

# FLEXIBILITY, ACCESSIBILITY, VALUE

**Kelsan® Solutions** ARE RICH IN FEATURES AND TECHNOLOGY THAT DELIVER POWERFUL FRICTION CONTROL SOLUTIONS

## WHY KELSAN® ?

- Kelsan®, with over 100 satisfied customers, has a proven track record of providing effective and reliable solutions.
- Our products are produced under tight quality control governed by our ISO 9001:2000 certification.
- We have in-house R&D and field technicians including several PhD's and certified engineers that are constantly improving existing products and creating innovative new products.
- Kelsan's dedicated design engineering and production team use FEA analysis software to produce locomotive and customer specific delivery systems.

## COMPLETE FRICTION CONTROL SOLUTIONS

Kelsan Technologies is not simply a product supplier. We are dedicated to providing our customers with comprehensive cost effective friction control solutions.....sustained solutions.

Our engineers partner with customers, freight locomotive and original equipment manufacturers to identify system challenges, measure baseline data, establish mutually acceptable performance criteria, and deliver pertinent solution. Kelsan's professional technical staff provides engineering services for product installation, systems maintenance, and long-term customer care. Following installation, Kelsan offers training seminars for vehicle and track personnel, and we conduct periodic after-sales system checks to ensure that system benefits are sustained.



## EXCLUSIVE TECHNOLOGY PROVIDERS

Proprietary technology is the foundation of Kelsan's success. Our research and development team is constantly adding and improving its product line in order to continue bringing leading-edge friction control solutions to our freight customers.

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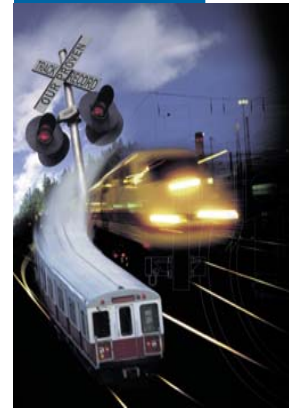
ISO 9001: 2000 CERTIFIED

For more information, please call:  
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INNOVATIVE ThinFilm FRICTION CONTROL

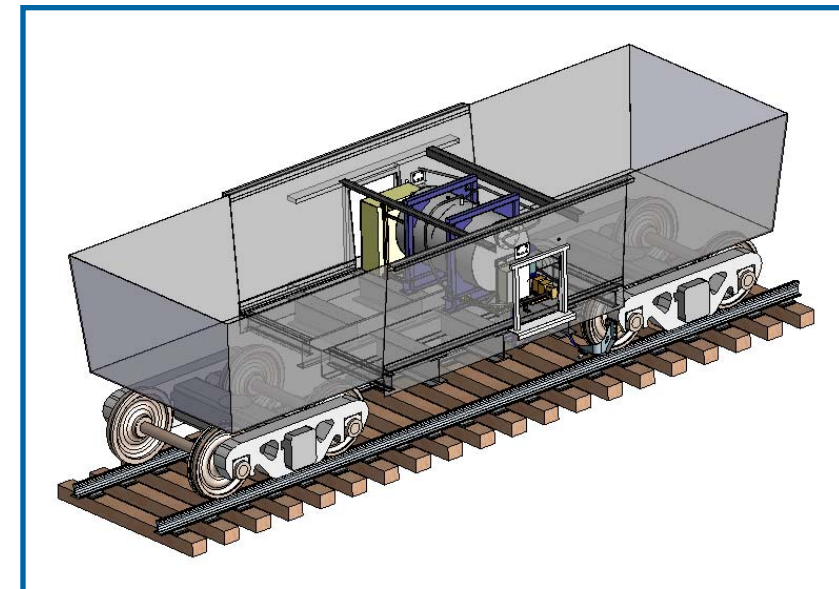


## Kelsan® Freight Car Solution

Intelligent OnBoard Freight Car TOR Friction Control System

**Kelsan® KELTRACK®** Liquid Top-of-Rail Friction Modifier  
**Kelsan® AutoPilot™** Car Based Top-of-Rail Application System

