INVEST IN **THE SMART TIRE COMPANY**

Reinventing tires w/NASA for $1T electric, autonomous and space industries

LEAD INVESTOR

Thomas Wuttke Senior Software Engineer, Cruise (General Motors), ex-Twitter, ex-Google

I'm investing with The SMART Tire Company because I see great value in both my experience with autonomous vehicles as well as one of my personal passions: cycling. In order to reach the sustainable, fuel efficient, safe and high performance future of transportation, we NEED better tires, and I know of no other company building the technology needed, including the major tire manufacturers. I will be among the first testers of the METL bike tires and can't wait to say "goodbye" to flats forever.

Invested $1,000 this round & $100,000 previously

smart.tires Akron OH Technology B2B Hardware B2C Minority Founder

Highlights

1 Hyundai Motors and Kia Official Collaboration

2. Exclusive NASA license & 5x new patent pending tire inventions
3. Multiple Global 500 Aerospace Customers with Space Industry Revenue
4. $300B market opportunity in terrestrial tires, key supplier to future $1T private space industry
5. 5000+ customer waiting list for our groundbreaking METL™ bicycle wheelsets
6. Patented space tire for the Mars and Moon supply chain
7. 12+ years and $10M+ in govt funding and research invested into this technology (different entity)
8. Partnerships: NASA, Hyundai, Kia, Felt Bicycles, The Ohio State University, University of Akron

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Our Team

Earl Cole CEO

Techstars mentor, Stanford & University of Washington business program mentor, worked with mega brands @Disney, @Honda, @Google. Proud father (x2), serial entrepreneur and unanimous Survivor champion.

Pneumatic (air-filled) tires haven't changed much in 100 years. However, NASA has been working for decades developing new tire technologies for outer space. Our mission is to bring this space age innovation back down to earth, as we usher in a new era of electric and autonomous vehicles. Safer, cleaner transportation can impact all of our lives.

Brian Yennie CTO

3x cross-industry technical founder. Previously @IDEX, @Showroom, @Newzcard. Creator of first eco-friendly virtual world for kids. National Merit Scholar. Owner / admin @CelticsStrong.

Jim Benzing Principal Engineer

R&D 100 Award Winner, original inventor of the lunar spring tire, NASA consultant, 20+ tire patents. 43 years at Goodyear include developing production manufacturing equipment and overseeing factory rollouts on 4 continents.

Charles Weinberg Senior Engineer, Shape Memory Alloys

PhD in Mechanical Engineering from University of Minnesota. Studied structural design with shape memory alloys and co-authored papers on new nitinol applications & forms.

William Farah , Esq General Counsel, Venture Capital Advisor

Entrepreneur & lawyer. Consultant for SOS Ventures. Director @ First Step Foundation and former ATP tour tennis pro.

Karen Jones, MBA Advisor, Federal Aviation Administration

Executive MBA with 20+ years experience working for the government in supply chain logistics and employee relations. Enterprise operations for the FAA in dealing with businesses, government and labor regulations within the aviation industry.

Angela Helin Advisor & Investor

Principal Load Engineer, SpaceX

Brennan Swain Patent / IP Counsel

The SMART Tire Company

NASA: Space Tire Company

In the 1960's, NASA began its own tire development for space exploration. You might recognize their first attempt, riding around on the moon:

The requirements were extreme. After all, the moon is a pretty harsh environment. But what has happened to that technology since? We've sent rovers to Mars, probes to deep space, but no more manned missions. Until now. With the US and other countries planning manned missions back to the moon, and someday to Mars, we're going to need truly incredible tires to get the job done.

