

HEVEA QUARTERLY

GLOBAL TIRE INDUSTRY INSIGHTS

INSIDE THE SMART FACTORY



BY ALEX H. STONE

By now, you've probably heard about GRI's new specialty tire factory in Sri Lanka—a 40 million dollar, state of the art smart factory to be exact. But what exactly is a smart factory? GRI says their new factory—in addition to using solar power and environmentally-friendly waste management systems—incorporates IoT and AI technologies. But what exactly does that mean?

IoT stands for “Internet of Things”

and it's considered to be the driving force behind Industry 4.0 (also known as the 4th industrial revolution). The idea behind IoT is to have data shared across a whole network of machines so that tasks can be accomplished more precisely and efficiently.

By creating an interconnected network among all aspects of manufacturing, companies can monitor, analyze, and react to data gathered throughout the manufacturing process. Imagine a sprinkler sys-

tem that knows when its going to rain, so that it can conserve water based on weather patterns. Or a factory that keeps track of the inventory of a certain part and automatically orders more of that part when supply gets low. Smart factories can even identify potential machine failures before they happen—minimizing shutdown time.

As the standards of living rise in countries that were previously known for low-wage labor, these technologies are becoming more

and more attractive—despite the sizable capital investments required to get started with them. And though these machines can replace certain labor jobs, they also create new opportunities for skilled workers to oversee the operations of them.

However, putting an entire factory on a network does come at a considerable cost to cyber security. If a smart factory's network is not adequately protected, a hacker could potentially gather a wealth of information about the products being produced and the resources and processes being used to produce them—they could even shut down the production of a factory entirely. Cyber security will definitely become invaluable to the manufacturing industry as smart factory technology spreads into industries outside of the tech world.

On the consumer end of things, smart factories are creating more opportunities for customization and flexibility. These integrated systems can easily adapt to changes in a customers order and easily accommodate customized products—all while keeping track of materials used and materials required. Smart factories are paving the way for a more personal and much faster manufacturing culture.

As these technologies trickle down from the tech world into other industries—ours included—we'll begin to see big changes in the speed and efficiency in which things are produced. Getting exactly what you want will soon become a fast and easy process.

AGRICULTURE

DRONES IN AGRICULTURE



BY ALEX H. STONE

The drone industry is projected to surpass 12 billion dollars by 2020. A large chunk of that industry will be centered around agriculture. So what all can these agricultural drones do now?

The most common application for an agricultural drone is analytics. These drones can use various cameras and sensors to monitor crops quickly and paint a more complete picture of the kinds of maintenance that farmers need to do on them. This information allows for farmers to assess the needs of specific segments of their fields and provide additional aid where it is needed.

More recently, though, drones have begun to replace certain pieces of equipment. As technology improves, we're seeing drones capable of spraying crops and even

drones capable of seeding. These drones can complete these tasks extremely efficiently—much faster than traditional equipment and involves much less labor. Companies like John Deere are already beginning to invest in these technologies.

Government interference, however, has put a damper on the advancement of these technologies. Restrictions on how high an unmanned aerial vehicle or UAV can fly, restrictions on weight, and restrictions on visibility have all played a roll in slowing down these developments—developments that were advancing quite quickly in 2015, when regulations on drones were scarce. Black light technology, for example, could allow for drones to monitor the presence of pathogens on crops—but this would require the drones to be flown at night, which is currently not allowed by FAA regulations.

Still, the promise of greater efficiency in farming will inevitably push these technologies forward. Various communities—Yuma, AZ, for example—are already pushing for programs that allow for leniency regarding these regulations. If these programs prove successful, we may begin to see a ramped up implementation of drones in agriculture.

PAKISTAN & THE COTTON INDUSTRY

Despite a mostly flat agricultural economy, the cotton industry has been seeing some exciting numbers for the past couple years now and farmers are hopeful that this will continue. Experts predict a rise from 12.5 million bales to 13 million bales for 2018. However, there is a potential hazard here.

Pakistan imports a large amount of cotton from the United States. In fact, cotton is our biggest agricultural export to Pakistan. Recently, US relations with Pakistan have been strained after President Trump made negative remarks about the country in his first tweet of 2018. The following day, Pakistan announced that it'd officially adopted Yuan, the official currency of China, as a currency for trade.

