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Tire Industry Research

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## Kumho Tire shares for sale

### Banks seek to sell Kumho Tire shares

Over 42% of shares in Kumho Tyres are being sold in a major restructuring. The company almost went bankrupt in 2009 and much of the debt owed to banks was converted into equity. It is these banks that now wish to sell their shares.

Although the shares were worth around KRW 755,000m (USD 674m) when the sale was announced on Monday 19 Sept, the stake is expected to be sold for up to KRW1million million (USD920m).

Woori Bank holds 14.15 percent of shares and the Korea Development Bank has another 13.51 percent. Other banks bring the total stake up to 42.1% of the company.

The banks plan to accept preliminary bids as early as November and choose preferred bidders through an official process in January.

Kumho Asiana Group's Chairman Park Sam-koo and his eldest son and president of the group, Park Se-chang, are expected to put in strong bids in an effort to regain control of the company.

A source close to the chairman has said, "Our will to acquire Kumho Tire hasn't changed at all from the past." Chairman Park and his son claim to have a guaranteed right of first purchase from the banks.

This may be in question, as foreign organisations are permitted to bid for the shares.

The company's share price has risen 68 percent since the beginning of the year to close at KRW11,350 on Monday in anticipation of the new deal.

### Commentary

Kumho Tire has had a troubled past. The parent group – Kumho Asiana Group – nearly went bankrupt seven years ago and the government stepped in to broker a rescue plan that commenced in December 2009. Banks who had lent large sums to Kumho were forced to swap the loans for equity. Since that time, nine creditors have held 42 percent of Kumho Tire, with Woori Bank and Korea Development Bank owning 14 percent and 13.5 percent.

Kumho Tire's debt ratio was as high as 858 percent in 2010 but fell to 290 percent during 2014 and has since declined further.

From 2009 until December 2014, Kumho Tire was under the oversight of a cautious management group. This meant Kumho was unable to develop its global business as much as other companies during that period as the oversight group concentrated on building financial stability to preserve the shareholding of the banks. It has therefore been slow to develop new products and has placed less emphasis on R&D and global expansion. The company was hit by a crisis in China in 2011 when a national TV station accused it of using excessive amounts of recycled rubber in its tires. Some argue that this was a warning shot by Chinese officials

against too-rapid expansion in the country. Whether that is true or not, the company fell from first place in market share with 16 percent of the Chinese replacement market and 23 percent of the OE market, to second or third as the publicity spread and consumers and some OE customers rejected Kumho brand tires.

In 2013 Chinese officials said that Kumho's factory in Nanjing was polluting excessively and forced Kumho to move the factory. With that move, in early 2015, Kumho started to receive much more positive treatment in the Chinese press and the companies situation has recovered somewhat. In 2013 Kumho also expanded its tech centre in Tianjin, originally set up in 2006.

### Emerging from restructuring

Once the company emerged from the debt restructuring programme, it embarked on a series of global expansions and initiatives designed to make up lost ground.

A few months before emerging from the debt restructuring, the company announced plans to re-start a car tire factory in the United States. That project was first announced in 2008, ahead of the restructuring in 2009 and just as the Western recession took hold. The original announcement referred to a \$165m investment for annual capacity of 2.1m tires.

In September 2013, Kumho said it would re-start the project with initial capacity of 3m tires per year and potential for up to 10m..

## About this publication

This document has been prepared in response to demands from the global tire community for insight into the global tire industry.

Our company tracks the tire industry around the world. We publish a weekly report that gives Western executives deep insight into current developments in China's tire industry.

Part of that research involves tracking the China-based publications that report on the global tire industry. We noticed that Chinese reporting of Western developments is woefully inadequate.

During conversations with many Chinese people, we identified a strong need in China for a source of information on the global tire industry that lies outside of the official channels.

Furthermore, in conversations with industry analysts, we identified a need for a short-form document that explains and analyses latest developments in the global tire industry.

**About the author.** This report is compiled by David Shaw. Mr Shaw publishes widely on LinkedIn about the tire industry. He has a 30-year track record reporting on the global tire industry at the highest levels. He publishes market research reports; offers a weekly news service and manages conferences globally.

For more information see <http://TireIndustryResearch.com>

The company broke ground on that in July 2014 and upped the investment to USD413m and capacity to 4m units/year. The plant came on stream in May 2016 with an announcement that its output would be geared toward original equipment fitments.

In the mean time, Kumho has made a series of announcements emphasising its global reach.

In 2013 it announced a USD100m expansion of its tire factory in Binh Duong Province, Vietnam, originally set up in 2008

In September 2013 it opened a new tech centre in Yongin City, near Seoul, claimed to be world class

It has expanded its OE programs with top car makers and won fitments with Volkswagen, BMW and others

It set up a partnership with ATP Automotive Testing Papenburg GmbH in Northwest Germany to test tires. The Papenburg unit is managed from Kumho's European Technical Centre (KETC) in Frankfurt.

In 2013, it signed a global R&D partnership with Yokohama which was extended in May 2015 to include an off-take agreement to supply Yokohama with tires made in Kumho's under-utilised Chinese factories.

<http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3023914&cloc=joongangdaily/homelnewslist1>

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## Section 1: Investments; additions and closures

### World's fourth aircraft tire company for sale?



UK tire trade magazine *Tyres & Accessories* is reporting that the world's fourth biggest aircraft tire company might be for sale. Dunlop Aircraft Tyres Ltd (DATL) is a small, speciality company focussed on the manufacture and servicing of aircraft tires worldwide. It is the fourth largest aircraft tire company worldwide, after Michelin, Bridgestone and Goodyear.

Venture capital (VC) company, AAC Capital Partners bought a majority stake (74.6%) in DATL in May 2007. VC companies typically seek to buy into a company at a discount and restructure it, improve the management and build it into a better company, before exiting 5-10 years later at a substantial profit.

Since AAC took over DATL has built its business in Asia with strategic partnerships; invested in new equipment and improved DATL's service offer. This is now paying off as DATL wins lucrative contracts from premium customers.

#### Commentary

The aircraft tire industry is very different from the car or truck segments. Car and truck is largely about providing new tires for civilian vehicles at both OE and replacement levels. The issue is complex because of the mix of sizes and styles of tires.

The size proliferation that we see in car and truck segments is yet to affect the aircraft tire industry as the airframes have very long lives and National Civil Aviation Authorities regulate the supply of all components on aircraft very closely. Because of this the barriers to entry are high.

Another difference is in service. Most of the aircraft tire business is about servicing existing fleets in multiple locations around the world. This involves replacing worn tires with serviceable ones while the aircraft is at an airport. Sometimes the maintenance and tire changes can be scheduled at the airline's home airport, but often it needs to be done somewhere else.

Furthermore, the aircraft tire business is split into civil and military operations. Military operations are more challenging as sometimes the aircraft may need servicing in remote or hostile locations, or even while at sea on an aircraft carrier.

Yet another difference is that aircraft tires are almost always retreaded. A typical aircraft tire will have a life of a few years, being supplied new, then retreaded five to ten times before the carcass is scrapped.

A distinct opportunity for DATL would be in China. The Chinese government is known to be seeking ways to prevent its air force from depending on foreign suppliers. This might be an opportunity for a Chinese tire maker to enter the aircraft tire business by buying DATL, which has an established manufacturing and retreading operation, good logistics as well as significant homologations on both military and civil aircraft.

<http://www.tyrepress.com/2016/09/ready-for-take-off-is-dunlop-aircraft-tyre-ltd-datl-up-for-sale/>

### Nokian builds EUR16m proving ground in Spain



Winter tire specialist Nokian is building a versatile technology centre for summer and winter tyres in Santa Cruz de la Zarza, Spain. It occupies approximately 300 hectares and the first test tracks are expected to be in use during 2017, but the facility will not be complete until 2019.

The investment is approximately EUR16 million. Construction is scheduled to begin in early 2017.

The central test area will be surrounded by a high-speed (300kph) oval with a circuit length of 5km.

Nokian Tyres uses over half of its R&D costs on testing products. The new centre complements Nokian's 700-ha Ivalo Testing Centre, nicknamed "White Hell" because of the extreme temperatures experienced there. Nokian also has test facilities at its headquarters in the town of Nokia, Finland.

<https://www.nokiantyres.com/company/news-article/oval-track-and-state-of-the-art-technology-nokian-tyres-constructs-an-all-new-technology-center-in-s/>

### Uzbekistan tire factory due on stream in 2018

A tire factory being built in Uzbekistan is due on stream in the third quarter of 2018, according to Uzbekistan's Jahon news agency.

The factory is being built in Angren, Uzbekistan and is expected to produce 3 million car tires, 200,000 agricultural tires, and 100,000 linear meters of conveyor belting annually. A second phase is likely to see the plant expand into truck tires, and increase PCR production to 5m units.

A turn-key contract for the construction of the plant was signed with Chinese company Poly Technologies Inc. in August 2014.

The total cost of the project is \$213.9 million. The Asaka Bank and Eximbank of China signed a \$156.3 million loan agreement to finance the project in July 2015. The remainder of the funds will be allocated by the Fund for Reconstruction and Development of Uzbekistan, O'zbekimiyosanoat, O'zavtosanoat, the Navoi Mining and Smelting Plant, and Almalyk Mining and Smelting Plant.

<http://www.timesca.com/index.php/news/17144-uzbekistan-building-its-first-tire-plant-with-china>

### Kenya's only tire plant closes as imports rocket



The only tire factory in Kenya, Sameer Africa, has announced that it will close. Meanwhile tire imports to Kenya have jumped. In particular imports from India and China have increased sharply.

Official data shows that Kenya imported Sh2.8 billion (USD28m) worth of vehicle tyres from Beijing in the first half of the year, up from Sh2.5 billion (USD25m) in a similar period of 2015 and Sh1.8 billion (USD21.5m) in 2013. Sameer has said it intends to supply the local market by sourcing tires from China and India.

"At a meeting held on Monday 29 August, the board of directors resolved to cease the manufacture of tyres and allied products at the Sameer Africa in Nairobi and to commence off-shore production by tyre manufacturers domiciled in China and India," the company said.

Sameer said it was in the process of finalising contract manufacturing agreements with companies in India and China as it shifts production from Nairobi.

<http://www.businessdailyafrica.com/Chinese-tyre-imports-hit-Sh2-8bn-as-motorists-shun-locally/539546-3374226-14o1ho8z/>

<http://www.businessdailyafrica.com/Sameer-shuts-down-Nairobi-tyre-plant/539546-3366462-kksevrz/index.html>

## Section 1: Investments; additions and closures

### Metro Tyres to invest in 2-wheeler capacity

Indian tire maker, Metro Tyres is to invest Rs 3000m (USD55.3m) over the next 2-3 years to expand 2-wheeler tire capacity in India. Metro will also enhance its research and development (R&D) activities.

The company has four plants in India. They are located in Ludhiana State (1), Manesar (1) and Noida (2).

Metro also said it is aiming to win 10% of India's radial two-wheeler tyre segment in the next 2-3 years.

"We are looking at expanding two-wheeler tyre capacity from 300,000 units per month to 600,000 units," said Metro Tyres Managing Director Rummy Chhabra. Metro has a technology partnership with Continental. Chhabra said the company is also developing entry-level two-wheeler tyres and will launch it in two years time.

[http://www.moneycontrol.com/news/business/metro-tyres-to-invest-rs-300-cr-over-2-3-years\\_7420201.html](http://www.moneycontrol.com/news/business/metro-tyres-to-invest-rs-300-cr-over-2-3-years_7420201.html)

### OCI opens JV carbon black plant in China

Korean chemical maker OCI has opened a joint venture carbon black factory in Shandong, China. The new plant is owned and operated by Shandong OCI Jianyang Carbon Black Company which was set up in 2014 as a joint venture with Shandong Energy Zaozhuang Mining Group.

The plant has capacity for 80,000 tons of carbon black per year and the feedstock is supplied by the Chinese partner.

OCI is the biggest manufacturer of carbon black in Korea with capacity for 270,000 tons at plants in Pohang and Gwangyang.

<http://www.koreaherald.com/view.php?ud=20160908001036>

### Apollo to double TBR capacity in Chennai

Apollo Tyres said it will double daily TBR (truck, bus radial) tire capacity at its Chennai plant to 12,000 units from 6,000 units over next 24 months. The investment will be Rs 27,000m (USD497m). The Chennai plant also produces 16000 passenger car tyres per day, but this capacity is not being expanded.