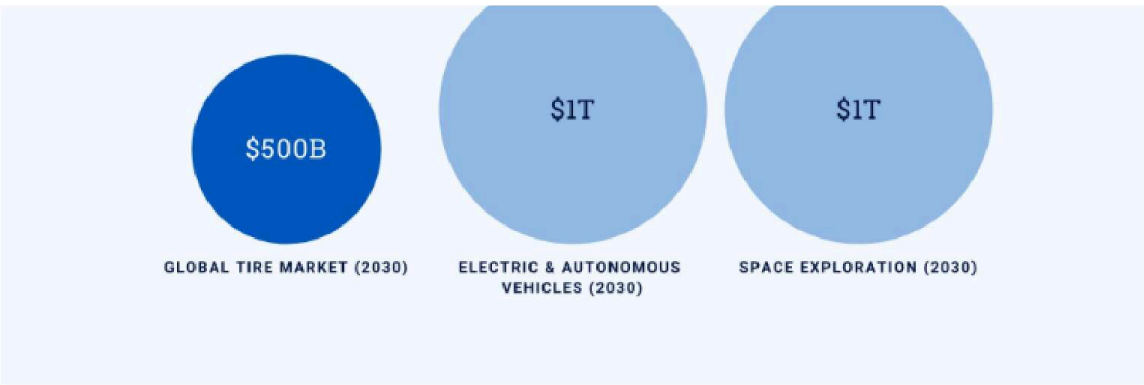
Not to worry. For the past 12 years+, with over $10M in research committed, NASA has continued developing the ultimate tire.

Down to Earth: The SMART Tire Company

The SMART (Shape Memory Alloy Radial Technology) Tire Company was formed for the express purpose of commercializing a new category of airless tire invented for the future of space exploration. Starting with the extreme capabilities of this Mars-grade technology, we've developed new, patented tires designs for cycling, automotive, trucking and aerospace applications. We've also created the ultimate lunar tire, capable of carrying multiple astronauts plus cargo across the south pole of the moon as part of the Artemis program (manned return to the moon).

The SMART Tire Company is disrupting an old but evergreen industry (tires) with new technology at the intersection of two rapidly emerging trillion dollar industries: electric vehicles (including autonomous) and space exploration. *Reinventing the tire* for the new era of transportation.

Disrupting the $300B+ Global Tire Industry



Problem

Despite our best efforts, **flat tires are a fact of life** -- about 1 flat per driver, per year in the USA. Tire failures contributes to over 20% of roadside emergencies, and reduce fuel efficiency every day on every vehicle, as they slowly leak pressure.

The tire industry is incredibly dirty. Every year, over 50B pounds of used tires become waste. Most of this waste stream goes into landfills or is burned in enormous tire yards. 20-30% of all ocean micro-plastics come from tires.

Fuel efficiency is a major concern for every vehicle on and off the road. SMART tires are based on technology designed for vehicles running on solar power on another planet. Did you know up to 30% of fuel efficiency comes from the rolling resistance of tires?

Future applications are even more demanding. Electric vehicles carry heavier loads over longer distances, with less margin for error. An autonomous (driverless) ride is useless and unsafe with a flat tire, and we will need a technology originally invented to solve exactly that problem.

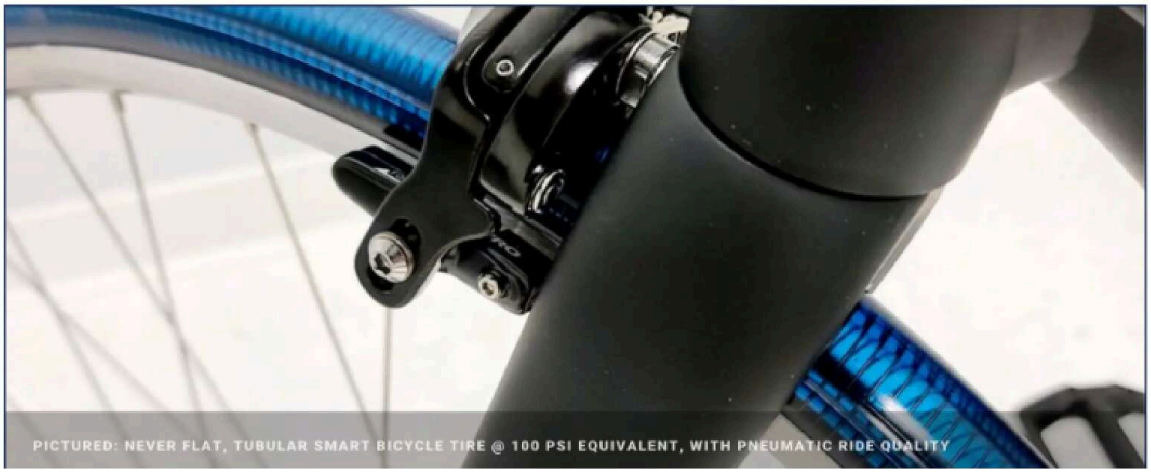
Space exploration is here to stay. Whether it's NASA, SpaceX, ESA or Blue Origin, the future of space includes land vehicles carrying heavier and heavier load. SMART Tire is the only company in the world developing tires capable of these kinds of missions.