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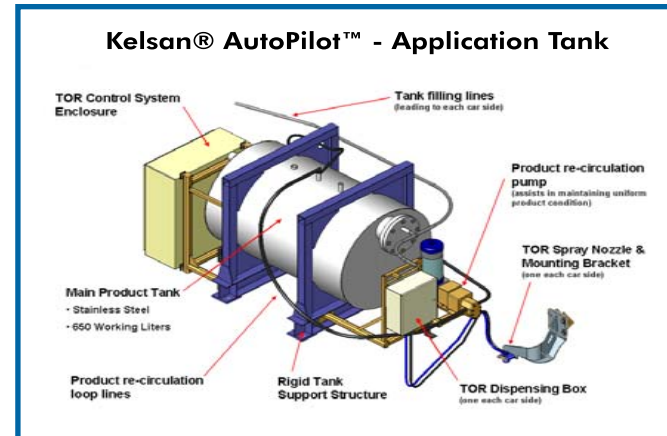
Note: Can be customized to fit any vehicle.

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## What is Kelsan® AutoPilot™?

Kelsan® AutoPilot™ is a top of rail friction control system that typically installs onboard a freight car. This friction control system is designed to spray Kelsan® KELTRACK® on the top of rail throughout your entire rail system. KELTRACK® optimizes the coefficient of friction on the wheel/rail interface and provides numerous benefits including fuel savings, increased rail life, increased track component life, reduced lateral forces, and reduced risk of derailments. Kelsan® AutoPilot™ is designed to be quick and easy to install and maintain.

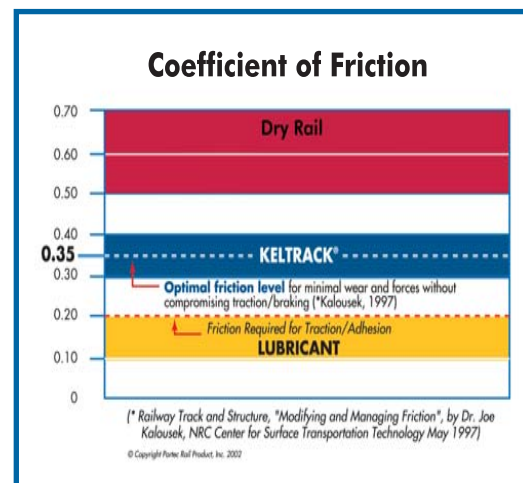
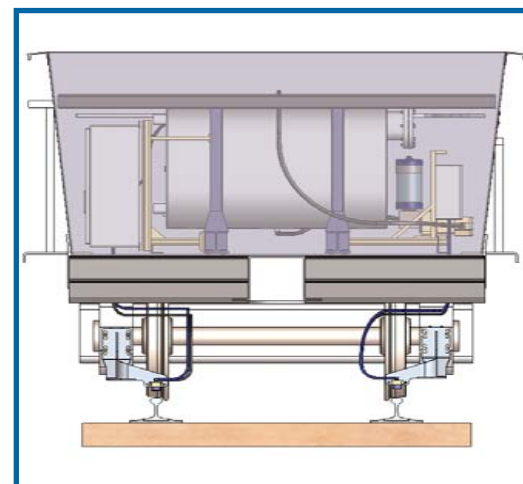


## Why Kelsan® AutoPilot™?

- Can be customized to fit any vehicle
- Fuel Savings
- Extend Rail Life
- Extend track structure life (ties, spikes etc.)
- Reduce lateral forces and the risk of derailments
- System arrives pre-assembled and easy to install
- Reduce Green House Gas (GHG) emissions
- Takes up 15% or less of freight car capacity
- GPS unit controls output of KELTRACK®
- Long refilling intervals with large capacity tank (172 Gallons)
- Simple system monitoring with email notifications including supervisory trip reports and system status
- Operates at temperatures as low as -38°C or -36.4°F

## What is Friction Control?

Kelsan® KELTRACK® is designed to provide an intermediate coefficient of friction on the top of the rail. It is water based liquid friction modifier that is applied directly to the top of rail. When the water evaporates, the material remains present as a thin, dry film. In contrast with standard lubricants (oil or grease), Kelsan® KELTRACK® has an intermediate coefficient of friction (0.35) which means it will not affect traction or braking. This intermediate friction level on the top of the rail is optimum for minimizing wear, energy and lateral forces in a safe and reliable manner.