Further straining the relationship between the US and Pakistan, the Trump administration announced a freeze on the aid that the United States has been offering to Pakistan. It is unlikely that these strains in the US Pakistani relationship will result in a complete cessation of trade between the two countries, but the present diplomatic situation could make for a certain level of volatility in cotton export market.



AGRICULTURAL LEGISLATION 2018

Farmers are looking to lawmakers to provide them with security in the upcoming 2018 Farm Bill—the current Farm Bill is set to expire in September of 2018. Given the general uncertainty of the agricultural industry, safety programs, such as MPP and PLC, are paramount in making sure that farmers can grow their businesses—and survive when the unexpected happens.

The 2018 Farm Bill will be the first farm bill since 2002 to be written for a down economy—but unfortunately, budget concerns may hinder this bill's ability to provide the support

that farmers are looking for. The Trump administration is looking for ways to reduce spending—particularly within the realm of SNAP (Supplemental Nutrition Assist Program) that accounts for quite a bit of the budget for the 2018 bill. Unfortunately for farmers, the proposed changes to SNAP have not been well received. The Trump administration has also cut funding to FMD and MAP programs, arguing that these programs are simply doubling down on efforts being made by private entities. These programs are responsible for reducing foreign import constraints and promoting

agricultural markets respectively and not everyone agrees with the decision to cut funding—previously covered under the 2014 Farm Bill—to these programs.

The agricultural industry is due to undergo a state of change. Technologies geared toward improving efficiency and sustainability are appearing and evolving rapidly. With companies like Google and IBM putting energy into agricultural R&D, this sector of the tech world is going to begin ramping up exponentially. We're gearing up for the future—by 2050, experts say we'll need to increase our food output by 100% to support the growing population. Farmers need some level of financial security to make capital investments in these technologies so that they can increase their efficiency to the levels that will be required of them in the future.

One potential source of relief—albeit a minor one—comes from the strangest of places: the rear end of a cow. A bipartisan committee

is currently fighting to pass a bill titled the FARM Act (Fair Agricultural Reporting Method), which aims to eliminate a bureaucratic process that is largely considered to be a waste of time and resources. Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), companies and organizations are required to document and disclose dumping of waste. This program was largely geared toward companies releasing toxic and chemical waste—such as factories. In 2008, the EPA passed an exemption to this bill for the agricultural industry but last April (2017), the DC Circuit Court of Appeals repealed this exemption. The FARM Act aims to reinstate this exemption and prevent farmers from having to use precious resources to comply with a practice that is, again, largely considered to be a waste of time. Legislators are hopeful that, with a bit of work, they will be able to get this common sense bill passed this year.

MANUFACTURING



A PERFECT STORM

When it comes to tire manufacturing, we may be looking at a perfect storm for 2018. With the supply of natural resources being restricted and factories being held to higher standards, expect to see a sharp increase in the cost of manufacturing. Depending on the severity of these changes, we may even see a move toward alternative suppliers in the coming years.

Let's look first at China: It's no secret that pollution has been a big issue for a long time—particularly in the winter months when homes need to be heated. 2015 brought a devastating wave of pollution to

Northern China—dubbed the Airpocalypse—causing the government to issue a red alert on the smog. Schools were closed and hundreds of flights were canceled.

Since then reducing smog in China has become a top priority for the country. Technologies and innovations dedicated to tracking and reducing toxic emissions are in high demand. Strict regulations are being placed on many of the factories in China; and while the country is seeing a reduction in the toxicity of their air, these regulations are having a devastating effect on smaller factories and also

on industries on an international level. These factories are being hit with frequent inspections and being forced to upgrade to more environmentally friendly machines that require shutdowns and high costs to implement. As a result many factories lay vacant—many more have had to shut down entirely.