Today's Tires

Flat Tires	200M per year (USA)
Solid Waste	50B lbs per year (Global)
Ocean Plastics	28% of all ocean microplastics
Fuel Efficiency	30% of fuel efficiency from rolling resistance of tires
Electric Vehicles	Heavier electric vehicles wear out tires even faster, create safety hazards

Solution

No flats. More fuel efficient, sustainable AND designed for the future of electric vehicles, autonomous vehicles and space applications. What's not to love?



PICTURED: NEVER FLAT, TUBULAR SMART BICYCLE TIRE @ 100 PSI EQUIVALENT, WITH PNEUMATIC RIDE QUALITY

> *The advantages of this type of tire are obvious. Not only does it eliminate potential issues with temperature or pressure affecting a gas-filled tire, it also eliminates the possibility of deflation*

- Car & Driver Magazine

SMART Advantages

Say goodbye to everyday tire problems

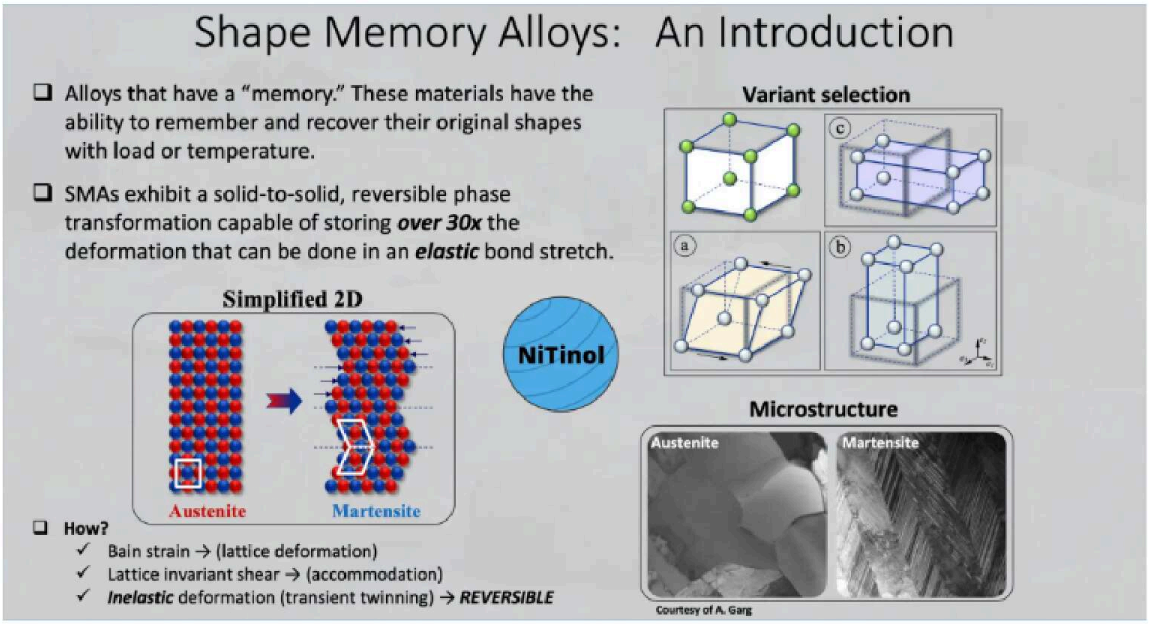
	Conventional	Airless	SMART
No Flats	◐	●	●
Sustainable	○	◐	●
Fuel Efficient	◕	◐	●
Electric Vehicles	◕	◐	●
Space Ready	○	◔	●

Technology

Born from the mission requirements at NASA, these tires were originally invented to withstand continuous use on Mars. That means operating at extreme temperatures from down to -230C, never, ever going flat, remaining lightweight, and staying energy efficient.

The "superelastic" tire was invented when two different disciplines worked together. Having built previous extraterrestrial tires out of steel and aluminum, NASA had a problem: the tires were taking too much permanent damage from the terrain. Enter cutting edge material science: a special metal alloy (Nickel Titanium or NiTinol) that can recover completely from the same types of deformation that were damaging the steel.

Shape memory alloys are capable of undergoing phase transitions at the molecular level with reversible strains an order of magnitude more than ordinary materials, before undergoing permanent deformation. The use of a NiTi shape memory alloy produces a superelastic tire that is elastic like rubber, yet strong like titanium.