The company will also adopt a multi brand strategy in India in both passenger and commercial vehicle segments. In passenger car, the company will use brands including Vredestein. In truck tires it will use the Regal brand, originally from South Africa.

Atish Sharma, president, Asia Pacific, Middle East and Africa (APMEA), said: "We have just begun test marketing the [Vredestein] brand in India in select places and we will soon launch it in a big way. With the European brand in place, the company will attain market leadership in the PCR segment," he said.

The company also expects to set up a separate assembly line to manufac-

ture tyres for Sports Utility Vehicle segment at its Baroda plant.

<http://www.financialexpress.com/industry/companies/apollo-tyres-plans-to-adopt-dual-brand-strategy-in-india/377792/>

### Bridgestone buys stake in French online retailer

Bridgestone France has taken a stake in French online tire retailer Pneus à bas prix (PAPB). Bridgestone said it is a minority stake, but did not disclose the price of the stake, nor the percentage ownership it has.

<http://www.ccfa.fr/Bridgestone-entre-au-capital-du>

### Trelleborg buys UK-based solid tire distributor

Trelleborg Wheel Systems has bought UK-based International Tyre and Wheel Solutions Ltd. (ITWS). ITWS is a privately owned distributor of large solid off-road (OTR) tires for the waste, recycling and demolition industries. The acquisition follows Trelleborg's purchase of Mitas pneumatic construction tires and gives Trelleborg a road offering in both pneumatic and solid tires across Europe, Middle East and Africa.

The acquired operation is headquartered in Lowton, England. Sales amounted to approximately SEK 40m (USD4.6m) in 2015.

<http://news.cision.com/trelleborg/r/trelleborg-acquires-leading-large-solid-tire-distributor-and-increases-its-geographical-reach,c2070414>

### Sentury picks Georgia for US factory

Sentury Tires has selected a site in LaGrange, Georgia for a USD530m tire factory in the United States. The new facility in LaGrange will support Century Tire's existing customer base in North America.

"We are very happy to select LaGrange to the location of our North American manufacturing," said Century Tire Executive Vice President Rami Helminen. "The ... high quality workforce complement[s] our leading edge technology in the production and research and development. We are confident that Georgia has the infrastructure that can help us build a successful logistical operation to supply our growing aftermarket dealer sales and OEM sales to auto manufacturers in the North American market. We anticipate production to start in 2018 and will build up to our projected manufacturing capacity of 12 million passenger and light truck tires." Century Tire products are sold worldwide under the brands Century, Landsail and Delinte. About 70 percent of Century Tire's sales are in the EU and U.S markets. Century Tire's parent company, Qingdao Century Tire Co., Ltd., based in Qingdao, China, employs 2,500 people worldwide and currently has manufacturing operations in Qingdao and Thailand.

<http://www.globalatlanta.com/confirmed-georgia-lands-500-million-chinese-tire-plant/>

## Sustainability in the Tire Industry - 2016

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## Section 2: People

### Cooper names Luis Ceneviz as head of Europe



Cooper Tire & Rubber Co. has named Luis Ceneviz as Managing Director—Europe Tire Operations, from 1 Oct. Ceneviz will continue with his role as Managing Director—Latin America Tire Operations. He has held this position since March 2015. Ceneviz will be responsible for the company's business throughout Europe, the Middle East and Africa as well as Latin America, including Mexico and Central and South America.

Ceneviz replaces Jeff Schumaker in the Europe leadership role. Schumaker, a 28-year Cooper veteran, will assume a new position as Vice President – Global Manufacturing.

<http://coopertire.com/News/Corporate-News-Releases/Luis-Ceneviz-to-Head-Cooper-Tire-Europe-Operations.aspx>

### Lehtoranta quits as CEO of Nokian



Ari Lehtoranta, president and CEO of Nokian Tyres has announced his intention to leave for another role, with effect from 31 December 2016. The Company's Board of Directors will start the recruitment process to select a new President and CEO for the company. In a phone call with investors, the company and Lehtoranta himself emphasised that there had been no acrimony and it was a purely personal decision made by the CEO. Both sides also said the company's strategy would not change in any way and that plans for the third factory will be unaffected.

Lehtoranta was named as President and CEO of Caverion Corporation, effective 1 January 2017.

Caverion designs, builds, operates and maintains intelligent and energy-efficient solutions for buildings, industries and infrastructures in Northern, Central and Eastern Europe. The group is based in Helsinki.

<https://www.nokiantyres.com/company/news-article/nokian-tyres-president-and-ceo-to-change/>

### Cooper re-aligns global management

Cooper Tire & Rubber Co has completed its previously announced senior executive leadership transition. Bradley Hughes is now President & Chief Executive Officer and a Director of the company. His appointment follows

the Aug. 31 retirement of Roy Armes as Chairman, Chief Executive Officer and President. Cooper also previously said Independent Director Thomas Capo has been appointed non-executive Chairman of the Cooper Board. <http://coopertire.com/News/Corporate-News-Releases/Cooper-Tire-Completes-Senior-Executive-Leadership.aspx>

### Giti names Torsten Gehrman as European boss



Giti Tire has named Torsten Gehrman (45) as Senior Managing Director – Europe. Gehrman will maintain his role as CEO of Giti Auto Parts Pte Ltd.

Both Giti Auto and Giti Tire belong to the Giti Group which is headquartered in Singapore. Gehrman is an experienced international manager in the automotive business. After starting his career at Continental AG he joined Giti Tire as General Manager in 2009. In 2014 he became the Vice President for Europe and Asia to Dura Automotive Systems, and at the beginning of 2016 he

became the CEO for Giti Auto.

<http://mhwmagazine.co.uk/giti-tire-appoints-torsten-gehrman-senior-managing-director-europe.html>

### IRSG names new secretary-general



The International Rubber Study group has named Mr Salvatore Pinizzotto as its new secretary-general. He will replace Dr Stephan Evans who has come to the end of his second three-year term.

Pinizzotto will take up the new role on 1 January 2017.

Pinizzotto has a degree in Economics and a Master in Business Administration. He worked for three decades in the metals industry, especially as Director of Market Research at the International Nickel Study Group.

### Commentary

The IRSG has a long history of providing unbiased, authoritative information about the global rubber industry.

Historically it focussed on the natural rubber sector, but in recent years has broadened its scope to cover synthetic rubber as well. The group has taken the lead in promoting its Sustainable Natural Rubber initiative (SNR-i)

<http://www.rubberstudy.com/news-article.aspx?id=5102&b=default.aspx>

## Section 3: Legislation and government

### US publishes TBR tariffs in Federal Register

The United States Department of Commerce published its official statement on anti-dumping tariffs on truck and bus radial tires from China in the 6 Sept edition of the Federal register.

The publication date defines the date from which duties are in force (90 days prior to the publication, which we estimate is 8 June).

The document also advised Chinese tire makers and others that they have 30 days to comment on the duties. Again, we estimate this period expires at 5pm on 6 October.

[https://www.federalregister.gov/articles/2016/09/06/2016-21346/truck-and-bus-tires-from-the-peoples-republic-of-china-preliminary-](https://www.federalregister.gov/articles/2016/09/06/2016-21346/truck-and-bus-tires-from-the-peoples-republic-of-china-preliminary)

### US ITC schedules final phase of dual TBR study

In a note published in the Federal register on 6 September, the United States International Trade Commission set out the plan for duties on Chinese-made truck tires. The investigations cover both anti-dumping duties (ADD) and countervailing duties (CVD).

The Commission will hold a hearing in connection with the final phase of these investigations beginning at 9:30 a.m. on Tuesday, January 24, 2017, at the U.S. International Trade Commission Building.

Requests to appear at the hearing should be filed in writing with the Secretary to the Commission on or before January 18, 2017.

Each party who is an interested party shall submit a pre-hearing brief to the Commission; the deadline for filing is January 12, 2017.

[https://www.usitc.gov/sites/default/files/secretary/fed\\_reg\\_notices/701\\_731/701\\_556\\_notice09122016sgl.pdf](https://www.usitc.gov/sites/default/files/secretary/fed_reg_notices/701_731/701_556_notice09122016sgl.pdf)

### India launches dumping probe into BR

On 16 September India launched an investigation into the alleged dumping of butadiene rubber originating in or exported from South Korea, Russia, South Africa, Iran and Singapore.

The investigation follows a similar investigation into alleged dumping of emulsion-SBR launched on 14 January this year (see below).

Both investigations were triggered by allegations from Reliance Industries Ltd.

The latest investigation into polybutadiene rubber (BR) covers the 12 months from 1 April, 2015 to 31 March, 2016. However, for the purpose of injury investigation, the period will cover the previous three years, from April 2012 to March 2015 in addition to the Period of Investigation.

Parties who may be affected by the investigation have 40 days from the notice to submit their responses

The e-SBR investigation launched in January was co-sponsored by Indian Synthetic Rubber Pvt. Limited and reliance and covers imports of SBR

grades in the 1500 and 1700 families from the European Union, Korea RP and Thailand. The period of investigation is investigation is from 1st October 2014- 31st September 2015.

[http://commerce.nic.in/doc/writereaddata/traderemedies/MOC636099736810350897\\_PBRInitiation%20notification.pdf](http://commerce.nic.in/doc/writereaddata/traderemedies/MOC636099736810350897_PBRInitiation%20notification.pdf)

### Turkey imposes 21.8% import tariffs on tires

Turkey is imposing a 21.8% import tariff on tires imported into the country. The new tariff covers all new tires – radial, bias, car, truck and other tires imported from China and Japan.

According to Turkey's official gazette the new tariff came into force from 7 September 2016. It excludes imports from all EFTA members, Macedonia, Bosnia and Herzegovina, Morocco Israel, Gaza Strip and the West Bank. Tunisia, Egypt, Georgia, Albania, Jordan, Chile, Serbia, Montenegro, Kosovo, South Korea, Mauritius, Malaysia. All other countries are subject to the tariff.

The same 21.8% tariff applies to new pneumatic tires, including car, motorcycle, truck, off-road, forestry tires of radial and bias construction, but not to retreads or inner tubes:

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4011.10.00.90.12

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4011.20.10.00.11

4011.20.10.00.12

4011.20.10.00.19

4011.20.90.00.11

4011.20.90.00.12

4011.20.90.00.19

4011.40.00.00.00

4011.50.00.00.00

4011.61.00.00.00

4011.62.00.00.00

4011.63.00.00.00

4011.69.00.00.00

4011.69.00.00.00

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4011.99.00.00.00

<http://www.resmigazete.gov.tr/eskiler/2016/09/20160907-2.pdf>

### South African tire workers threaten strike

Workers in South Africa's tire-manufacturing sector may decide to strike over a pay dispute with management.

Earlier, the main union, Numsa reached a three-year pay deal in the vehicle-assembly sector with manufacturers including BMW, Ford and Toyota.

Numsa said the deal was for a 35% increase over three years.

Numsa said in September it was preparing for a strike in the motor retail sector — including panel beaters, filling stations, tyres and components — where employers were offering a 7% pay rise and unions demanding 15%.

<http://www.bdlive.co.za/national/labour/2016/09/13/union-warns-of-crippling-strike-in-car-parts-sector>

### Michelin slams calls for 3mm tread depth laws

At a press conference at the Paris Motor Show, Michelin rejected calls for a change to EU laws on tread depth. The company said, "While some manufacturers are lobbying for tires to be replaced as soon as the tread depth reaches 3 or 4mm, Michelin maintains that the current legal limit of 1.6 mm is perfectly suited to the challenges of modern motoring."

Michelin said it takes this position for three main reasons:

#### 1–Safety

- Current legislation, which dates back to 1989, was based on performance levels at the time. In view of the progress made in the tire world, the majority of products on the market today are superior.
- Braking distances depend on a wide range of factors. The braking system, ABS sensors, road surface texture, weather (humidity and temperature), tire pressure and temperature, and the driver's actions all play a significant part alongside the tire's intrinsic qualities.

#### 2–Cost

- Replacing tires when the tread depth reaches 3 or 4 mm means doing so more frequently, which represents an increase in running costs.