Effective in late 2017, amid concerns of oversupply, the governments of Malaysia, Thailand, and Indonesia implemented an artificial supply cap on natural rubbers. Between them, these three countries produce 70% of the world's supply of natural rubber. With the prices of rubber reaching all time lows, many rubber farmers are finding it nearly impossible to make ends meet. The International Rubber Consortium aims to counteract this with their Agreed Export Tonnage Scheme (AETS), which went into effect December 15th, 2017. And while this move may provide better quality of life for the farmers in these countries,

the rising cost of materials coupled with the rising cost (and in some cases, the elongated timelines associated with) of manufacturing will certainly have a noticeable effect.

It remains to be seen how drastic the effect of these regulations will be, however the problems created by the regulations could very well spell opportunity for other countries. Countries with more relaxed environmental regulations may prove attractive enough for industries to invest in new factories. In general, clothing companies are the first in and first out of manufacturing countries. In recent years, we've been seeing more and more clothing coming out of Vietnam, this could be where the industry is heading. Regardless of what the future holds, these regulations spell change for the way tires are manufactured and that change will affect everyone in the industry.

CHINESE TIRES: AN UNLIKELY STORY

BY ALEX H. STONE

No matter where you live, you've probably seen these three words on a product that you own: "Made in China". From toys to clothing to tires, a big chunk—if not the majority—of our manufacturing over the last couple decades has taken place in China. But why? It's an interesting story that goes back almost 20 years, to the Clinton presidency. One of the big issues at the time—that's 1999—was whether or not the United States should back China in attempting to join the World Trade Organization (WTO).

Critics of this move warned that the low costs of labor in China would cost many US workers their jobs—which turned out to be true. But experts agree, no one could have predicted the extent of China's manufacturing prowess. In addition to low labor costs, the Chinese government lowered tariffs to make it easier for companies to import the materials they needed. Not to mention China's more relaxed environmental regulations.

But, almost twenty years later, China's tight hold on the tire industry may soon be coming to an end—and it seems to be a product of both the United States government's interests and China's own interests.

It started in 2009, when President Obama placed a tariff on certain Chinese products—including tires. This move was partly to support the US manufacturing industry but specific considerations were made toward Chinese tires on account of safety concerns in regards to the quality of cheaper tires. And though the US tire market did see some improvement under these tariffs, other Asian manufacturing countries, such as South Korea, Thailand, and Indonesia saw their shipments double in value.

In June of 2016, the Chinese government announced plans to try and reduce their tire market by 40%. This is largely aimed at solving the problem of overpopulation within the tire manufacturing sector. They hope that through enforcing stricter factory and environmental standards, they'll be able to eliminate some of the smaller producers. These smaller producers are the ones whose quality—and safety—are suspect.

There will always be manufacturers—of tires and more—in China. But as China makes moves to protect and revitalize its air quality and hold factories more accountable for environmental safety, we will begin to see some of those manufacturers popping up in other countries.



HOW IT'S MADE: RUBBERMASTER LAWN-GUARD

The year is 2015. Fall is just about to wind down. Countrywide Tire CEO Chad Isaacs and VP of Operations Eric Johnson are at the GIE Expo in Louisville, Kentucky. It all starts with one simple statement: "We can do that better."

After listening to feedback from lawn care customers, Countrywide Tire noted that lawn mower tires with rounded shoulders allow for turning without harming the grass as much. That's where Countrywide's S-Turf tire came from. But Chad and Eric think they can take it one step further... By creating lawn mower tires are soft in the center,

they believe they can offer further protection for grass during turns. Thus the embryo of the Lawn-Guard tire was born. Let's look a little bit further into this process...

As you can see, it all starts with an idea. Sometimes the idea comes from our customers; sometimes it comes from elsewhere. Once our idea is in place, we get in touch with our factories. We work with the engineers to design products that we feel are up to our standards for quality. From there, we gauge interest from our customers and begin stocking our warehouse.

For the Lawn-Guard tire, we ran tests with a local lawn company to make sure the tires performed as well as we envisioned. The results were spectacular; we were told by very experienced professionals that these tires had, in their opinion, outperformed our competitors in both traction and lawn preservation—particularly in wet conditions.

Countrywide has expanded its catalog exponentially in the past year and it's not slowing down for 2018. The Rubber Master brand is growing. Keep an eye out for Countrywide's Lawn-Guard tire, coming this Spring!

