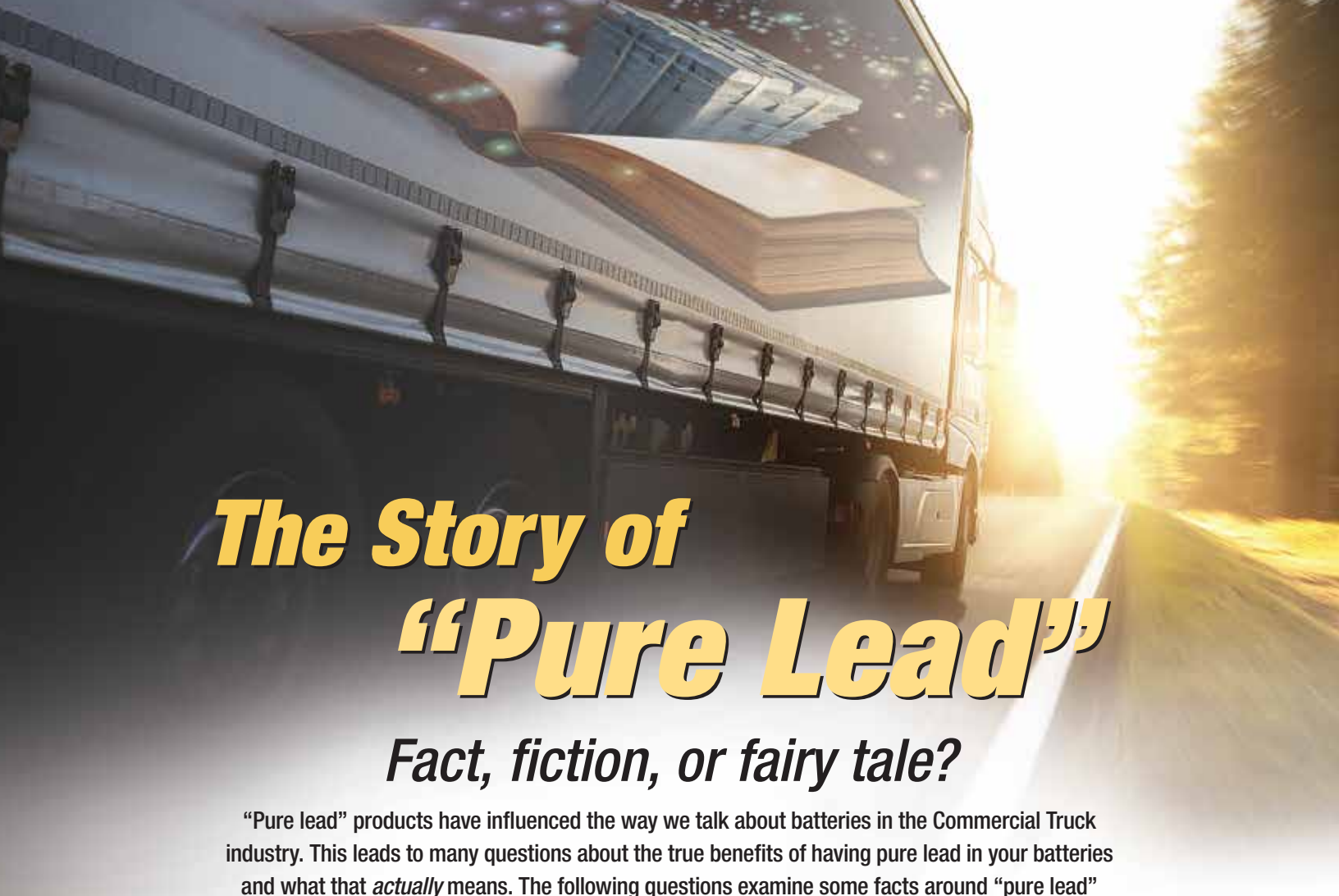

The Story of "Pure Lead"

Fact, fiction, or fairy tale?

