meet new safety requirements.



Greenbrier Cos. Inc. CEO Bill Furman on Friday said he supports new railcar safety measures passed by the Canadian government.

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**PORTLAND
BUSINESS JOURNAL**



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Tank Car of the Future



Tank Car of the Future

HIGH CAPACITY PRESSURE RELIEF VALVE

Current Standard:

No requirement

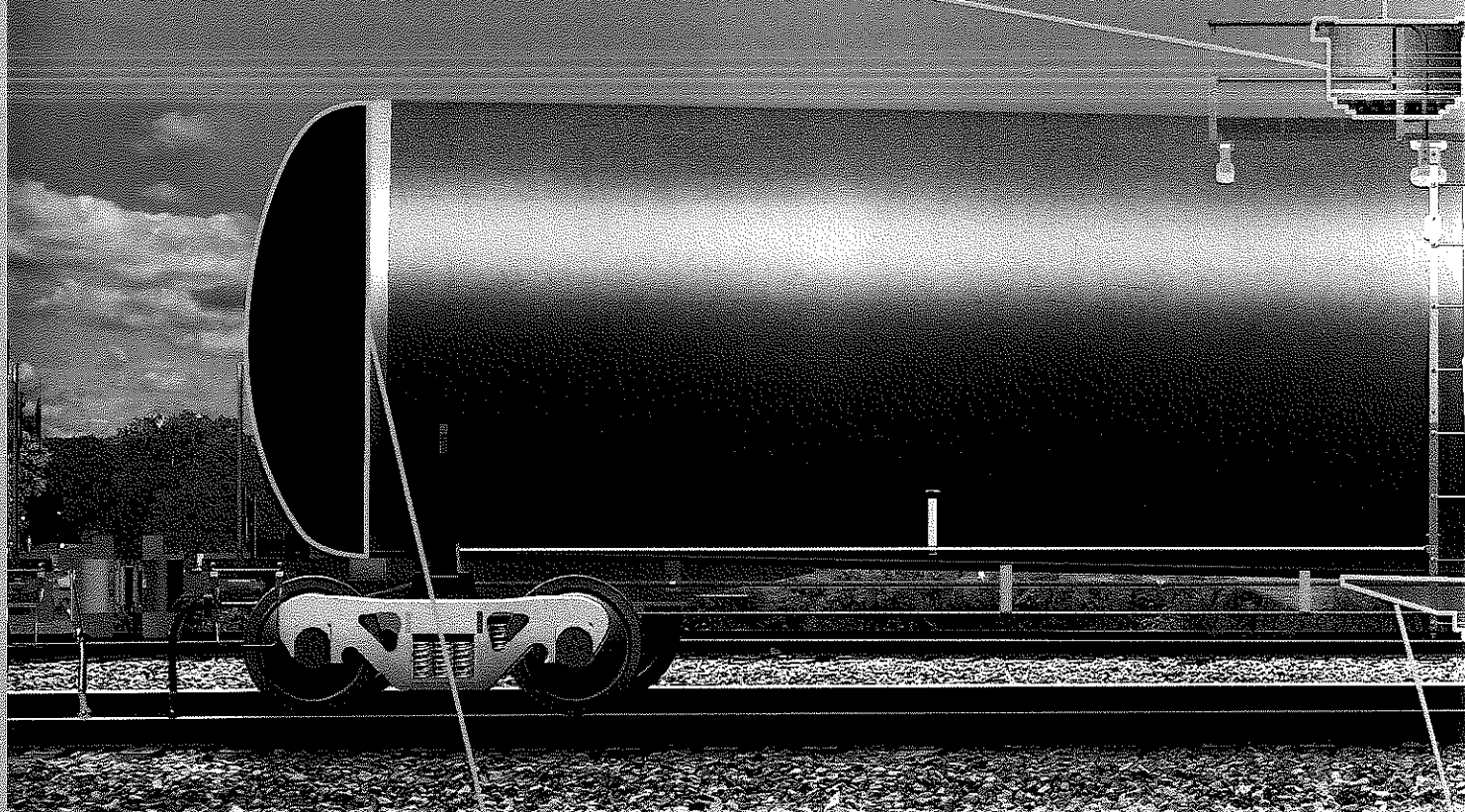
Latest Rail Industry Proposal:

Requires a high capacity pressure relief device to protect against a rise in internal pressure resulting from fire. Provides for faster release of product.

TOP FITTINGS PROTECTION *

Current Standard:

Requires top fittings protection to protect the integrity of valves and fittings used to load product in the event of an accident.



HEAD SHIELDS

Current Standard:

Requires minimum ½ inch thick half height head shields at both ends of the tank car to improve puncture resistance.

Latest Rail Industry Proposal:

Requires ½ inch thick full-height head shields at both ends of the tank car.