NEXEN'S FIRST QUARTER

One of Countrywide's longtime suppliers, Nexen, has some big things going on to start the year off.

First, we're excited to congratulate Nexen on receiving an award in the transportation category at the prestigious 'Good Design Awards' in 2017. The tire which received the award was their 'N'FERA AU7, which is an Ultra High Performance tire geared toward high end sedans. Also new for this year, Nexen's Radian HTX RH5 will be the OEM tire for the 2019 Ram 1500 Pick-up truck. And Nexen will be one of the official tire suppliers for the Pro 2 Formula Drift Championship this year.

Countrywide has been working with Nexen since the 80's. Their



factories produced some of the very first RubberMaster inner tubes and they continue to produce many RubberMaster products today. We're excited to see their brand grow and prosper.





RETAIL



BIG THINGS FROM MILLS FLEET FARM

If you live in the Midwest, chances are you've heard of Mills Fleet Farm. They're a one-stop shop for just about everything under the sun—appliances, hunting gear, apparel, farm supplies, automotive products, you name it. They currently have 37 stores across the Midwest but that's all about to change soon. In February of 2016, the conglomerate KKR purchased the family owned chain and they've got big plans for it.

Mills Fleet Farm was founded in 1955 by Stewart Mills and over time has become a staple in Midwestern rural communities. Their first store opened up in Brainerd, Minnesota but today they are headquartered in Appleton, Wisconsin. Initially Mills Fleet Farm was a name primarily associated with farming and blue-collar communities but as they've expanded, they've begun to attract more suburban customers as well.

KKR has plans to double the number of Mills Fleet Farm stores in the next six years. In order to support this growth, they've recently opened a massive distribution center in Chippewa Falls, WI. This will allow them to quickly and efficiently supply all of their stores with the daunting variety of products that they stock. Countrywide Tire & Rubber has been a proud supplier to Mills Fleet Farm since 1999 and is excited to see them grow.



ASK THE EXPERTS

We want to hear from you. Please send us your questions about the industry and we'll print them—and answer them of course—in our next newsletter!

THE SHIFT FROM BIAS TO RADIAL

BY ERIC JOHNSON,
VICE PRESIDENT
OF OPERATIONS

Radial tires have been growing in popularity for a while now. There's an increased demand for heavier capacity tires, the cost of manufacturing has gone down, and many retailers are beginning to stock less of the bias and lower ply tires.

The move to radial started about 5 years ago. That's when the price difference began to level out. These days, the difference between a bias tire and a radial is only a few dollars. This is because the manufacturing process and technologies associated with radial tires have been advancing steadily to meet the market demands.

There could come a time when bias tires are actually more expensive than radials because popularity of bias tires is going down. That's when we'll really see a sharp drop in bias tires. The main factor is cost; bias tires are starting to become more expensive because of the lower volumes being produced. There are, however, certain circumstances where a bias tire is better than a radial tire. Industrial tires, for example, will likely always be bias. There really aren't any advantages to doing a radial on something that small. It's never going to need to handle high speeds or have to carry a huge weight load and traction isn't as big of a factor. Another reason for the shift is that the equipment being hauled on these tires is getting heavier. The technology is improving. The machinery is improving. And with that is coming more weight. A lot of these trailers can last a long time; it's just the tires that wear out. And so customers are going to be upgrading those tires to meet those weight limits.

At the end of the day, many customers tend to prefer buying tires that exceed their load carrying requirements. Even if their hauling needs are not at the weight limit that their current tire is at, they feel more comfortable going higher than they to. They can feel confident that they won't have problems driving down the road on these heavy loads. Pricing is also a factor. The differ-

ence in price between these plies is now minimal. For this reason, some retailers are dropping lower plies completely. They don't want to have money tied up in stocking tires that just aren't selling as well.



COUNTRYWIDE'S BRAND NEW OFFICE

MINNEAPOLIS, MN—Countrywide Tire & Rubber is starting off 2018 with some big changes! The first big change? A brand new office. Located in downtown Minneapolis, the new office features high-rise views and a gorgeous Art Deco feel. This move has been a long time coming and is happening along side the move to new warehouses (see article). It's a big transition that embodies the way in which Countrywide Tire & Rubber as a company is moving forward.