Watch Heather Oravec, PhD, demonstrate the resiliency of a shape memory alloy tire, which can be crushed all the way to the wheel rim with no permanent damage!

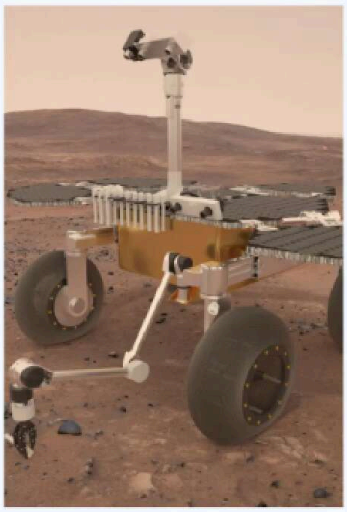
Building on these superelastic properties, the chief engineer of The SMART Tire Company is also the original inventor of the lunar spring tire, which was awarded an R&D 100 award ("the Oscars of innovation"). NASA Glenn Research Center, now collaborating with STC under a Space Act Agreement, originally developed the superelastic aspects.

The original Lunar Roving Vehicle contract was awarded in 1969 to Boeing, and the budget was over $302M (in 2022 USD). This kind of high tech, high budget,

low volume work is a perfect revenue source for SMART Tire. The Artemis program has manned return to the moon as its primary objective, and a budget of $35B.

Pictured below: a SMART lunar tire built to take advantage of superelastic materials, uses a patented structural design to be the first ever "space tire" suited for heavy vehicles on the Moon and Mars. The tire weighs less than 18 pounds and is strong enough to carry manned vehicles and cargo at extreme extraterrestrial temperatures.

1972: APOLLO LUNAR TIRE WITH PIANO WIRE MESH



MARS FETCH ROVER: SHAPE MEMORY ALLOY TIRES

NASA ARTEMIS PROJECT: SMART LUNAR TIRE

Building on this foundation, STC has developed terrestrial designs that leverage these same properties in an eco-friendly, fuel-efficient, and extremely durable (never flat) tire.

We are taking the magic of shape memory alloys, integrating them with rubber treads, and delivering a product which is literally the best of both worlds, from Mars to Earth!

Applications

The applications for a high performance airless tire are nearly endless, making up a significant portion of the tire industry, which stands to grow to $500B by 2030.

- **Cycling**: flats and tire inflation are an everyday pain
- **Mobility Fleets**: constant tire maintenance causes expensive downtime
- **Electric Vehicles**: are heavier and harder on ordinary tires
- **Autonomous**: specific safety & maintenance concerns with flats
- **Military**: tires need to go off-road, get soldiers home safe, and survive
- **Airlines**: a commercial jet can save 27,000 lbs of jet fuel every year
- **Space**: future missions to the Moon and Mars need stronger, more reliable tires
- **Trucking**: where an 18 wheeler becomes a 10 wheeler, saves on fuel and never gets a flat
- **Racing**: consistently perform at the highest speeds and distances without tire failures

Photo Gallery

clockwise: Jeep demo, scooter tire, bicycle tire (no tread), spring tire, SMART lunar tire, METL concept bike

Competition

The global tire industry is highly fragmented, with the top 3 manufacturers (🇯🇵 Bridgestone, 🇫🇷 Michelin, 🇺🇸 Goodyear) each holding less than 10% market share. **No major competitor specializes in airless tires or has ever developed a high performing airless product.** Current attempts are flat free, but are heavy, loud, have high rolling resistance, provide a rough ride, and are less fuel efficient. Big tire companies are in no hurry to change the old system and business model they put into place (in the early 20th century) and continue to profit from, today.

Current airless tires have similar designs with the same flaws: loud, heavy, fuel inefficient, use even more rubber and polymers, and with a rough ride.

MICHELIN TWEEL/UPTIS (2005-2022)

BRIDGESTONE AIRLESS (2013-2022)

GOODYEAR NPT (2021-2022)

No amount of rubber, polyurethane and plastic components can produce a competitive airless tire, as evidence by 18+ years of failed attempts at this approach.

This is the same old rubber & plastic technology, repeated and rebooted for over a century. The competition has invested *billions* of dollars in capital assets that

revolve around rubber and pneumatic (air-filled) designs, with no end in sight.