#### 3–Ecology

- Numerous materials and a certain amount of energy are required to make a tire. The more material used, the greater the impact will be on the environment. Tires should therefore be replaced as late as possible to avoid overconsumption of raw materials and the energy used in manufacturing them.
- Rolling resistance, responsible for 20% of a cars' fuel (or electric power) consumption, improves with wear. Michelin considers that replacing tires prematurely would see annual fuel consumption rise by 900 million litres, and carbon dioxide emissions by 3 million tonnes – or 9 million if we were to add the loss of material caused by premature tire replacement. This is equivalent to the annual CO2 emissions of the city of Birmingham, the second city of the UK.
- Recycling is also heavy on energy consumption and the more material we have to recycle, the lower our overall sustainability performance.

Increasing the legal minimum tread depth Europe-wide from 1.6 mm to 3 mm would amount to 1.5 million tonnes of raw materials wasted annually, equating to an energy demand of 290 million tonnes of crude oil, that is to say, more than the annual production of Mexico and Venezuela combined.

<http://www.michelin.com/eng/media-room/press-and-news/press-releases/Group/Michelin-at-the-Paris-motorshow-2016>

## Section 4: New business models

### US researchers report progress on guayule



Researchers in the United States say they are on track to make a concept tire entirely from guayule rubber by next year (2017).

During its annual meeting in California, the consortium behind the Biomass Research and Development Initiative (BRDI) grant, "Securing the Future of Natural Rubber—an American Tire and Bioenergy Platform from Guayule," reported several key advancements emerging from the group's work over the past year.

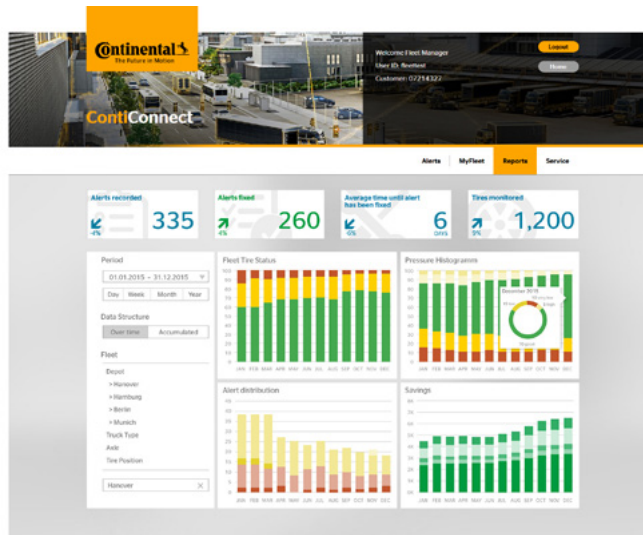
Guayule is a shrub that grows in the south-western United States, but also in parts of Europe, Australia and other arid, dry climates. Its stems contain rubber that can be processed for use in tires.

"We have nearly finished our work on developing guayule-based tire components," said Chuck Yurkovich, Cooper's Senior Vice President of Global Research & Development. "We have proven that we can replace traditional polymers with guayule in certain components, and that tires made from these components perform equal to conventional tires. We are optimizing the use of guayule formulations to develop not only a full guayule tire, but we will also evaluate guayule blends in certain components where an advantage has been shown to exist," Yurkovich added.

Another grant consortium partner, the Agricultural Research Service of the United States Department of Agriculture (USDA-ARS), reported on its work to sequence the guayule genome. This effort is to direct breeding and genetics tools reported by the Cornell University consortium partners. These efforts should help improve yields, disease- and pest-resistance, cold tolerance.

<http://coopertire.com/News/Corporate-News-Releases/Cooper-Tire-and-Consortium-Partners-Report-Signifi.aspx>

### Conti, Bridgestone highlight telematics at IAA



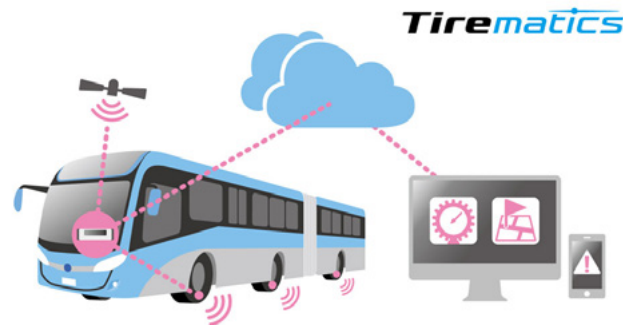
Both Continental and Bridgestone chose to use the international Automotive show at Hannover to focus on their telematics offerings.

Conti highlighted its cooperation with Tom Tom's Webfleet and its own TIS-fleet offerings. The combination allows fleet operators and drivers to remotely transfer data from the truck to the back office without having to return the vehicles to a depot.

Conti also showed its iTire solution in which a smart sensor can be attached to the inner face of the tire tread.

Meanwhile Bridgestone showed its Tirematics solutions. The Tirematics package brings together all Bridgestone's connected tire solutions: IT systems that use sensors to remotely monitor, transmit and analyse real-time information, such as the pressure and temperature of commercial truck and bus tires.

Bridgestone said it is testing a system to continuously transmit relevant



vehicle data to the server. This gives fleet managers early warning if a tyre is rapidly deflating. The system also enables advanced algorithms to generate predictive maintenance scheduling.

#### Commentary

The IAA Hannover is focussed on the global truck business. In the past, a visitor could expect to see a range of new tires focussing on reduced rolling resistance and improved wear.

This year, however, the focus was much more on offering new services to fleet managers. Services that can help save money over the longer term and keep uptimes high and avoid unexpected delays or problems.

For the premium tire makers, this is the new target. Simply making good tires is no longer enough. Imports from China and other countries have grown rapidly in the developed world. Up to now these have mostly been targeted at small fleets, one-man operators and others who are focussed on initial purchase price rather than total cost of ownership. Longer term, however, the premium manufacturers can see that cheap imports of decent quality tires have the potential to erode their customer base. If they sell only tires, then the tire market will end up being a race for the lowest cost of manufacture, and the Premium brands have no hope of winning that competition.

Their strategy is to sell services to fleet managers. If tire makers can help the fleet managers to save money and improve their service to their own logistics customers, then the cost of tire purchase is less of a factor in the purchasing decision.

Using connected products; the internet of things and processing that data in ways that ease the life of the fleet manager is a good way to compete and keep the cheaper brands out of the market.

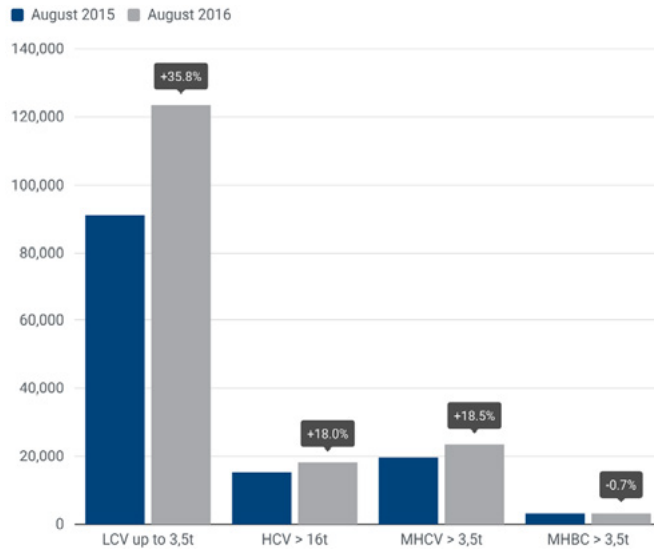
<http://www.bridgestone.eu/corporate/press-releases/2016/09/bridgestone-demonstrates-the-benefits-of-tirematics-at-iaa/>

[http://www.continental-corporation.com/www/pressportal\\_com\\_en/themes/press\\_releases/3\\_automotive\\_group/cvam/press\\_releases/pr\\_2016\\_09\\_21\\_zusammenarbeit\\_tomtome\\_en.html](http://www.continental-corporation.com/www/pressportal_com_en/themes/press_releases/3_automotive_group/cvam/press_releases/pr_2016_09_21_zusammenarbeit_tomtome_en.html)

<http://www.continental-tires.com/transport/media-services/news-room/20160921-itire>

# Section 5: Statistics

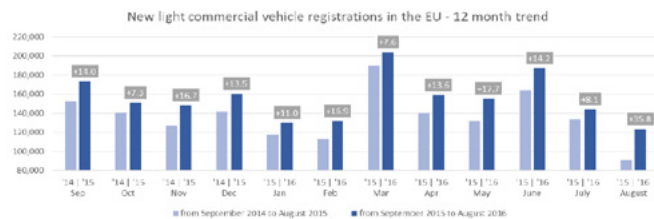
## EU truck registrations up by 14% in Jan-August



In August 2016, demand for new commercial vehicles in the EU increased substantially (+31.8%) on strong sales in the van segment. This was the 20th consecutive month of growth. All major markets grew, especially in Italy (+105.9%), Germany (+42.6%), Spain (+19.5%), and France (+16.8%). Overall, 150,425 new commercial vehicles were registered in the EU.

Over the first eight months of 2016, the EU market increased by 14.3%, to 1.5 million commercial vehicles. During the eight months, Italy (+39.4%), Spain (+12.9%), Germany (+12.1%), France (+11.8%) and the UK (+2.7%) all posted growth.

### New light commercial vehicles (LCV) up to 3.5 tonnes

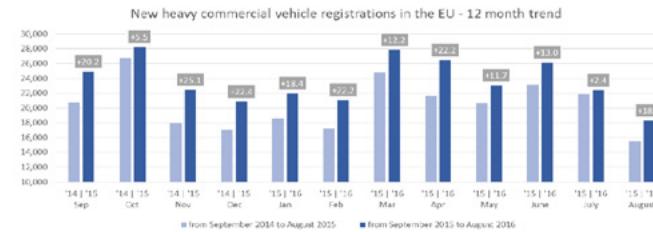


In August 2016, registrations of new light commercial vehicles (LCV) up to 3.5 tonnes (vans) totalled 123,594 units, up (+35.8%) compared to August

2015. This marked the 36th consecutive month of growth in the segment. Demand was mainly driven by the Italian (+117.8%) and German markets (+53.8%), followed by Spain (+18.5%) and France (+17.4%). The UK market also grew (+6.3%) last month, after seeing a slight decline in July.

From January to August 2016, 1,237,236 new light commercial vehicles were registered in the EU (+14.5%). Italy (+40.8%), Germany (+13.8%), Spain (+13.1%), France (+11.6%) and the UK (+2.9%) all contributed to the positive upturn over the first eight months of this year.

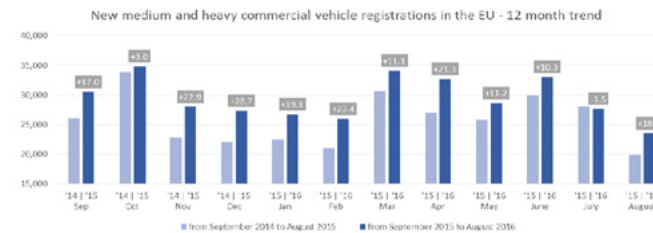
### New heavy commercial vehicles (HCV) over 16 tonnes



August 2016 results show a double-digit increase in registrations of new heavy commercial vehicles (trucks) over 16 tonnes (+18.0%), which totalled 18,307 units. Italy (+58.1%) and Spain (+25.3%) largely contributed to this growth, followed by France (+17.4%), Germany (+13.7%) and the United Kingdom (+2.4%).

Eight months into the year, the EU market continued to grow (+15.7%), reaching a total of 189,462 heavy trucks registered. Italy (+37.8%), France (+17.0%), Spain (+8.7%), Germany (+8.3%) and the UK (+4.2%) all saw demand increase, contributing to the overall upturn of the EU market over the period.

### New medium and heavy commercial vehicles (MHCV) over 3.5 tonnes



In August 2016, new trucks registered in the European Union were up again after the decline observed in July. Overall, 23,529 new trucks were registered, 18.5% more compare to August last year. Among the major markets results for trucks were similar to the heavy truck segment, with Italy (+62.2%), Spain (+21.5%), France (+21.3%) and Germany (+17.5%) all posting double-digit percentage gains.

From January to August 2016, all major markets posted growth. Italy (+36.1%), France (+16.2%) and Spain (+12.4%) made a particularly

significant contribution to overall growth. In total, 234,070 new trucks (+14.3%) were registered in the EU.

### New medium and heavy buses & coaches (MHBC) over 3.5 tonnes

In August 2016, new bus and coach registrations remained stable (-0.7%) compared to August 2015, totalling 3,302 units. This marks the third consecutive month of decline after June and July 2016. Spain (+165.1%) posted the highest upturn, followed by Italy (+9.0%) and Germany (+7.1%), while the UK (-11.0%) and France (-0.1%) performed less well than in August 2015.