"Pure lead" products have influenced the way we talk about batteries in the Commercial Truck industry. This leads to many questions about the true benefits of having pure lead in your batteries and what that *actually* means. The following questions examine some facts around "pure lead" and if this marketed feature is really the best solution for your fleet.

Is it good to have 100% pure lead in your battery?

100% pure lead is certainly conductive. However, conductivity isn't the only quality needed inside a battery. Anything made exclusively of 100% lead is extremely malleable and soft. Commercial trucks create an especially volatile environment for a battery's internal components with both high heat and high vibration. This is no environment for soft, non-fortified materials, such as 100% pure lead.

Once batteries discharge their energy they must be recharged. The rate of receiving that charge is referred to as charge acceptance. A battery with 100% pure lead can actually impede charge acceptance through the gradual buildup of a passivation layer (coating) affecting the mass-to-grid interface. Special alloys help improve charge acceptance and the conductive interface between the mass and the grid[1].

Does a commercial truck battery that claims to have pure lead really ONLY have pure lead?

The answer is simply no. Mixing lead with other metals increases its strength so it can withstand the manufacturing process and the environment inside the battery[2]. None of the leading commercial truck competitor batteries analyzed by East Penn have 99.99% pure lead grids. Which leads to the next question: How should grids be alloyed to best meet the need of commercial truck applications?

How should grids be alloyed?

Grid alloys should be used with the lead to provide certain benefits to the grid and enhance battery performance. Matching the right alloy blend with the unique needs of the battery is not only a solution but a highly effective strategy. Fahrenheit® products utilize a strategically engineered alloy formula to match the intended service needs of the battery. For instance, more cycling or higher temperature conditions in commercial trucks significantly benefit from our strategic alloy enhancements. These enhancements also help reinforce the integrity, durability, and power conductance capabilities of the grid even in the most extreme conditions.

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[1]Pure lead and the tin effect in deep-cycling lead/acid battery applications, Journal of Power Sources, Authors: Robert F. Nelson and David M. Wisdom.

[2]The Impact of ALABC Research Results on Battery Design, The Battery Man, Author: R. David Prengaman, RSR Technologies

What other features does East Penn use to protect the grids and other internal components?

Fahrenheit batteries boast Thermal Shielding Technology to protect batteries, vehicles, and your investment. A specially designed case fights against high heat while protecting AGM performance. A Heat Reduction Catalyst combats rising internal temperatures, optimizing recombination and recharging conditions.

All of these features serve to further protect the internal components of batteries, including the grids. Our strategically engineered alloy formula is already enhanced for better performance. The extra protection offered in the Fahrenheit products maximizes its potential.