LOGISTICS



ELECTRONIC LOGGING DEVICES: A FORK IN THE ROAD

BY ALEX H. STONE

As of December 18th, 2017, truck drivers will be required to log their hours using electronic log books or ELD's (Electronic Logging Devices). The mandate was passed in 2015 but companies were given a generous stretch of time to implement these technologies. In the United States, it is illegal for a commercial driver to drive for more than eleven hours straight. The previous way of doing things—using pencil and paper log books—al-

lowed records to be manipulated in a way that circumvented the law.

ELD's will make traffic stops go much faster. With ELD technology, a police officer can simply plug into the truck's ELD and verify that the driver has been operating within confines of the law in just minutes. In the past, the police officer would need to read through a handwritten log book.

And while this is a step in the right direction in terms of safety, not ev-

eryone is excited about it. Costs associated with implementing these technologies are hurting smaller companies and some industry professionals are skeptical of the efficacy. President Trump has commented via Twitter, "ELD's are very unfair. Truckers voted for me, so mark my words. I will end the ELD mandate." But with the mandate already in effect, freight companies can either comply or shut down.

It remains to be seen how ELD's will affect the freight industry, however

with advanced automotive technologies becoming more and more accessible, this change may be just the beginning of a much needed face lift for the industry. Demand for drivers is at an all time high and perhaps a bit of modernization could offer a quality of life improvement for these jobs that might make them more attractive to younger faces.

THE FUTURE OF THE COMMERCIAL TRUCKING INDUSTRY

The price of freight has been on the rise for some time now and it isn't currently showing signs of letting up—in fact, with the rising cost of fuel predicted for 2018, we may actually see further increases. These elevated costs are largely due to a shortage of commercial drivers. This shortage may actually worsen as many drivers are threatening to abandon the industry over the recent mandate requiring the use of electronic logging devices (ELD's).

So how can companies avoid some of these costs? Jason Sauer, Logistics Manager at Countrywide, has one word for them: Planning. There are a variety of methods of shipping that are less affected by these rates. Such as LTL freight and trains. "We had a shipment going out..." said Jason Sauer, "We were quoted at 4 days by our carrier. Well, the customer didn't need it right away so by shipping it by train,

which took 7 days, we were able to cut that cost in half." If you're willing to sacrifice a bit of expediency, you can save on enormous costs. "The people that are really getting hit are the ones who need partial/truckload shipments sent out quickly. That's when these direct truckers can basically name their price due to the high load volumes and a large shortage of drivers. And with this, everyone is seeing steep increases."

Technologies geared toward the commercial trucking industry have really been taking off in recent years and with this influx of cash headed into the trucking industry, there's never been a better time for companies to invest in their future. Especially with the cost of fuel on the rise, advancements that can promise greater efficiency will look especially attractive this year. One such technology generating a lot of attention at this year's Annual Clean

Transportation expo is the "connected fleet". This is a collection of features we're seeing implemented on commercial and consumer vehicles that allow for more efficient transit through the collection of data.

These features include traffic information, information about road conditions, information about other vehicles, and information about the condition of the user's own vehicle. The computer present on the vehicle uses this information to complete trips in the safest and most efficient way possible. With realtime route adjustment, shipments can arrive quicker and freight companies can use less fuel per shipment. The safety features included in these technologies ensure that shipments arrive safely. In the future, when more vehicles are connected, vehicles will be able to go into an automated cruise, driving much closer together and

stopping much more efficiently.

With the mandatory implementation of Electronic Log Books this year, many freight companies will already be looking to modernize their systems. It's not unreasonable to expect that the implementation of these technologies will influence the market place, making these technologies more common and as a result, more affordable.

Further on the horizon, innovations in electronic vehicles have spread to the commercial freight industry. With Tesla recently joining the fully electronic semi-truck market, the accessibility of these vehicles will likely ramp up exponentially over the next decade. Couple that with the rising cost of fuel, clean freight is becoming more and more of an attractive investment.