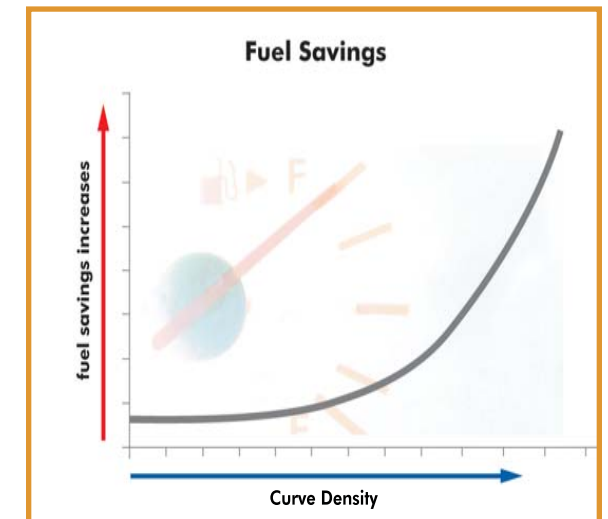


## FUEL & G.H.G SAVINGS

Kelsan® KELTRACK® dramatically reduces lateral and flanging forces, thereby also reducing curving resistance that leads to higher fuel costs. The amount of fuel savings is based on the number of curves in a system and the degree of each curve. Thus, the greater amount of curves and degree of each curve the greater the fuel savings. Systems will also experience an annual green house gas emission reduction.

- Reduce fuel consumption up to 6%\*
- Reduce Green House Gas Emissions up to 3%\*

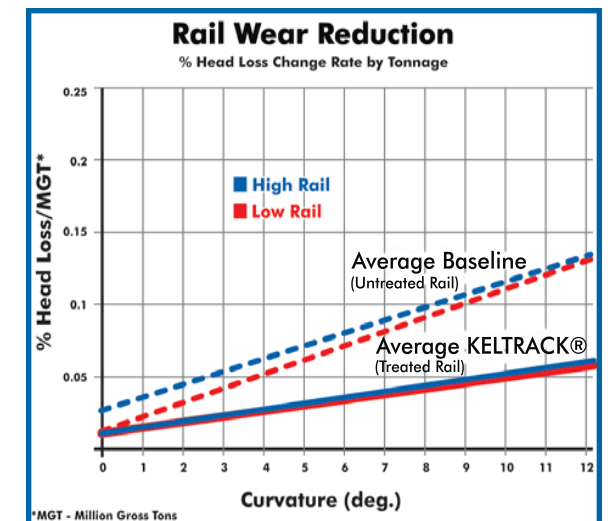
\*Depends on the number of curves and degree of each curve



## EXTEND RAIL & INFRASTRUCTURE LIFE

Kelsan® KELTRACK® dramatically reduces lateral and flanging forces, thereby also reducing rail wear. Continuous application of KELTRACK® improves truck steering and reduces flanging forces resulting in rail wear reduction of up to 50%.

- Reduce rail head area loss by up to 50%
- Defer costly rail replacement
- Improve truck steering
- Reduce gauge widening
- Reduce spike breakage
- Increase tie life



## REDUCE LATERAL FORCES

Kelsan® KELTRACK® leaves a thin film of liquid friction modifier that quickly dries and leaves an optimum friction level on the top of the rail. This optimum friction level reduces lateral forces caused by heavier axle loads, higher train speeds, and poor wheel conditions. As a result, 10° (175 meters) curves behave like 6° (291 meters) curves.

- Reduce lateral forces by up to 50%
- Reduce derailment potential
- Extend track structure component life