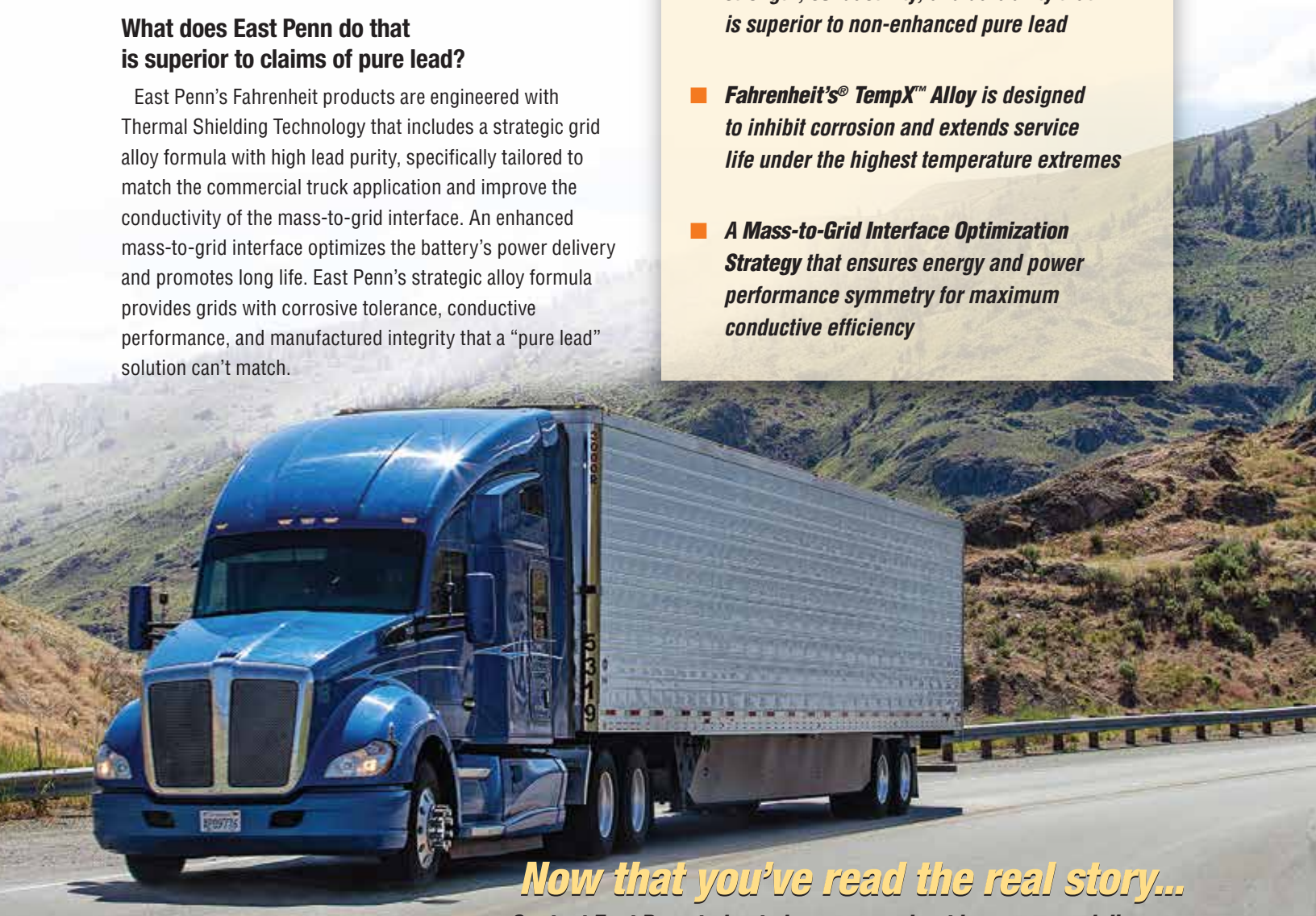
What does East Penn do that is superior to claims of pure lead?

East Penn's Fahrenheit products are engineered with Thermal Shielding Technology that includes a strategic grid alloy formula with high lead purity, specifically tailored to match the commercial truck application and improve the conductivity of the mass-to-grid interface. An enhanced mass-to-grid interface optimizes the battery's power delivery and promotes long life. East Penn's strategic alloy formula provides grids with corrosive tolerance, conductive performance, and manufactured integrity that a "pure lead" solution can't match.

East Penn's Strategic Alloy Technology delivers:

THERMAL SHIELDING fahrenheit® TECHNOLOGY

- ***An Engineered Alloy Formula that provides power, performance, and purity with the combined factors of strength, conductivity, and durability that is superior to non-enhanced pure lead***
- ***Fahrenheit's® TempX™ Alloy is designed to inhibit corrosion and extends service life under the highest temperature extremes***
- ***A Mass-to-Grid Interface Optimization Strategy that ensures energy and power performance symmetry for maximum conductive efficiency***



Now that you've read the real story...

Contact East Penn today to learn more about how we can deliver a happily ever after for your fleet's power and service needs.

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