BOTTOM OUTLET HANDLES

Current Standard:

No requirement

Latest Rail

Requires reconfig from inac outlets in

Source: Association of American Railroads, February 2014

* Greenbrier top fittings protection differs from this rendering.

Latest Rail Industry Proposal:

Contains the same requirement.

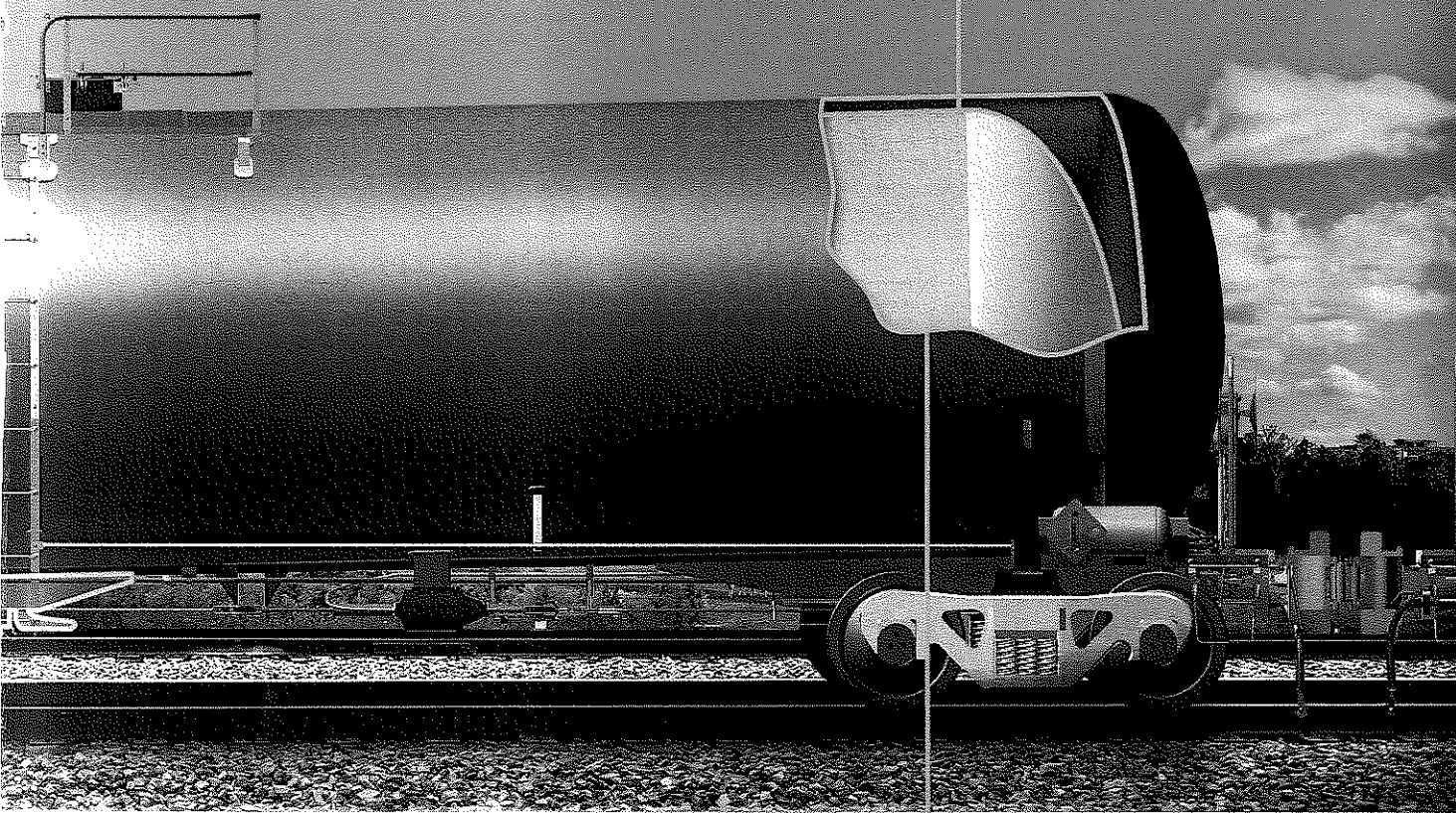
STEEL TANK

Current Standard:

Requires a minimum 1/2 inch thick steel tank forunjacketed cars and a minimum 7/16 inch thick steel tank for jacketed cars.

Latest Rail Industry Proposal:

Requires a minimum 9/16 inch thick steel tank.



Industry Proposal:

**bottom outlet handle
ation to prevent the handle
ertently opening the bottom
ne event of an accident.**

JACKET AND THERMAL PROTECTION

Current Standard:

Requires a minimum 1/2 inch thick steel tank OR a 1/8 inch thick steel jacket.

Latest Rail Industry Proposal:

Requires the addition of both a 1/8 inch thick steel jacket around the tank car and thermal protection.

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