Over the first eight months of 2016, the EU market for buses and coaches showed modest growth (+1.0%), totalling 24,809 new vehicles. Demand was primarily driven by Germany (+14.5%) and Spain (+10.3%), while the UK (-6.8%), Italy (-5.5%) and France (-2.4%) saw demand decline over this period.

<http://www.acea.be/press-releases/article/commercial-vehicle-registrations-14.3-over-eight-months-31.8-in-august>

### Retread market falls in Japan

Japan Retreaders Association (JRA) Chairman Tatsuo Gomi discussed the downturn in Japan's retread market in 2015.

While there was an increase in corporate earnings for the year, Gomi said that reduced demand from China and the rest of Asia had caused exports to stagnate. A mild winter also reduced consumer spending on tires. For retreaded tires, Gomi said materials costs have fallen. However, 11R225 tire casings remained in long-term shortage, which had put pressure on the number of retreads.

Based on a survey of JRA members, 1.367 million units were shipped during the 2015 calendar year – a fall of 3.6 percent from the previous year. Domestic sales of commercially available truck and bus tires, which make up 90 percent of total sales, fell 3.3 percent, with 1.235 million units shipped. This marked the first year-on-year fall in 11 years.

Since Japan's Ministry of Economy, Trade and Industry (METI) stopped gathering up-to-date manufacturing statistics on retreaded tires in 2009, the Japan Retreaders Association (JRA) has taken over the task of collecting this information from around the country. JRA Chairman Tatsuo Gomi discussed the downturn that the country's retread market experienced in calendar 2015.

<https://www.japanrubberweekly.com/2016/09/jra-chairman-market-downturn-retreaded-tires/>



## Section 5: Statistics

### US report on end-of-life tire disposal

A report from the US-based Rubber Manufacturers' Association (RMA) claims that stockpiles of End-of-Life tires have fallen to just 7 percent of the figure from 20 years ago.

| Market or Disposition (000 tonnes)           | 2007    | 2009    | 2011    | 2013    | 2015    |
|--|---------|---------|---------|---------|---------|
| Tire-Derived Fuel                            | 2484.36 | 2084.75 | 1427.03 | 2120.29 | 1922.67 |
| Ground Rubber                                | 789.09  | 1354.17 | 1093.50 | 975.00  | 1020.75 |
| Land Disposed                                | 593.98  | 653.38  | 491.65  | 327.78  | 451.40  |
| Exported                                     | 102.08  | 102.10  | 302.48  | 245.84  | 102.07  |
| Civil Engineering                            | 561.56  | 284.92  | 294.99  | 172.00  | 274.92  |
| Reclamation Projects                         | 132.58  | 130.00  | 54.29   | 49.17   | 52.54   |
| Electric Arc Furnace                         | 27.14   | 27.10   | 65.55   | 65.56   | 26.00   |
| Baled Tires/market                           | UNK     | 27.76   | 1.92    | 30.00   | 9.19    |
| Agricultural                                 | 7.13    | 7.10    | 7.10    | 7.10    | 7.10    |
| Punched/ Stamped                             | 1.85    | 1.90    | 1.90    | 1.90    | 41.20   |
| Baled/no market                              | 9.31    | 15.57   | 32.78   | No data | No data |
| Used Tires <sup>1</sup>                      | n/a     | 371.25  | n/a     | n/a     | n/a     |
| Other  |         |         |         |         | 94.86   |
| Total to Market                              | 4105.79 | 4391.05 | 3083.76 | 3666.85 | 3551.30 |
| Generated <sup>2</sup>                       | 4595.72 | 5170.50 | 3781.00 | 3824.26 | 4038.80 |
| % to Market/Utilised                         | 89.3%   | 84.9%   | 81.6%   | 95.9%   | 87.9%   |
| % Managed (incl. baled and landfilled tires) | 102.5%  | 97.9%   | 95.4%   | 104.5%  | 99.1%   |

<sup>1</sup> RMA began tracking tires culled from scrap tire collection entering domestic used passenger and light truck used tire markets in 2009. RMA changed the way it incorporated estimates of tires entering used tire markets between 2009 and 2011. In 2009, RMA included used tires as a market for scrap tires. In 2011 and 2013, RMA subtracted used tires from the total tires hauled to calculate total net scrap tire generation.

<sup>2</sup> RMA changed the basis for reporting scrap tire generated annually from state-provided data in 2005-2007 to a calculation of replacement market tires sold and vehicles scrapped for reports issued 2009 and after.

© Rubber Manufacturers Association, 2016

In 1990, about a thousand million scrap tires were in stockpiles in the U.S. By 2015, over 93 percent of those tires had been cleaned up. Only 67 million stockpiled tires to go.

Data © Rubber Manufacturers Association, 2016

#### Total stockpiled tires in US

| Year | 1990  | 1992  | 1994 | 1996 | 2001 | 2003 | 2005 | 2007 | 2009 | 2010 | 2011 | 2013 | 2015 |
|------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|
|      | 1000m | 1000m | 685m | 510m | 308m | 272m | 180m | 142m | 128m | 125m | 77m  | 75m  | 67m  |

Data © Rubber Manufacturers Association, 2016

| Tire Class  | No (millions) | Market % | Av. Weight (lb) | Total Weight (000t) |
|---|---------------|----------|-----------------|---------------------|
| Light Duty Tires  | 248.8         | 89.0%    | 22.5            | 2799.0              |
| Passenger tire replacements <sup>1</sup>                | 206.1         | 73.7%    |                 |                     |
| Light truck tire replacements <sup>1</sup>              | 29.1          | 10.4%    |                 |                     |
| Tires from scrapped cars <sup>2</sup>                   | 13.6          | 4.9%     |                 |                     |
| Commercial Tires  | 30.9          | 11.0%    | 120.0           | 1854.0              |
| Medium, wide base, heavy truck repl. tires <sup>1</sup> | 17.9          | 6.4%     |                 |                     |
| Tires from scrapped trucks and buses <sup>2</sup>       | 13.0          | 4.6%     |                 |                     |
| Total tires hauled                                      | 279.7         | 100.0%   | 33.3            | 4653.0              |
| Used tires culled                                       | 36.9          | 13.2%    | 33.3            | 614.2               |
| Net scrap tires   | 242.8         | 4038.8   |                 |                     |

<sup>1</sup> Factbook 2014: U.S. Tire Shipment/Activity Report for Statistical Year 2013, Rubber Manufacturers Association.

<sup>2</sup> Ward's Motor Vehicle Facts and Figures, 2014. Includes the total number of vehicles removed from service in 2013. In 2013, Ward's did not publish vehicles retired from service separated for the car and truck/bus category. Instead, it only published total vehicles scrapped from service. RMA estimated the split between cars and trucks/buses based on the average of the split from 2002 - 2012. Assumes two tires scrapped from light duty vehicles and 2.5 tires scrapped from trucks and buses.

Data © Rubber Manufacturers Association, 2016

<https://rma.org/news/tire-manufacturer-backed-efforts-reduce-tire-piles-93>

### RMA updates US tire forecast

Total U.S. tire shipments are projected to grow slightly in 2016 according to a mid-year forecast by the Rubber Manufacturers Association (RMA), the national trade association for tire manufacturers in the U.S.

| Replacement        | 2015  | 2016 forecast | Change | Units (millions) |
|--------------------|-------|---------------|--------|------------------|
| PCR                | 206.1 | 205.0         | -0.6   | -1.1             |
| Light truck        | 29.1  | 30.8          | 5.6    | 1.6              |
| Heavy truck        | 17.9  | 18.5          | 3.3    | 0.6              |
| Original equipment | 2015  | 2016 forecast | Change | Units (millions) |
| PCR                | 49.7  | 49.8          | 0.1    | 0.1              |
| Light truck        | 4.4   | 4.8           | 10.2   | 0.4              |
| Heavy truck        | 6.2   | 5.3           | -14.9  | -0.9             |
| Total              | 313.5 | 314.1         | 0.2    | 0.7              |

<https://rma.org/news/mid-year-tire-shipment-forecast-shows-slight-growth-2016>

## Section 6: Company information

### OTR business facing ups and downs



The US off-the-road (OTR) tire market is a roller coaster ride: up one year, down the next. Tim Easter, director of OTR sales for Yokohama Tire Corporation (YTC) and a 27-year OTR industry veteran looks at what causes the OTR tire market to change so frequently and what the outlook is for the rest of 2016 and beyond.

**Question:** How's the overall OTR market been so far in 2016?

**Tim Easter:** Certain industries are doing well, but mining is down considerably, causing the total market to trend down this year.

**Question:** Do you think it's going to recover in 2017?

**Easter:** It's difficult to tell. The [US] election is probably going to play a big factor, especially in regards to the mining industry.

**Question:** Why is the mining industry struggling?

**Easter:** A lot has to do with gold and copper commodity prices. The prices are down, and it costs more to extract the ore. Plus, regulatory restrictions on how coal is mined and used have impacted the coal industry adversely.

**Question:** Traditionally, the OTR market seems to always fluctuate. Is this downturn normal or something completely different?

**Easter:** We always say that the OTR market is a very peak-and-valley type of industry. For the coal industry, it's been down for almost five years now – that's a little bit long. But overall, I would say this one may be a little longer than we've seen in the past, but it's definitely a normal trend of the OTR industry.

**Question:** Are there any other trends that could affect the industry?

**Easter:** Trends in the OTR industry are driven by many things, from the economy to government regulations to how many containers are shipped across the ocean. The new super freighters, for example, can ship more containers so that could have a positive effect on port business.

**Question:** Do OTR tires need more testing than commercial or consumer?

**Easter:** I haven't worked on commercial or consumer tires from a new product development standpoint, but I know OTR tires take a lot of testing. We do everything from the initial drum testing at the factory to field testing. We go through different versions of the tire – we call it V1, 2, 3, 4. Then we'll make changes to improve the product before mass production. Yokohama has always been very patient and strives to get the best product to the market.

<https://www.yokohamatire.com/newsroom/state-of-the-offtheroad-tire-in-dustry-with-yokohama-tire-corporations-tim-easter>

### Conti seeking acquisitions in the tire business



In an interview with Reuters, the head of Continental's tire activity, Nikolai Setzer said Conti has the resources and will to buy another tire maker. "We have the financial capability" to shoulder purchases, Setzer said in an interview at the Hanover trucks show.

He seemed to say that the company is not looking at premium brands, but at lesser brands serving the replacement tire sector. "There are not so many tyre makers that could fit us," the executive said.

#### Commentary

You can think of the tire industry as segmented into large global players, who have factories in every part of the world; regional players who have multiple factories and outlets, but limited to only one region and local players who have one or maybe two factories and a few outlets in a single country.

It sounds like Conti is on the lookout for national players or maybe regional ones.

Conti is strong in car and truck tires, but has only recently built its strength in the speciality segments such as mining, earthmover, or agricultural tires.

It is seeking to grow its manufacturing capacity and customer bases in those areas, so the company is probably looking to buy speciality tire makers based in one small region but which has some good technology and some interesting customers.

<http://in.reuters.com/article/continental-tyres-outlook-idINL8N1BX22Z>

### Apollo seeking to expand into US



Apollo's CEO, Neeraj Kanwar has told Indian journalists that he is expanding into the United States. The company tried to do this three years ago with the abortive take-over of Cooper Tire.

The company is hiring senior staff and setting up a small R&D unit in the United States to create a range of products for customers there.

Apollo's current range only matches around 10% of the demand in the United States.

Apollo wants to increase this to 70% of the demand by developing new tires aimed at

specific market segments and sizes.

Apollo currently exports roughly 150,000 units per year to the US, around 0.5% of the 300m unit/year replacement market there.

### Commentary

This revelation is not unexpected. When I met with Mr Kanwar back in March of this year, all his questions were about the United States. Following the Cooper disaster, Apollo appears to be adopting a more organic approach with the aim of building the right portfolio from scratch.

One could imagine that once Apollo has the right range of products, it will start to look to acquire distribution channels to win more volume. The company was able – just – to raise USD2500m for the Cooper acquisition. When Bridgestone was bidding for Pep Boys, it bailed out when the price reached around USD1000m, so even the biggest distribution chains in North America are within Apollo's financial reach.