GUAYULE: IS IT FINALLY TIME?



BY ALEX H. STONE

It's no secret that almost all of our natural rubber comes from the same place: Southeast Asia. Given the importance of natural rubber—especially in its military applications—our government has long had an interest in finding a way to produce natural rubber domestically. What might surprise you, though, is that the tire industry and a few other parties have been working on it for close to a century now.

The guayule (pronounced why-YOU-lee) plant doesn't look like much more than your typical desert shrub, but inside of its roots, there's something very special: a sap that can be turned into natural rubber. It grows in desert climates—Arizona in particular—and the United States government has had its eye on it for a long time now.

During World War 2, the United States government launched what was called the Emergency Rubber Project. Given that our supply of natural rubber was in jeopardy, we planted guayule all across the deserts of Arizona and California. Once diplomatic relations stabilized, we abandoned the project. Why?

Well, the simple answer is convenience. Importing natural rubber is relatively easy and the prices for doing so are usually quite low. And guayule plants simply don't yield much natural rubber.

Though they take far less time than Hevea trees to grow, guayule bushes need to be destroyed to be harvested. And the rest of the plant—so far—isn't good for much.

However, guayule may soon finally have its day in the sun. This year Bridgestone tires has teamed up with a company called Versalis to attempt to finally crack the case on this peculiar shrub. And they're not the only ones. Coopertire and a company called Yulex are both looking at guayule as a source of domestically produced natural rubber. The government has provided these companies with a handful of grants—clearly excited by the prospect of a successful guayule genome.

The name of the game here is genetic modification. Scientists in all of these organizations believe that, using the same process we use with other crops, we'll be able to grow larger more viable guayule crops—crops with yields large enough to justify the use of guayule-born natural rubber. They may even be able to alter other traits of the plant to make it more useful. It's a time consuming process but the carrot at the end of the stick is quite bountiful: an end to the natural rubber monopoly.

COUNTRYWIDE'S NEW WAREHOUSE

BY OUMAR CHERIF

MAPLE GROVE, MN—This year, Countrywide moved into a brand new warehouse that will quadruple the amount of inventory we can store. The new warehouse uses a few innovations to maximize its efficiency—the new space is actually less square feet than the old space. Here's how we did it:

We've narrowed our aisles from 12 feet to 9 and a half feet, increasing the number of racks we can have. In order to do this, we've moved to a new piece of equipment called a Reach Truck, also called a Narrow Aisle Truck. These are specialized fork lifts that can easily navigate the narrower aisles.

We've also moved away from traditional racking and adapted a system called portable racks or stack racks. These racks are much more efficient and can store a considerably larger number of products in a small space. And since the products don't need to be on pallets, they're quicker to load and unload than traditional racking. We're cutting a considerable amount of cost on each shipment we unload.



Finally, we've moved into a space with 32-foot ceilings as opposed to 24-foot ceilings. The additional height affords us a considerable increase in volume per square foot. We're building upward, not outward.

I believe that this move represents a step forward for the company. We're excited to be maximizing efficiency while cutting our costs as we move forward into this new chapter of Countrywide's history.

RUBBERMASTER

LAWNGUARD



The lawn friendly LAWNGUARD protects turf and minimizes wheel slip. Rounded shoulders and unique center tread design allow a gentle contact patch that guards turf from scrubs and tears in turns and pivots.

WHY HEVEA?

The Hevea Brasiliensis tree—also known as the rubber tree—is a deciduous tree that grows in tropical climates. It can grow up to 120 feet tall and live up to 100 years. It is native to Brazil.

In 1875, efforts were made to spread the Hevea Brasiliensis tree to other nations. They had success in Southeastern Asian countries, like Malaysia and Indonesia. Not too long after that, a blight infected the majority of the rubber trees in Brazil, crippling their rubber industry. Today, almost all of our natural rubber comes from Southeast Asia.



COMING UP

Countrywide has a lot of big things planned for this year. Keep an eye out for the Countrywide Tire and Rubber quarterly webinar. There are new products on the horizon and Countrywide is always working on ways to make your ordering experience easier and more efficient.



ABOUT

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