In addition, the world is moving rapidly to electric vehicles, and people are asking, Do Electric Vehicles Need Special Tires? (spoiler alert: they sure do).

SMART tires replace conventional materials with the power of shape memory alloys, which are then integrated through proprietary methods with durable rubber treads for road use. Our tire technology is a legitimate disruptor and game-changer.

The SMART Tire Company is patent pending on several critical aspects required to integrate shape memory alloy tires with modern vehicles, including treads and wheels, and will aggressively defend our right to exclusively commercialize those inventions, worldwide.

Of course, one way the competition can capitalize on this airless revolution, is to license or acquire the technology from The SMART Tire Company.

Team

The SMART Tire Company has a multidisiplinary team that combines deep tire industry experience with material science, space exploration, early stage startups, intellectual property law, manufacturing and product marketing.

Experience isn't enough, though. We're also passionate about affecting change and giving back. Our founder, Earl, created the Perthes Kids Foundation, a global nonprofit charity to benefit children with a rare disease. CTO Brian Yennie's first business was an eco-friendly virtual world, that donated a portion of all proceeds to wildlife charities, a full decade before the Metaverse became a trend.

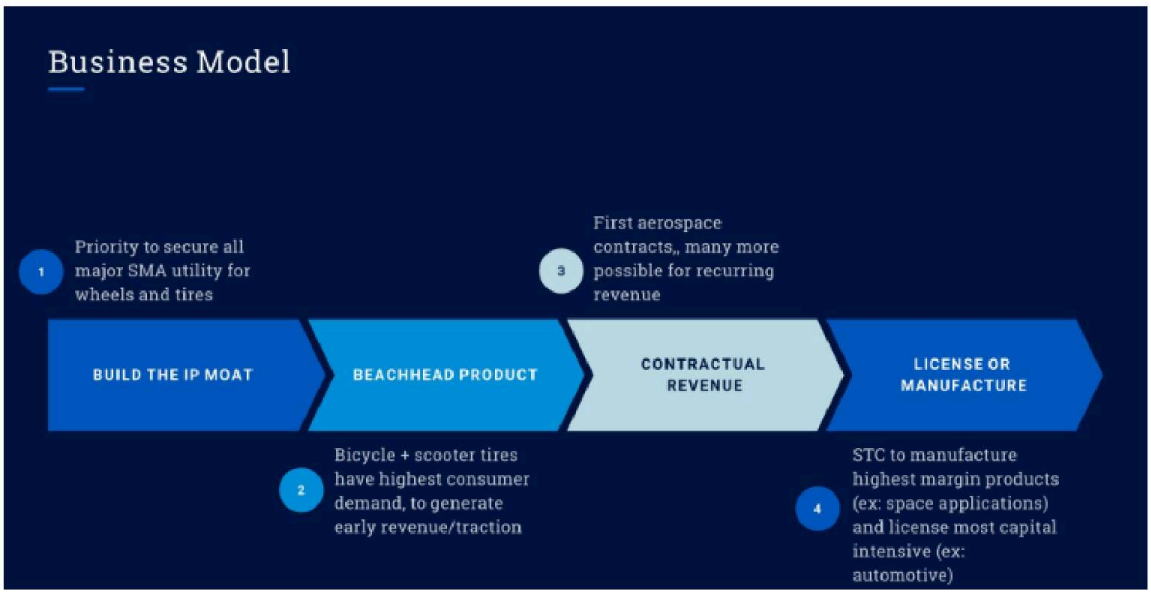
Revolutionizing the tire industry is not just a potential unicorn company in the making, it means cleaner and safer transportation for everyone, worldwide.

Business Model

Our mission is to bring shape memory alloy tires to as many markets as possible, as quickly as possible by developing the core technology, and licensing or co-developing with the right global partners. We are currently building an intellectual property moat around the technology through key US and international patents, nearing the launch of our beachhead product for market validation, and have secured our first contractual revenue from the largest aerospace company in the world, for one of the highest profile missions ever: the return of astronauts to the moon.

In July of 2003, Tesla was founded to disrupt one of the most successful inventions of all time: the combustion engine. Nearly 20 years later, electric vehicles are the future of transportation, and Tesla stock soared to a market cap of over $1 trillion.