Apollo management knows that the US market is key to a strong global presence. While the company is strong in India, it is getting stronger in Europe and seeking OE contracts. If Europe is the global centre for tire technology, then America is the global centre for distribution and logistics. One of the keys to success in the United States will be its brand strategy.

Apollo has been working hard to work out an effective strategy for its different brands in different parts of the world. It is likely to use Vredestein as the sporty brand with Apollo as the brand featuring safety and security. <http://www.livemint.com/Companies/2rUxG7iXQ8dtHjVrFdKTI/Apollo-Tyress-Neeraj-Kanwar-eyes-US-market-again-3-years-a.html>

### Gajah Tunggal made recalled Goodyear tires

Goodyear announced in September that it is recalling 1650 tires for potential tread separations. The tires are G399A LHS tires, size 295/75R22.5 LRG, manufactured January 24, 2016, to May 28, 2016.

Later in September, Catharina Widjaja, director of Indonesian tire maker Gajah Tunggal said Gajah Tunggal made the tires for Goodyear, and said up to 196 926 tires were affected, made in the period April-September, 2016. Widjaja said Gajah Tunggal would make every effort to ensure the recall action had no impact on the operations, legal, financial condition, and the business of Goodyear tire manufacturer.

Widjaja said the type and size of tires was devoted to the US and Canadian markets. "We are proactive recall of tires even though no claims [we made against them]" she said.

The cause was incorrect curing press set up in which the clamp pressure on the mould was insufficient.

Gajah Tunggal is closely aligned with GiTi, with the parent group owning 49% of Gajah Tunggal.

<http://www.jpnn.com/read/2016/09/27/470152/Gajah-Tunggal-Tarik-Ratusan-Ribu-Ban-dari-Amerika-Serikat->

### Porsche picks Nexen for Cayenne

Korea-based Nexen Tire is to supply the Porsche with its N'Fera RU1 tires in size 255/55R18 109Y XL for original fitment on Porsche's Cayenne. This is the first time that Nexen has supplied tires to Porsche for any of its car models.

[http://int.nexentire.com/pr\\_nexen/news/news\\_view.asp?idx=142](http://int.nexentire.com/pr_nexen/news/news_view.asp?idx=142)

## Section 6: Company information

### Michelin dealers don't like online sales plan

Following the announcement last month that Michelin is opening a website to sell BF Goodrich brand tires direct to consumers, dealers have struck back, arguing that 'we are tire dealers, not installers'

The dealers are concerned about the reduced profit margin on tires sold through the website. The payment is taken on the Michelin website and a fee is available to a local tire store to install the tire.

Michelin argues that the tire store can then try to sell extra services to the customer.

Dealers say they will accept the customer but then try to sell a different brand of tire: one that makes more profit.

Michelin has made the BF Goodrich site live from mid-September, and expects to do the same with Michelin brand tires before the end of the year.

### Commentary

Michelin is not the only company to try this. All the main tire makers want to meet the needs of a growing band of consumers to buy tires online – just like they buy books, music or computers.

Although online sales in the US are only around 6% of the total market of 300m units, that number is expected to grow. In Germany online sales account for around 22% of tire sales and in Sweden the figure is around 18%.

However, all the top tire makers have recognised that the old way of buying tires is changing. New consumers – those in their 20s and early 30s want a better experience when buying tires – an experience that few conventional tire stores can offer.

Tire makers also want to realise more of the value of their tires themselves, rather than sharing it with the wholesale and retail chain.

And finally, premium tire makers want to prevent dealers from making the buying decision and converting a potential buyer of a premium brand into a buyer of a budget brand.

For all these reasons, premium tire makers are placing a high priority on creating online sales channels. In the United States, Goodyear was the first to do this, but the uproar from Michelin dealers has been stronger. That is caused by the lack of transparency from Michelin, which declined to tell dealers how much they might expect, nor how the programme would work.

A year after Goodyear made its announcement, Goodyear dealers say the online sales tool is bringing new customers into the store. The fitting fee is barely worth it, but the fact that of all the shoppers who buy online and then visit a tire store to get them fitted, around 70% have never been in the store before, is a positive for the dealers who struggle to win new customers.

Whether dealers stick with Michelin or Goodyear is almost irrelevant. The experience in Europe has been that the fitting partners of online tire stores tend not to be existing tire specialists, but other service outlets who do not have a strong presence in the tire segment, even though they have all the equipment and skills to fit new tires.

This move to online tire sales may mark the beginning of the end for independent specialist tire stores.

<http://www.bfgoodrichtires.com/>

### GiTi brings Giti brand to European PCR tires

Giti has historically used brands in Europe such as GT Radial, Primewell and Runway. Now it has officially launched the Giti brand into Germany's passenger car segment. The move follows Giti Europe's decision last May to launch the Giti brand into the European truck tire sector.

There will be four Giti-branded passenger car tire ranges in Germany. All of them were developed by the company's European R&D Centre in Hannover. The four products include:

- GitiSport S1 UHP tyre in rim sizes between 17 and 20 inches;
- GitiSport S1 SUV for large, powerful SUVs;
- GitiPremium H1 for mass market cars running on 16-18 inch rims; and
- GitiSynergy E1, designed for 15-17 inch rims and offering low rolling resistance.

Giti Europe said Germany is a trial launch to assess consumer reaction. No decision will be made on a European roll-out until the Germany programme has been analysed and assessed.

<https://www.am-today.com/sites/default/files/articles/16554/2016-09-12-communication-presse-lancement-giti.pdf>

### Dow Jones adds tire firms to Sustainability Index

Dow Jones has added Bridgestone Corp and Hankook Tire Co to the Dow Jones Sustainability World Index in its latest review, published on 19 Sept. They join Michelin, which has been on the list for some time.

[http://www.robecosam.com/images/DJSI2016\\_ComponentList\\_World.pdf](http://www.robecosam.com/images/DJSI2016_ComponentList_World.pdf)

## Section 7: What's Green

### What makes a tire sustainable?

#### Key points

Continued population growth and consequential demand for vehicles, is expected to put 2.5bn vehicles on the world's roads by 2050.

That growth is expected even though the world's resources of food, land, water and petroleum are limited. Simultaneously carbon dioxide emissions are growing, with potentially disastrous consequences.

Within the transport and automotive sector corporations and individuals are setting out strategies to manage a reduction in consumption and carbon emissions, while continuing to provide improvements in mobility.

Up to 2030 the world's population is forecast to grow to 8.5 billion, from 7.4 billion in 2015. Much of that population growth will be in parts of the world which we currently consider to be developing countries. As economic activity grows, there is a common belief that demand for personal mobility will increase significantly.

Today around 1.2 billion vehicles are on the roads around the world. By 2050 this is expected to more than double to 2.5 billion.

This growth in people and vehicles is expected even though the world's

resources of food, land, water and petroleum are limited.

Simultaneously, emissions of carbon dioxide are increasing around the world. Scientific evidence of climate change is now overwhelmingly linked to the increased emission of carbon dioxide and other greenhouse gases such as nitrous oxide and methane.

Projections suggest that annual emissions of approximately 49 Gt of CO<sub>2</sub> in 2010 could grow to between 63 and 72 Gt CO<sub>2</sub> by 2030, on a business as usual scenario. Scientists estimate that if average global temperature rise is to be kept below two degrees, then emissions will have to fall to around 47 Gt CO<sub>2</sub> by 2030, to 28 Gt by 2050 and that by the end of the century emissions should be negative.

The Paris climate change talks in December 2015 (COP21) concluded with agreements to keep average warming to 1.5°C, but so far pledges from 187 nations for cutting their emissions won't meet that goal. To keep warming below 1.5 degrees, developed nations will have to transform the way they use (and produce) power.

The transportation sector – a major contributor to global carbon emissions – is going to have to come up with solutions which will cut its growing carbon footprint. Within the sector, tires contribute up to 25% of the emissions of vehicles.

Following the Paris talks, the chief executives of the largest US tire companies (Bridgestone, Michelin, Pirelli, Yokohama, Toyo Tire) called for the adoption of carbon pricing, greater coordinated regulatory framework and investments in green technologies.

#### Tires and sustainability

Governments, media and less well-informed observers have discussed the concept of a 'green' tire without a clear definition of what such a tire might be.

##### Our definition is as follows:

*A Green Tire is one that minimises the consumption of resources during its manufacture, distribution, use and final disposal, while maintaining high levels of performance and safety.*

A definition is one thing, but the processes and technologies required to deliver such a product are complex. More significantly, materials, process and in-service conditions all interact. This means there is no single recipe for making a 'green' tire.

Instead, each application area and each segment within those application areas will require a different balance of manufacturing technology, ingredients and processes to deliver the goal of minimum total energy.

The materials and technologies used to make a truck tire, for example, are different from those required to make a passenger car tire or a high performance motorbike tire.

Within truck tires, the materials and technologies appropriate to a steer tire used primarily on a German Autobahn are different from the materials and technologies appropriate to a trailer tire used mainly in the Australian bush.

A wide range of processes consume energy during manufacture. For example: extracting and refining the raw materials, mixing those materials together, constructing and curing the tire. As a general rule, for a tire which lasts its full design life, the energy consumed during manufacture is less than 20% of the energy consumed in service.

Energy consumed during a tire's lifetime is less obvious, but easier to quantify. Energy will be consumed in overcoming rolling resistance, wind resistance and in accelerating and braking (figs 1, 2).

As a tire rolls along the ground and accommodates distortions in the road surface, it deforms slightly. This takes energy and some of that energy is transformed to heat. This energy has to come from somewhere: i.e. the fuel used to power the vehicle. Energy wasted during each revolution of the tire results in greater fuel consumption

Although each of these deformations is small, the total energy wasted accumulates with each revolution of the tire. A truck tire with a rolling diameter of 1m and which travels up to a million km, will make over 300 million revolutions during its lifetime.

Clearly a small reduction in the energy consumed per revolution will have a big impact on the overall energy consumed during the life of a tire.

In a truck, around 25% of the fuel put into the tank is consumed in overcoming the rolling resistance of the tires. The rest is used to overcome aerodynamic (wind) resistance and to accelerate from a standstill or up

#### Greatest environmental impact

Around 80% of a tire's environmental impact comes from its in-use rolling resistance

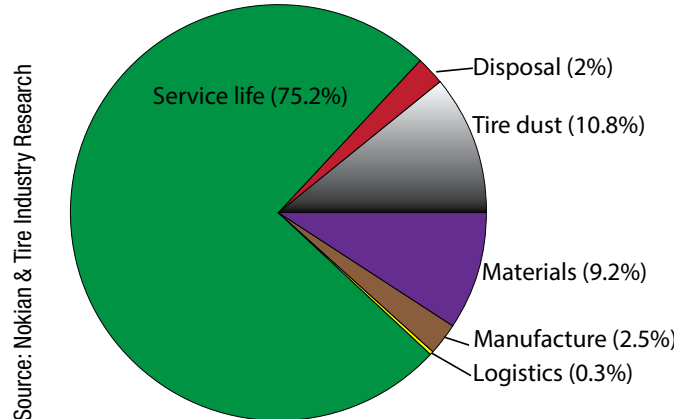
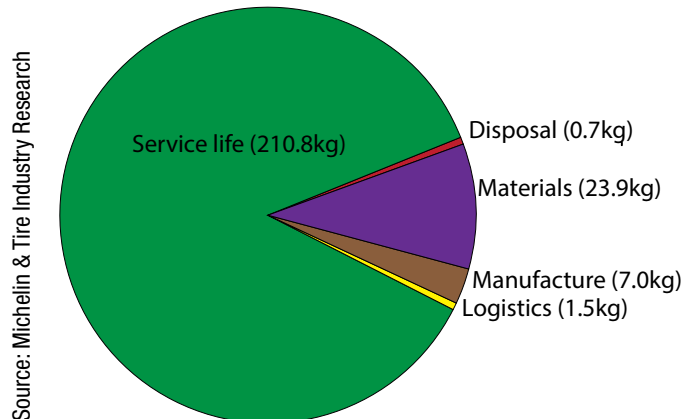


Fig 1: Life cycle assessment of car tire (CO<sub>2</sub> impact)

Fig 2: Life cycle assessment of car tire (Combined environmental impact)

hills.

A truck making deliveries on rural roads will use proportionately more fuel in accelerating and braking. A tour bus on an open freeway driving across the US Great Plains will use proportionally less on changing speed and overcoming wind resistance.

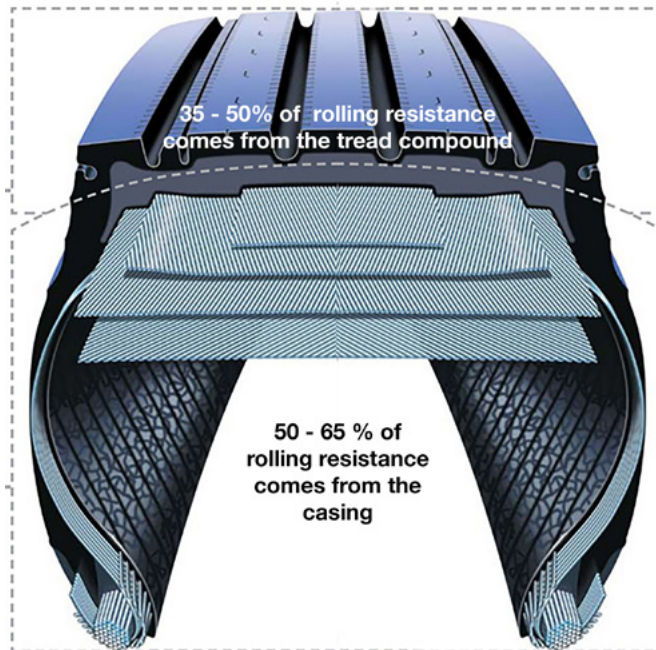
### Rolling resistance

Rolling resistance comes from a range of sources within a tire. In a passenger car tire, the tread area which has direct contact with the road contributes 40-50% of the total rolling resistance. The sidewall and the casing contribute about 20-30% each. The bead area contributes a small percentage of the total (see fig 3). Because a truck tire will be more heavily loaded, the carcass will contribute slightly more to rolling resistance than in a car tire.

Within each of these areas, the greatest part of rolling resistance comes from hysteresis – the energy lost when a material deforms and then springs back to shape.

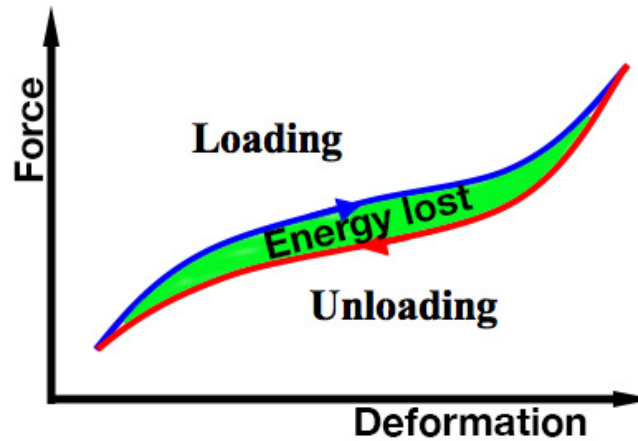
This process occurs when a tire rolls along the ground. As a section of rubber enters the contact patch between road and tire, it deforms. Because the tire is made of rubber, a lot of the energy of that deformation is recovered – but not all of it (fig. 4).

**Fig 3: Sources of energy loss in a tire**



Source: Bridgestone & Tire Industry Research

**Fig 5: Hysteresis and energy loss**



A small part of the energy is wasted as heat and the only source of this energy is the fuel used to drive the vehicle.

A simple curve shows how energy is wasted during a load cycle. In fig 5, the area inside the blue and red lines represents wasted energy. As this area gets larger, more energy is wasted and more fuel is used. But as the area between the two lines falls, so does the energy of rolling resistance.

Tire makers can cut the amount of wasted energy. As more carbon black is added to the mixture, the area between the red and blue lines increases and so does the amount of wasted energy.

Another method would be to use rubber with less filler, which would mean the rubber becoming more elastic and more fuel efficient. Unfortunately, the tire would also wear out much more quickly.

If we are looking at overall sustainability, then we need to find a compromise between energy wasted and the overall lifetime of a tire.

If tire makers can reduce the internal rolling resistance of their tires, then truck operators stand to make significant savings on their fuel costs.

The same arguments apply to car tires. However, since cars and light trucks tend to travel at higher speeds than heavy trucks, the contribution of wind resistance is greater in the car tire segment, so around 20% of the fuel put into a car is used to overcome tire rolling resistance.

Tire makers have concentrated on reducing rolling resistance in their tires. Life Cycle Analysis says this makes the greatest contribution to the overall environmental impact of their tires.

Great strides have been made in understanding rolling resistance and fuel economy and the performance of tires has improved dramatically (figs 6-8).

However, rolling resistance is not the only contributor to energy costs.

According to analysis by the Japan Automobile Tire Manufacturers Association (JATMA), the extraction and refining of raw materials contributes around 10% to the overall energy costs of a car tire.

A tire wears out. The tread gradually erodes away. In truck tires the tread is often renewed in a process known as retreading. This is rarely economic in car tires. However, current research by tire makers and their suppliers is focussing on how and why the tire wears and on finding ways to reduce the wear rate within the rubber.

Historically, there has been a compromise between the life of the tire and the wet grip – or safety margin – of that tire. Just as materials developments have re-evaluated the link between wet grip and fuel economy, research into tire wear has re-evaluated the link between wet grip and tire life.

Tire makers have struggled to improve the fuel economy of their tires and indeed any benefits accrue only indirectly as their customers reap the rewards of this hard work. Within the factory, however, any energy saved has a direct impact on their costs. So while the energy consumed during tire manufacture amounts to only 10% of the total, those costs have been under intense scrutiny.

Tire manufacture is energy-intensive. Materials are heated and cooled multiple times during the manufacturing process. So cutting costs means looking carefully at the repeated heat/cool cycles.

Manufacturers will also look at reducing the amount of raw materials they use. Since raw materials contribute up to 60% of total costs in some factories, a small saving in raw material consumption can have a big impact on profits.

### Rolling resistance, inflation pressure and tread depth

Much discussion of 'green' tires and sustainability has revolved around improving fuel economy. This report uses figures from the JATMA analysis, as it is regarded as the most thorough: it includes the energy cost of producing raw materials which many other reports ignore. It also takes into account the latest generations of tires which consume less fuel during their in-service phase. There have been many other life cycle analyses of varying quality but most show that the in-service phase consumes 80-90% of the total energy.

When a standard tire is compared with the fuel-efficient tire, the savings in CO<sub>2</sub> emissions are limited. According to JATMA, a car fitted with four fuel efficient tires will emit around 8219 kg of CO<sub>2</sub> during the 30,000 km lifetime of the tires. When fitted with conventional tires, this figure rises to 8430 kg over the same distance. This represents a saving of just 2.5%.

Compare this with the potential savings from maintaining the correct inflation pressure. (A typical car tire has a nominal inflation pressure of around 2.4 bar). When tires are under-inflated, more energy is needed to make them turn.

The wide range of the figures takes account of different vehicles. The impact of tire inflation pressure on a fuel efficient vehicle such as a Toyota Prius will be greater than the impact on a wasteful vehicle such as a HumVee, for example.

Correctly inflated tires also last longer. When under-inflated, a tire's contact patch with the road surface is concentrated on its outer edges, causing rapid wear of the shoulder areas. When run at 80% of the recommended pressure, it is estimated that tire life falls by 25%. At 60% correct pressure, tire life falls by 65%.

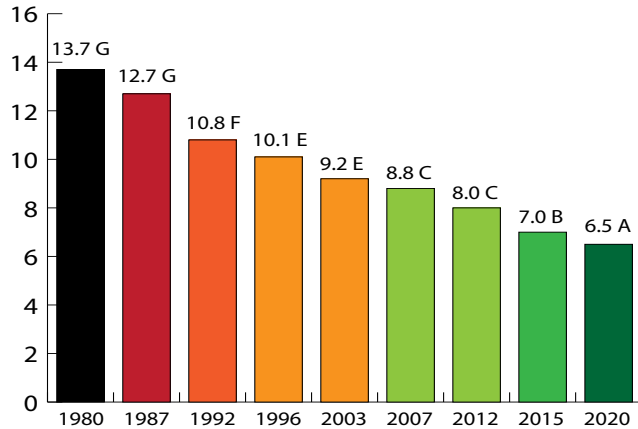
Research has shown that many drivers do not properly inflate their tires.

**Fig 6: Improvement in Rolling Resistance with time (1)**

For a premium brand car tire in size 205/55 R16

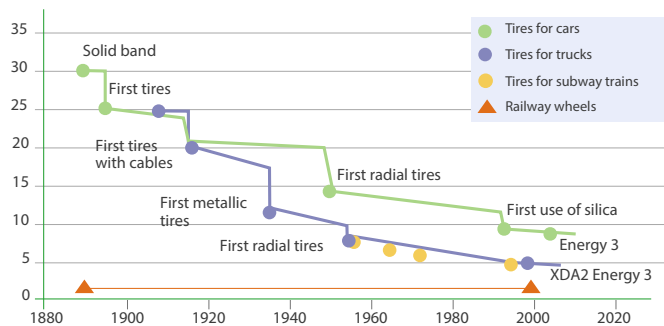
Rating letters A – G and the colours of the bars correspond to the EU car tire label rolling resistance criteria.

Note: dates are not to scale



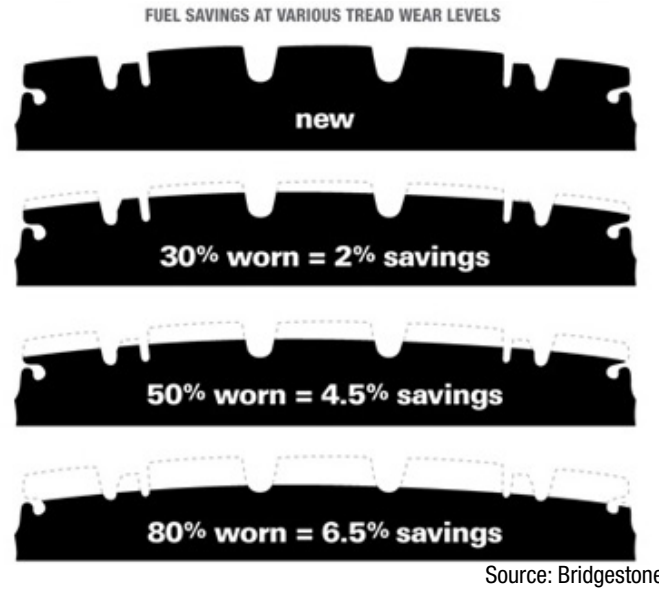
Source: Michelin & Tire Industry Research

**Fig 7: Improvement in rolling resistance with time (2)**



Source: Michelin & Tire Industry Research

**Fig 9 : Effect of tread depth on fuel consumption**



Source: Bridgestone

Vehicle electronics, including tire pressure monitoring, go some way to resolving the problem but do not completely eliminate it.

In a 2008 report from UNECE examined data from a series of EU studies: the median under-inflation pressure was roughly 0.2 bar. Around 20% of tires were over-inflated by 0.1 bar or more while only 10% were correctly inflated. About 70% were under-inflated by varying amounts. This means potentially billions of litres of fuel are wasted each year.

Just as under-inflation can outweigh the impact of a fuel-efficient tire, so too can tread depth. Reduced tread depth means better fuel economy. This can be attributed to the reduction in tread mass and rubber distortion, as well as subtle hardening of the tread compound during years of service and exposure to the elements (although of course diminished tread depth tends to increase stopping distance) (fig. 9).

A truck tire tread worn by around a third offers the same 2.5% savings in vehicle fuel economy as a fuel-efficient tire. A tread worn to half of the original tread depth offers nearly double that, while a tread worn close to the legal limit might offer fuel savings of 6.5% over a new tire.

In car tires, rolling resistance gradually drops by about 20% during the life of a tire as the tread wears out. This change in rolling resistance will be manifest as a decrease in fuel consumption of two to four percent, even if the tires are exactly the same make and model.

A car trip meter or odometer takes no account of the change in rolling diameter of the tire as it wears, which can lead to confusion over the fuel economy calculation.

The US Tire Rack organisation used GPS systems on a long, straight road to measure a distance travelled of 100 miles exactly. On a new tire with tread depth of 12/32-inch (9.5mm) the vehicle's trip meter/odometer recorded a distance of 99.4 miles. On tires buffed down to the legal minimum of 2/32-inch (1.6mm), the vehicle systems recorded the same distance as 101.0 miles due to the increased number of rotations.