Now, STC is after something else that affects the environmental impact, fuel efficiency and performance of every vehicle on and off the road: the tires. With this new innovation, The SMART Tire Company is poised to take a large and profitable share of the global tire market, which will grow to $500B/year by 2030 (not guaranteed).



What's a beachhead product?

According to Bill Aulet, Managing Director of the Martin Trust Center for MIT Entrepreneurship, a beachhead market is the "holy grail of specificity". After hundreds of hours of customer discovery and research, STC has found the answer: micro-mobility. Be sure to check out our global media coverage in *TechCrunch, Fast Company, Pink Bike, Mashable, Popular Science* and TV networks CBS, ABC, FOX, TF1 and many others, to get a glimpse of the excitement around our new SMART tire products.

Knowing we had found the right customers for the first ever SMA tires, SMART has developed a go-to-market strategy centered around a cost competitive carbon fiber wheelset with integrated SMART tires, and scooter wheels specially designed for urban mobility fleets.

Micromobility products are chosen to generate early revenue in the fastest growing mobility segment, with lower regulatory requirements, faster time-to-market and preexisting demand

	Cycling	Scooter
Form	Integrated Carbon Fiber Wheelset	Retrofit 9" scooter wheel
Business Model	B2C, B2B	B2B
Launch Target	2023 (B2C)	2023 (pilot)
Cost	$150 per tire; $3000 integrated wheelset	$30 per tire
Comps	ENVE carbon fiber ($2000-$3000 without tires)	Fleet OEM tires ($10, with TCO of $50)
Value Prop	Highest performance airless on the market	Zero flats w/ smooth ride; safety & environmental features can win city contracts
Traction	5000+ waiting list, Felt Bicycles R&D partner, Decathlon OEM interest (#1 global bike manufacturer)	Spin Mobility R&D partner

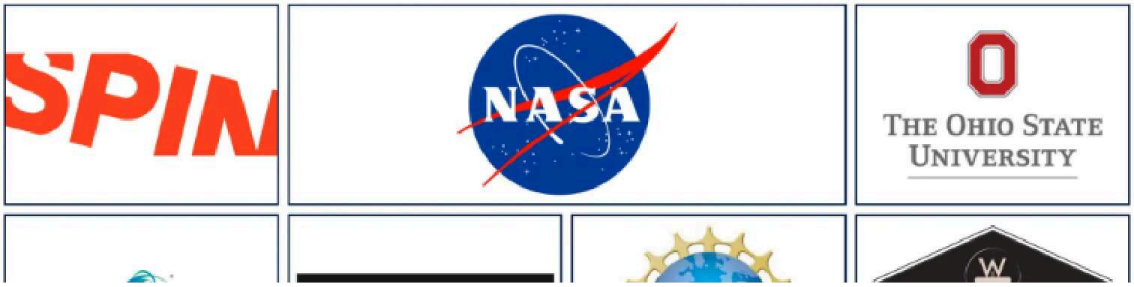
Key Accomplishments

- Space Act Agreement with NASA Glenn Research Center to continue optimizing shape memory alloy tire designs
- Reduced the material cost of our bicycle tires by 90% since 2020, as part of our go-to-market strategy
- Developed world's first heavy load space tire, for manned missions to the Moon and Mars
- Signed contract w/ Fortune 100 aerospace company for lunar tire development
- Patent pending methods for wheel and rubber tread integrations with shape memory alloys
- University collaboration to develop special alloy joining methods
- Opened a state-of-the-art 5000 sq ft research & development facility in Akron, Ohio
- Recently exhibited at major conferences in San Francisco (TechCrunch), London (MOVE) & Paris (Viva Technology) with overwhelming excitement from attendees

Partners

A few of the great companies and organizations working with The SMART Tire Company are listed below. Early partners include large aerospace companies, micromobility providers, bike manufacturers, and world-class research institutions. We are currently developing relationships with additional automakers and private space companies.

Partners



"ALONE WE CAN DO SO LITTLE; TOGETHER WE CAN DO SO MUCH."

One Last Word

Join us! Made In the USA, eco-friendly, NASA-invented technology, backed by YOU, our visionary, amazing supporters. Help us achieve our goal of *Reimagining the wheel*™ and building the next great American tire company... The SMART Tire Company!

To learn even more, visit https://smarttirecompany.com, or drop us a message at hello@smarttirecompany.com.

To join the waiting list for SMART bicycle tires, please visit our cycling page at https://smarttirecompany.com/cycling