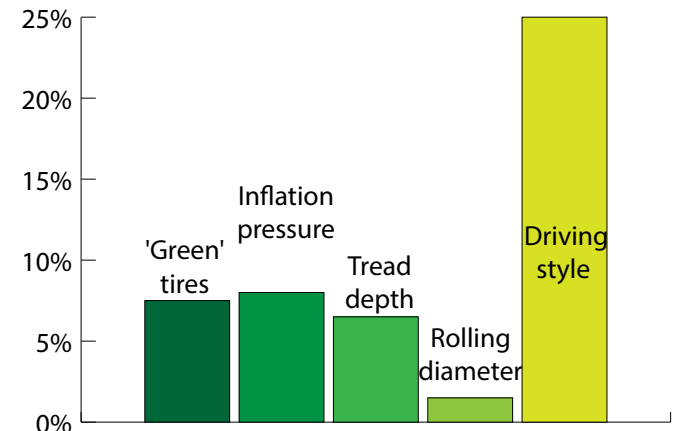
The effect of this is that if vehicle owners rely on the vehicle's trip meter to measure distances and use this to calculate average fuel consumption, then the calculations will under-estimate the average fuel consumption per unit distance offered by new tires and over-estimate the fuel used per unit distance in worn tires, The difference amounts to around 1.5% when four new tires are compared against four worn tires.

### Driving style

Driving style (e.g. using the accelerator less and more gently) can lead to even bigger savings in fuel. If aggressive drivers adopted a more gentle driving style, they could improve fuel economy by 30 – 35%; the average driver could easily get another 20% from each litre of fuel by concentrating more on reducing fuel consumption and driving accordingly, including shutting the engine down when stopped for more than a few seconds (fig. 13).

Inflation pressure and driving style are completely in the hands of individual motorists, while tread depth will decrease steadily over the life of a tire. However, the construction of the tire and the composition of the tread compound are within the control of the tire maker. If tire makers are to contribute to a more sustainable transport system, then a focus on fuel economy is an effective way of delivering it (figs 10, 11).

**Fig 13: Fuel saving potential**



Source: Tire Industry Research

## Fuel use, wet grip, silica and machinery

As discussed above, between 80 and 90% of the energy consumed by a tire in its lifetime comes from internal friction within the tire during the in-service phase.

It is therefore no surprise that in an effort to reduce environmental impact, the initial effort in tire development was to minimise the internal rolling resistance.

Rolling resistance is one of the three criteria now being used in tire labelling systems to give consumers information on the most fuel efficient tires. (See chapter 4)

Going back over 20 years the accepted wisdom was that rolling resistance, wet grip and lifetime were linked in an eternal triangle and that improvements in one parameter came at the expense of the others (fig. 12).

Since the mid 1990s there have been a series of developments that permit one or other of these parameters to be improved with no impact on the others. However, each of these developments has required a significant change in either materials or processes or both.

The future for low-environmental impact tires is likely to be involve advanced materials and more sophisticated processing.

Take silica (SiO<sub>2</sub>): when Michelin first introduced its 'Green X' tires at the Paris motor show in 1992, it claimed the technology could improve rolling resistance in all tires, with no impact on other performance criteria.

The secret of making these 'green' tires was to use silica in place of carbon black as the reinforcing agent. But to make the silica interact with the rubber another ingredient called a silane was used. Not only was this silane expensive, but it changed the process of mixing rubber.

Historically when rubber and carbon black are mixed, the materials have a limited level of chemical activity. The process is essentially passive and involves little more than mechanical mixing.

With the silica-silane-rubber combination a chemical reaction takes place. Not only does this generate a certain amount of heat energy, but it also releases alcohol. This release of ethanol can lead to corrosion in the mixers.

Unlike carbon black, silica prefers to clump rather than to disperse evenly throughout the rubber matrix. This means that new mixer designs have to be used to get an effective dispersion.

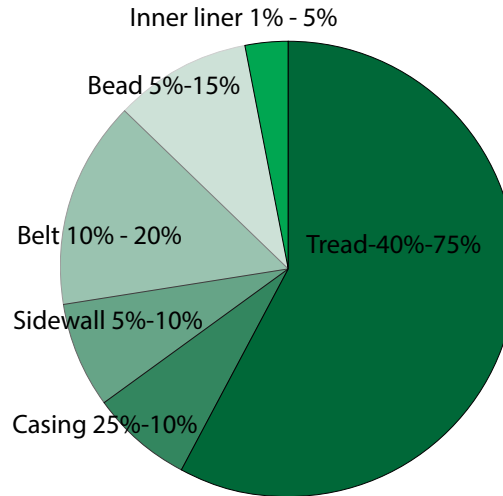
The result was that as tire companies introduced silica mixing, they had to change mixers from tangential to so-called inter-meshing. They also saw a decrease in the life of their mixers as corrosion took its toll on the steel.

However, manufacturers have pressed on with silica and are now seeking more sustainable sources. Goodyear has been testing silica made from rice husk ash and now has a form of a high enough quality to be used in tires. Its initial source will be in China and the silica will be used in the tires it manufactures in China. (See chapter 9)

This means less rice husk sent to landfill and according to Goodyear silica made from rice husk takes less energy to produce.

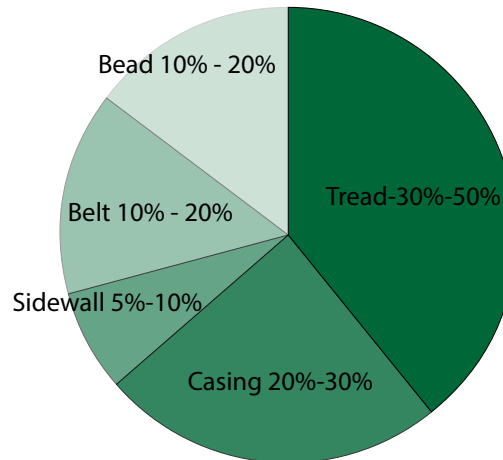
In a separate development, Goodyear has found that soybean oil can reduce the amount of petroleum based oil used in tires. Furthermore the oils can extend tire tread life. Goodyear also found that rubber products made with soybean oil also blend more easily with the silica.

**Fig 10: Where energy is lost in a car tire**



Source: Orion & Tire Industry Research

**Fig 11: Where energy is lost in a truck tire**



Source: Orion & Tire Industry Research

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**Chapter 3: What's Green?**

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**Chapter 5: Natural rubber**

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## Section 8: Strategy

### Tire industry moves on

I think the tire industry is going through another major transformation.

Since I started analysing this industry in the late 1980s I've seen only two or maybe three such large-scale transformations.

To give you an idea of the scale of transformation I am talking about, think of the switch from bias-ply to radial construction in the 1940s and 1950s.

#### 1990s – More flexible manufacturing

During the 1990s passenger car and light truck tire markets saw a transformation in terms of the range of sizes demanded by OE customers and then the replacement market. This drove massive changes in the upstream machinery supply sector.

Before this transformation, typical production runs were measured in the thousands or tens of thousands. A factory would churn out the same size of tire for days on end.

After the change, factory managers had to cope with multiple size changes in a day and production runs of a few hundred, or even a few tens of products. It triggered research into new production methods with acronyms such as C3M, BIRD, ATOM and MMS. Ultimately, it led the suppliers to create machines with fast change-over times, better accuracy and greater flexibility. That trend is still in place today, though the need for increased flexibility and accuracy has become just one of those on-going development objectives.

#### 2000s – better materials

The next big change was in materials. Triggered by the development of the high-profit Winter tire segment and by legislation on vehicle emissions and fuel economy, tyre makers were pushed to deliver better fuel economy at the same time as extended wear life in truck tires and improved wet grip in car tires.

We can put a precise date on the start of this revolution: 7 October 1992. That was the day Michelin launched the 'Green X' tire at the Paris motor show.

The technology behind this innovation was the use of organo-silanes to improve the coupling between rubber and silica. That allowed a frequency-dependent hysteresis response in the compound which led to improved grip while maintaining rolling resistance.

Like the proliferation of tire dimensions, this revolution has not yet run its course. We will continue to see improvements in materials and in our understanding of materials. After a couple of decades of intense research, most tire engineers know where rolling resistance arises. We have come a long way towards understanding wear mechanisms and the need for



homogeneous compounds at a nano-scale.

However, I am convinced that management attention is now moving away from the technologies associated with the technological focus of the wet grip-rolling resistance-wear triangle toward more pressing business issues.

#### This decade – Business issues

The tire industry has historically been dominated by the technologists. The two revolutions mentioned above were both technological. Prior to that we had invention of the radial and before that the need to develop synthetic rubber when natural rubber became less available during times of war. All of them are technology-based developments.

It's only natural that products based on a complex composite made from a variety of reinforcement cords coated with a range of visco-elastic, thermoset polymeric mixtures of unusual ingredients need advanced technological management.

When the science of compound development was more black art than rational science, managers needed to understand the risks and compromises that were being made as the engineers and chemists developed new compounds and new products.

Nowadays, we have a much better understanding of those complex technologies and managing a tire company is becoming more like managing any other manufacturing & distribution operation. Senior management

teams need more understanding of global business issues than insight into specific rubber or tire technologies. As the risks associated with technology diminish, we can – at last – leave those to the engineers and focus on the real issues facing the business.

Those business risks include

- Global competition;
- Local and global legislation;
- Environmental and resource constraints;
- Disruptive technologies,
- Online sales and distribution.

None of these is unique to the tire industry.

#### Future management requirements

The future development of the tire industry will depend on managers understanding these wider business risks and managing them, rather than on how well they understand and communicate aspects of tire technology.

One of my stronger interests in recent years has been the development of the tire industry in China. It seems to me that almost all Chinese tire makers as well as their government and advisors still think in terms of those earlier technological constraints. They rarely, if ever, discuss the business risks mentioned above.

If you want to identify the potential winners among the Chinese – or any other – tire makers, look at these business issues and try to understand whether the management has the skills and abilities to handle them. Many of us know about Chinese tire makers' limitations in technology. Those can be remedied by buying in outside consultants and experts.

The business risks can only be solved when senior management understands that corporate survival depends on actively addressing and managing those risks and converting some of them into opportunities.

#### Inward-looking tire makers

This is likely to be challenging for a tire industry – in China and elsewhere – that has traditionally looked either inwards or to their competitors for the next generation of managers.

Historically, all tire makers felt that managing the business required a good understanding of tires and rubber. The only place you get those is from long experience in the tire industry. As a consequence, the industry became inward-looking and tended to reject people and ideas from outside.

I have seen this countless times in my career tracking tire makers and others.

Newcomers to the industry frequently comment on the risk-averse, change-resistant culture of tire makers.

Rather like the entrenched residents of remote and unsophisticated villages, traditional tire industry people will only accept outsiders after many

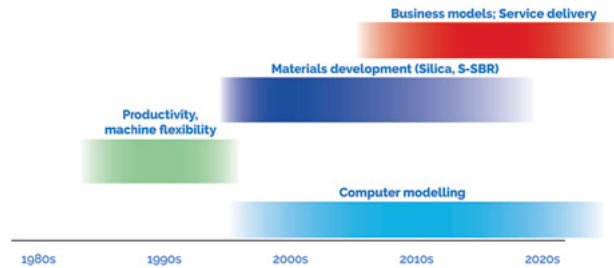


## Section 8: Strategy

years learning our ways and understanding our culture.

In today's world, this attitude will cause a tire business fail.

### Transformative change



This then, is the essence of the third transformative change I have witnessed in the industry. A transition away from management rooted in technology to management adapted to wider global issues.

I hope this will mean that the industry recruits more people from outside its existing ranks; more diversity; a management team more representative of its diverse and wide-ranging customers and stake-holders.

Let me take those global issues in turn:

### Global competition

Premium-brand tire makers are facing something of a crisis. It is not apparent yet, but will increasingly affect margins and profitability.

Tire makers in China, India and other countries are making increasingly competent tires. Personally I'm not ready to put any of them on my car. But the day will come when I – and many others – will decide that we are not prepared to pay the brand premium for a limited performance advantage.

As web-based consumer reviews and other sources of information allow consumers to make more informed choices, the price premium of top brands will become increasingly unsustainable against aggressive, low-cost manufacturers with names that few today recognise.

Just as Toyota, Samsung, Hyundai, Huawei and Alibaba have built brands on strong service offer and excellent price-performance ratios, a series of tire makers from Korea, India, Taiwan and China are building their own brand strength in markets from Africa to the Middle East and even the United States and Europe.

Today the price gap between the premium brands and the no-name Asian bands is much wider than the technology gap. That technology

gap will only reduce, putting the lower-priced imports into pole position in price-performance terms.

### Local and global legislation

Here is an area where premium brands have the scale to help themselves and potentially disadvantage the competition. Legislators in Europe, the Gulf States, China and elsewhere are becoming very interested in the tire industry.

It started with rolling resistance targets and consumer labelling, but legislators in China are asking tire makers to limit their specific energy consumption and specific water usage.

Working with legislators and lobbying will become an increasingly important part of the strategic development of tire makers.

Large companies have the staff and can make the time available to influence legislators as they seek to put more control on manufacturing and distribution

### Environmental and resource constraints

The tire industry is not environmentally-friendly. We use fossil fuel resources; some of the chemicals we use are carcinogenic; the carbon black used to reinforce compounds comes from the dirtiest, nastiest fraction of crude oil; end-of-life tires are a hazard and environmental blot and now the natural rubber industry is being accused of promoting de-forestation.

These drawbacks are accepted because there is no sensible alternative to pneumatic tires.

As resources become tighter, the industry is going to have to accept change. Key among these will be a change in emphasis toward a circular economy under which the resources contained within end-of-life tires can be recycled back into new tires. While this has a technological dimension, the real challenge will be convincing the technologists to adopt less wasteful processes.

### Disruptive technologies

A venture capitalist I know once told me that he loves industries that are inward-looking; resistant to change and based on 20-year-old technologies, because those are the ones he can make most money from as he destroys them with disruptive technologies. Think Amazon and bookshops (or any shop); think AirBnB and hotels; think Uber and taxis.

I cannot see any business models that might disrupt the tire industry in this way, but that does not mean no-one is working on them.

The tire industry is ripe for disruptive change

### Online sales and distribution

This is the near-term frontier of disruptive change. It is clear to me that a good strategy for a premium-brand tire maker is to engage with custom-

ers across social media with games, competitions and other infotainment. When they need tires, they are likely to come to my site. Then I can offer them a set of tires, with suitable discounts and provide them with a fitting opportunity to suit their busy schedule.

That way I can avoid the risk that a dealer will switch them away from my brand into a low-priced brand.

Engaging customers for a potential tire purchase is no different from engaging with them for a potential purchase of a computer or washing machine or other consumer durable. We need to bring those skills in to the industry.

# Section 9: Goodyear Strategy

## Goodyear analysis

Many of you know me will know that I have been a little sceptical about Goodyear. The company's most recent investor meeting has pretty much convinced me to change my mind.

Ever since becoming an independent commentator on the global tire scene, I have been suggesting that established tire makers follow a certain strategy over the short- to mid-term (5-10 years).

At Goodyear's investor day CEO Rich Kramer and his top management team reiterated that strategy more clearly than perhaps I have been able to do.

Broadly, it is this:

- Focus on high-profit tires more than high-volume products;
- Integrate tire operations across multiple disciplines
- Improve the service offer to customers
- Reach out beyond traditional tire industry expertise
- Work with OEMs to understand and anticipate long-term future trends.

In addition, it is essential to operate on a low-cost model and to move the retail operations forward to meet and exceed the expectations of a new generation of connected consumers.

Because this approach was explained so clearly, I want to draw heavily on the presentations made by Rich Kramer, CEO and Chris Delaney, head of Goodyear's Asia-Pacific business.

Kramer spoke of four megatrends that are affecting the tire industry in the short term and another that is mid- to long-term.

- Tire sizes continue to proliferate
- The industry is facing increased complexity in manufacture, retail and other aspects.
- Consumers are more knowledgeable, connected and informed
- The transportation business will undergo disruption

Although Goodyear has identified other trends, the half-day presentations were focussed around these four trends and how Goodyear can benefit from them through its planning and strategising.

In simplistic terms, Goodyear says it is in the process of switching away from a volume-based strategy to one more focussed on high-profit segments. Companies such as Nokian and Pirelli have followed this approach for years, so it really is nothing new in the tire industry. It is new however, for one of the top-three. Traditionally these companies have all sought to be full-service companies offering every type of tire from motorcycle to earthmover. I detect a sense from Goodyear that it no longer wants to make every type and style of tire – only the more profitable ones. And if

you look at its revenues over the last few years, they have been steadily falling while profitability has been increasing.

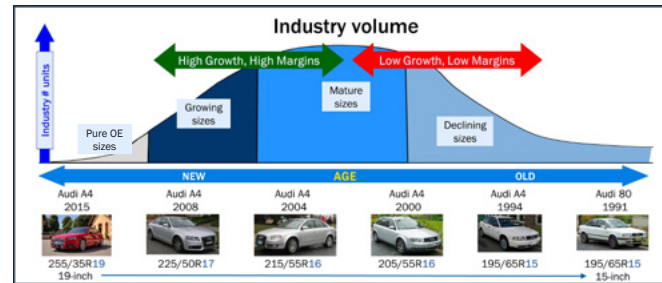
I predict that within a couple of years Continental will overtake Goodyear as the third largest tire maker in the world by revenues. Conti wants to expand into earthmover tires; off-road tires; motorcycle tires and other high-profit niches.

Goodyear has divested its agricultural tire unit to Titan and is moving its capacity up-market. In North America over the last decade its output has dropped by around 30%.

It is fairly clear to me that Goodyear wants to do the same in Europe. The move to disentangle itself from Sumitomo a year ago fits in with that strategy.

Another aspect of Goodyear's presentation was rather subtle. Kramer said it is not enough simply to make the tires in the right sizes, you have to be able to convince customers to buy them and then get them to the sales outlets in good time. Delaney noted that the lack of Goodyear tire stores in India has limited Goodyear's ability to sell tires in that country.

## First megatrend: tire size proliferation



I have paraphrased the first megatrend. Kramer specifically identified this as long-term growth and changing mix.

Tire size proliferation is just one aspect of that development, but it indicates the direction of the industry. More tire sizes requires more flexible manufacturing operations; more responsive logistics and inventory systems from main distribution warehouses to individual tire store. It means giving everyone in the supply chain confidence that if an end-user orders a tire that is not held in local stock, it can be delivered and fitted in the timescale required by the customer.

But it is more than that: today a whole range of new brands have come on the market and they offer different levels of performance and profitability to dealers, wholesalers and even to the consumer. In addition, the advent of online sales is adding further complexity.

## Second megatrend is increased complexity

One aspect of this business that I have not discussed much is the silo-na-

ture of the industry. The tire industry – like many others – is full of experts in their own field, but few of them have a genuine appreciation of how other experts contribute. Technologists despair of the marketing people while sales and distribution get frustrated at the lack of support from manufacturing.

Even more specifically, experts on mixing – and goodness knows we have plenty of them – sometimes do not fully understand the need for ensuring consistency in the output from their mixers and extruders.

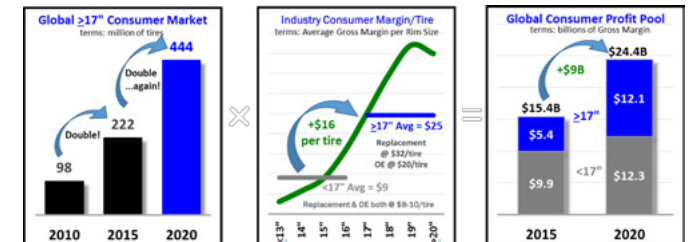
As we move up the size and speed scale into the high-profit niches of Y-rated, 19-inch tires, consistency and repeatability become much more important than they was in the days of V-rated 16-inch tires. Labels add a further dimension to the need for repeatability.

Management needs to understand and communicate the contribution of each aspect of the value chain across all departments and operations to create a coherent team, all of whom have respect and admiration for the others who contribute to the value of the product, from brand management to distribution and computer modelling.

No-one can make a profit from the tire industry, unless all parts can work together and appreciate the role of their colleagues who work in different departments, different countries and often in entirely different ways.

Kramer expressed this idea more succinctly: “You can't only focus on one area of capacity in the tire business to win. You have to do it all. And for Goodyear that is our competitive advantage. We can do it all with our business model that is designed to connect and link all our businesses from innovation to manufacturing to distribution to retail to installation and to customer service.”

## 17-inch sizes upwards



Kramer clearly identified consumer tires in rim diameters of 17-inch and upwards as the main driver of profit in the coming years.

He showed a chart indicating that the volume of tires in this segment doubled in the five years to 2015, and is set to double again from 222m to 444m units in the five years between 2016 and 2020. This represents a CAGR of around 15%. During that period the number of tires sold in the

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13-16-inch range is set to grow at around 4% CAGR, with more competitors fighting for a share of the slow-growing market.

Not only is the volume set to increase, but the profitability per tire is also much higher. Goodyear internal estimates put the average profit per tire in sizes of 16-inch and below at between \$8 and \$10 per unit in both OE and replacement.

In the 17-inch upwards category, this is around \$32 per tire in replacement and \$20 per tire in the OE segment, with peak profitability of up to \$42 per unit in 19-inch sizes.

This 17-inch plus category made up only 14% of the global passenger car tire volume in 2015, set to increase to 24% by 2020, so it remains a relatively small part of the market, but according to Goodyear the potential profit pool from this segment is around a third of the total potential of USD15,400m in 2015, rising to almost half of the USD24,400m in 2020.

Hence the strategic plan to convert tire production to these sizes; build the potential demand through OE fitments and ensure tires are distributed to the right stores in the right time frame with appropriate profit margins for each part of the value chain and the right logistics and inventory management to ensure on-time delivery.

But complexity does not stop there.

### Third megatrend is the empowered consumer

Kramer said the previous generation of tire buyers tended to buy from someone they knew personally who lived in the same small town. That tire dealer carried a few hundred tires and if the specific tires for the buyer were not in stock, the buyer would wait a day or two and come back to be offered high quality service.

In that model the retailer is in control, and the customer was happy to yield control because there was a personal relationship that meant the retailer would offer good service.

The next generation is nothing like that. The millennials, or generation Y or whatever label you want to put on them are connected. All the time. They know prices at local stores; they know availability; they have researched tire characteristics and they want the tires to come to them. They are absolutely in control of their purchasing decisions and the small mom-and-pop tire store cannot hope to continue with the same business model that worked two decades ago.

According to Kramer. "This group is not looking for a transaction. This group is looking for an experience."

Kramer referred to Starbucks. He said Starbucks offers an experience that is about free wi-fi; local newspapers; comfortable chairs: a place where you can hang out with your friends. It is an experience, more than a place

to get a quick coffee.

Kramer said, "Our job is to make the tire buying job easier. To take all that friction from the tire buying process and provide them with a memorable experience and to do it seamlessly an aligned business model from end to end."

He said, "Goodyear was the first tire manufacturer to offer sales directly to consumers." The company offered its own online store in the US in 2015 and has managed to allay the fears of dealers who worried that they would lose business.

Kramer continued, "Working from the market back and understanding consumers, we worked directly with our retailers and our aligned distributors which is a significant advantage for Goodyear versus other competitors. We work with this group and we offer a consistent proposition that works for the consumers. The consumer wins because the tire buying process is easier. Our aligned partners win because they are getting incremental business from this."

He said it is not easy, but the model is working in the United States, and, "we are going to continue to roll this out around the rest of the world, taking into consideration the different markets we have to roll it into but we will do it very thoughtfully."

### Fourth megatrend is connected cars and vehicles

Kramer referred to the on-going research in to cars and trucks with advanced driver assist systems (ADAS and autonomous driving (AD). This, together with ride share applications and similar disruptive technologies is causing huge changes in the vehicle industry.

Kramer said he did not think this will have a substantial impact on the types of tires used, or the technology going into them.

He acknowledged that these changes are likely to mean fewer cars, each being used more intensively, but overall distance driven is likely to increase, rather than decrease.

He also suggested that the ownership of cars is likely to change. As ride-sharing becomes more common, vehicles are likely to be owned by fleets rather than individuals. The drivers for tire sales will therefore become more focussed on the value proposition rather than the emotional value of the brand.

This, said Kramer is also good. The big brand tire makers all sell into the truck segment and the aircraft segment and these are dominated by fleet purchasing managers who will prioritise uptime and scheduled servicing over ad hoc replacement.